Language learning in older adults: Interdisciplinary perspectives

Centre for Research in Language Development throughout the Lifespan
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23 June 2022 - Workshop Programme

8.45-9.00	Registration
9.00-9.15	Welcome and overview of programme for the day
9.15-10.15	Outi Tuomainen (University of Potsdam): Interactive speech communication in adverse listening conditions in normally hearing and hearing-impaired older adults
10.15-10.30	Coffee break
10.30-11.30	Simone Pfenninger (University of Salzburg): On the interplay of multiple factors over time from a dynamic systems perspective
11.30-13.00	Poster slam and poster session Lunch (from 12:00)
13.00-14.00	Merel Keijzer (University of Groningen): Language learning as a vaccine to promote healthy aging: The cognitive and socio-affective effects of third-age language learning in healthy older adults and older adults experiencing cognitive or mood problems
14.00-15.00	Thomas Bak (University of Edinburgh): Confusion or cognitive reserve? The neurology of multilingualism and language learning in later life
15.00-16.00	Coffee and themed discussion in groups

Organising committee: Karen Roehr-Brackin, Faith Chiu, Eva Gutiérrez-Sigut, Ramya Maitreyee.

Plenary sessions

Interactive speech communication in adverse listening conditions in normally hearing and hearing-impaired older adults

Outi Tuomainen
University of Potsdam

Speech communication can be difficult for older people, due to the combined effects of age-related hearing loss, which is common over the age of 65, age-related decline in the quality of phonation and speech articulation, and cognitive problems such as poorer short-term memory and processing speed. Furthermore, the degree to which communication with others is successful is often affected by the listening environment (whether "good" or "adverse"), and the impact of the adverse listening environment appears to be greater for certain listener groups such as children and older adults or individuals with hearing impairments (e.g., Gordon-Salant, 2005; Matty et al., 2012).

In this talk, I will give an overview of our past projects that have aimed at gaining a comprehensive account of older people's speech production and perception in situations involving communication with another individual. In these studies, we elicited interactive communicative speech by using the spot-the-difference diapix picture task (DiapixUK; Baker and Hazan, 2011). Communication between the participants was either in good listening conditions (i.e., both speakers could hear each other normally), or in different adverse conditions. These comparisons enabled us to get a sense of the degree to which a person is able to adapt their speech to overcome the difficult listening conditions, a skill which is of paramount importance in speech communication in everyday life. I will present some of the main results across two different large-scale projects (N=197 talkers) regarding measurements of speaking/vocal effort, listening effort and communicative efficiency in younger and older talkers.

Instructed L2 learning in healthy older adults: On the interplay of multiple factors over time from a dynamic systems perspective

Simone E. Pfenninger
University of Salzburg

While research on instructed second language (L2) acquisition in healthy older adults has recently begun to gain traction, the mechanisms of third age additional language learning are yet to be investigated. In particular, there have been calls for more research employing dynamic methods capable of revealing how significant peaks and dips in the L2 development emerge in relation to variable learner behavior. Scholars have long asserted that there is substantial inter-individual variation in older learner populations in that differential L2 learning success may be explained by the varying expectations, abilities, emotions, and attitudes learners bring to the L2 learning endeavor. Even within the individual, learner differences are far from stable and can manifest significant fluctuations occurring at different timescales (across the lifespan, across days, daily occasions separated by hours, and moments separated by minutes or seconds), contributing to observed day-to-da7 variability and, importantly, differentially affecting L2 development at different moments in time.

Drawing on my own micro-development studies of L2 learning in the third age, I focus here on both INTER-learner variation (with an emphasis on the dynamic nature of the cognition–affect interface) and INTRA-learner variation, which, according to van Geert and van Dijk (2002: 355), is "an interesting variable in its own right" that occurs in various forms: inconsistency (= intra-individual variation across trials within tasks at one measurement), dispersion (= intra-individual variation across different types of tasks within a single session) and variability (= intra-individual variation within tasks in individual time-serial data of repeated observations). I argue that a better understanding of differences in the level of a developmental variable within and across older L2 learners will facilitate sensitivity to intervention analysis and help refine and tailor future meditation-based interventions in the third age.

Language learning as a vaccine to promote healthy aging: The cognitive and socio-affective effects of third-age language learning in healthy older adults and older adults experiencing cognitive or mood problems

Merel Keijzer
University of Groningen

Bilingualism has been put forward as a life experience that may boost cognitive performance and slow down age-related cognitive decline. In more recent years, bilingualism has come to be acknowledged not as a trait but as a highly individual experience where the context of use strongly modulates any cognitive effect that ensues from it (cf. van den Noort et al., 2019). In addition, modulating factors have been shown to interact in intricate ways (Pot, Keijzer and de Bot, 2018). Adding to the complexity is the fact that control processes linked to bilingualism are bidirectional— just as language control can influence cognitive control, individual differences in cognitive functioning predict language learning outcomes and control. The aim of this paper is to shed light on the bidirectional and individual cognitive, social and linguistic factors in relation to bilingualism and second language learning, with a special focus on older adulthood. We present (ongoing) studies within the Bilingualism and Aging (BALAB-www.balab.nl) lab in Groningen which make use of randomized controlled trials to show the cognitive and socio-affective effects of introducing a bilingual experience later in life as opposed to other intervention types such as musical training. We investigate this in healthy older adult cohorts but also in (pre)clinical populations of elderly experiencing memory and/or mood problems. By investigating the effects of late-life second language learning as opposed to lifelong bilingualism, we aim to shed more light on the mechanisms underlying the benefits of bilingualism as a life experience, especially as it pertains to cognitive reserve in older adulthood, and differentiate between healthy older adults and those suffering from late-life cognitive impairment and depression.

Confusion or cognitive reserve? The neurology of multilingualism and language learning in later life

Thomas Bak
University of Edinburgh

When speaking about multilingualism and the ageing brain, an often-heard story is that of older multilinguals, particularly patients with dementia, "reversing" to their first language, sometimes losing in this way their ability to communicate not only with their wider environment, but also with

the closest family. On the other hand, recent research has shown that multilinguals develop dementia several years later and that their cognitive functions recover better from stroke than those of monolinguals. Indeed, there are calls to introduce language learning as an intervention counteracting cognitive ageing. This talk will try to reconcile these opposing narratives, relating them to new insights in neurology and neuroscience of healthy and pathological ageing.

Poster session

Language learning in older adults with a history of depression: A qualitative study of participants' expectations and experiences

Jelle Brouwer, Floor van den Berg, Hanneke Loerts, Jodi Sturge, Remco Knooihuizen, Merel Keijzer
University of Groningen

Language learning later in life has been proposed as a stimulating way to preserve or even improve cognitive functioning (Antoniou et al., 2013). Additionally, language learning may be beneficial for well-being: learning a language is an inherently social activity that stimulates you to interact with others. Furthermore, the realization that one is able to learn a new skill later in life may increase older adults' feeling of autonomy (Pfenninger & Polz, 2018), and the learning process itself may be an activity to be savored, too (Matsumoto, 2019).

Learning a language might also be beneficial for older adults with a history of depression. Late-life depression is associated with reduced well-being and loneliness (Cacioppo et al., 2006). Depression in older adults is also consistently associated with reduced cognitive functioning (Panza et al., 2010), even after remission of symptoms (Bhalla et al., 2006). Additionally, late-life depression is a risk-factor for dementia (Diniz et al., 2013). Following a cognitively stimulating language intervention, then, might be especially suitable for this population.

However, from our own experiences with studying older adults following a language course, we know that participant adherence to language courses varies drastically from person to person. Similarly, comments made by our participants after the course ended suggest that some enjoyed the course immensely, while others found it quite stressful. It is therefore important to understand the motivations, expectations, and experiences of participants to maximize adherence. Understanding these experiences will not only tell us which aspects of the language course contributed to well-being, but also how future language courses could be improved.

The goal of this qualitative study was to gather information about the experiences of thirteen older adults with a history of depression who had participated in a three-month language learning intervention. Data were collected through semi-structured interviews which included questions about why participants enrolled in the study, their expectations, and how they benefited from the English intervention. At the time of writing, the data is being analyzed. During the presentation we will discuss the findings and the implications they have for future language interventions aimed at older adults with a history of depression.

Tracing L2 directed motivational currents through the narratives of senior language users: An ecological approach to lifelong language learning

Bérénice Darnault
University of Barcelona

PhD Student under the supervisions of Pr David Lasagabaster and Dr Elsa Tragant de Le Mestres

In the context of an ageing and increasingly more independent learning population, a narrative inquiry into the life stories of motivated senior language users remains a promising yet relatively unexplored area (Pfenninger and Singleton, 2019; Cox, 2019; Derenowski, 2021). The literature

review covered so far shows there have been no attempts to understand storytelling, third age SLA and L2 motivation all combined, let alone to theorise around them from an emic perspective. This paper takes a bird's eye view on motivation in language learning as a life-long individual process that evolves along a narrative continuum, starting at birth and developing over the course of life, personal experiences, choices and events.

I conducted two sessions of semi-structured interviews with three highly motivated senior English learners aged between 65 and 80 years old, who commonly participate in regular coffee English exchange meetings in Nice (France). The study recorded their lifelong stories with language learning in a chronological order, from childhood up to their current practice experience at the café language circles. Subsequent data analysis involved the use of retrodictive qualitative modelling (RQM) to identify each learner's profile and trace back their respective trajectories, while detecting potential emerging commonalities and salient motivational drives throughout their journey with languages.

Results show that all three learners experienced persistence and designed autonomous and self-directed systems of language practice upon retirement. Overall, the use of a retrospective-longitudinal design in the context of complex dynamic systems not only helps typify learning profiles, but also identify common motivational patterns of L2 DMCs after retirement through a historical lens.

This paper reviews the existing gap in the age-related and lifelong language learning research agenda, and the niche to explore third age language learning in light of the theories of Complex Dynamic Systems (CDST) and Directed Motivational Currents (DMC). As such, we propose cross-disciplinary connections, locating third age L2 learning experience in the wider spectrum of L2 motivation and geragogy. Findings on those lifelong learning and motivational ecosystems will hopefully inform educational designers, and optimize language education quality through better appreciation and anticipation on the autonomous third age learning experience.

Additional language learning in the third age

Helga Donnerer
University of Essex

In the field of second language (L2) learning and teaching, there is ongoing controversy about which approach provides the best opportunities for successful language learning: the monolingual context, using exclusively the L2, or the multilingual context with a mix of languages that include the L1 and/or other languages known to learners (Brown, 2021).

Several studies with children, adolescents and young adults have already compared a monolingual and a multilingual approach to teaching and learning languages (Hofer & Jessner, 2019; Hopp et al., 2020; Hopp & Thoma, 2021), which either found better performances in the multilingually taught group or no differences at all. Studies with older adult language learners (Cox, 2019; Kliesch & Pfenninger, 2021; Pot, Keijzer, & De Bot, 2018; Pot, Porkert, & Keijzer, 2019), however, have not used a multilingual approach so far.

A pilot study investigated a multilingual approach to language learning for 15 older adults aged 60+, focusing on the change in language proficiency and metalinguistic awareness following a four-week course of beginners' Italian. The results showed a significant improvement in language proficiency, but no significant increase in metalinguistic awareness. Moreover, in an exit questionnaire, all participants expressed their preference for a multilingual approach towards language learning over a

monolingual approach. They reported benefitting from their prior knowledge of languages and (language) learning strategies, and combined with high motivation, time management skills and perseverance, they felt well-equipped for learning additional languages in such a context.

As the findings did not show the expected increase in metalinguistic awareness, possibly because the participants already performed strongly at pre-test, a subsequent, larger-scale study will focus on changes in metalinguistic awareness again and also address the impact of individual differences (language learning aptitude, strategies, and beliefs), biographical factors and learners' perceptions of (multilingual) language learning within the overall framework of an investigation of the two different approaches. As this study, which is currently in progress, will make a direct comparison between a multilingually and a monolingually taught group, findings will provide fuller insight into the benefits of either (or both) approaches in older adults' additional language learning.

In the prime of life: Learning of syntactic processing is intact in older adults

Willem van Boxtel
University of Essex

Background: Syntactic priming is an increasingly popular tool to examine implicit sensitivity to syntax and learning of syntactic processing. While specific accounts of the mechanisms underlying syntactic priming vary, most hypotheses include an implicit learning mechanism Past studies suggest syntactic priming may remain intact with age, contrary to the majority of past literature emphasising the declining nature of sentence processing in older age: however, most priming studies with older adults have focused on production, and none have included an electrophysiological component. This study explored the neural correlates of syntactic priming in older adults' comprehension.

Method: We used a self–paced reading and event-related potential paradigm with a group of older adults (n = 18, M Age = 69.6, SDAge = 4.01, range = [64,79]). Participants read reduced relative Targets which were Primed (preceded by another reduced relative), Unprimed, or lexically Boosted (preceded by a reduced relative with the same verb), while reading times and EEG recordings were obtained. We further manipulated lexis–only overlap in filler sentences to examine the impact of syntactic matching on lexical processing.

Results: Participants showed intact syntactic priming and lexical boost on reading times, while lexical facilitation was dependent on syntactic overlap. P6 waveforms took a frontal distribution but were not topographically centered in any one location; syntactic overlap and lexical boost had significant effects on P6 waveforms, especially when recorded on verbs. Our findings contradict accounts that consider older adults' sentence processing impaired, and emphasise task demands in previous linguistic studies leading to findings of declining performance with age.

The challenges and rewards for older adults using Moodle to learn languages

Jodi Emma Wainwright
The Open University

Living longer can mean encountering a wide range of cognitive, affective and social challenges. Technology itself cannot solve these problems, but it can empower older adults and make them more capable, resourceful and independent. It helps to connect people and thus help to combat these challenges. In my study, I take the opportunity to bring technology and language learning

together by investigating older adult English language learners in a French setting and their interactions on Moodle.

Learning a new language goes way beyond learning about the target language; it involves not only learners' cognitive, but also emotional functioning as well as the social context in which the language activity is embedded. My interest is the role of Moodle for older adult language learners, the challenges they may face and the rewards that using technology in a social learning environment can bring them.

Using a qualitative case study methodology, learners were interviewed about their use of Moodle to learn English. The interviews were supplemented by data from the Moodle platform in order to fully analyse learners' perceptions of their use of Moodle with the aim of answering the research questions. Initial interviews were carried out with twenty-two learners and five of these learners then took part in follow-up stimulated recall interviews. Using reflexive thematic analysis, the initial interviews were analysed using inductive thematic analysis and the follow-up interviews were analysed using deductive thematic analysis with the codes identified from the initial interviews.

Vygotsky (1978) wrote about learning an additional language as a liberating activity for children, this study provides evidence that the same can be said for older adults. Maturational constraints operate in conjunction with a number of affective and social factors so the teaching of foreign languages should not be based on preconceptions about possible shortcomings in older adult learners, however, Moodle can compensate for such deficits and contribute to both linguistic and non-linguistic outcomes for all learners.

Investigating the maintenance of lexically entrained terms across adulthood

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University of Warwick[1], University of Edinburgh[2]

Language is not fixed: new words and conventions are continually introduced into speech communities, with younger generations introducing not only new vocabulary (e.g., a podcast) but also new uses for existing words (e.g., dropping a podcast). This linguistic dynamism has implications for inter-generational communication, as older speakers may experience difficulty adapting their language use.

One important behaviour that appears to support effective communication is lexical entrainment, the tendency to re-use a conversational partner's words (e.g., using the unconventional candy, rather than the conventional sweet, after a partner used candy). However, effective communication may also require speakers to adaptively modulate re-use (maintenance) of recently heard words depending on the context/conversational partner (e.g., not continuing to use candy with a different partner). To investigate inter-generational communication, we therefore studied age-related [Younger (18-39), Middle (40-59), and Older (60+)] changes in both lexical entrainment, and maintenance of entrained terms with a new partner.

In Experiments 1 and 2, British participants completed a picture-naming task. Participants took turns with a confederate to name pictures that had both a favoured and disfavoured name in British English (sweet vs candy); entrainment was measured as participants' tendency to re-use the same (disfavoured) name as the confederate. In Experiment 2, participants additionally named the same objects again to another partner; maintenance was measured as their tendency to continue to use the disfavoured name.

Both studies showed entrainment: participants in each age group were significantly more likely to use disfavoured names following the confederate's use compared to a spontaneous naming task. Furthermore, entrainment increased with age: Younger participants entrained marginally less than Middle participants and significantly less than Older participants. Additionally, Experiment 2 revealed a maintenance effect: participants in each age group used disfavoured terms during the second session significantly more often than in spontaneous naming. Maintenance also increased with age: Younger participants maintained entrained terms significantly less than Middle participants and Older participants.

These results suggest important age-related differences in the mechanisms underlying two behaviours that play a critical role in successful communication. Moreover, they suggest older adults may experience difficulty in learning appropriate contexts for new linguistic conventions.