Innovative interventions for young children's phonological working memory: The case of Dutch

Authors: Jing Lin, VU Amsterdam
Luis Morgado da Costa, VU Amsterdam
Amarilis Mulder,
Abstract ID: 262
Event: Linguistics 2026 Athens
Subject: 21. Language technology
Presenter Name: Jing Li

Abstract

Phonological working memory (PWM) is a fundamental cognitive mechanism in language acquisition. It helps us retain, process, and manipulate the sound structures of the language, and thus underpins the successful acquisition of pronunciation, vocabulary, grammar, and communication skills, which eventually improve our overall language proficiency. This general picture is not only attested in L1-acquisition but also in the context of learning an L2. Moreover, recent research on language pathology has consistently revealed a deficit in PWM in children with Developmental Language Disorder (DLD) and dyslexia.

The vital role of PWM in language acquisition and proficiency logically gives rise to a particular direction in intervention methods in language education and therapy. Instead of directly focusing on language knowledge or skills, interventions for PWM may also be beneficial, as shown in Karousou & Nerantzaki (2020). Inspired by this 2020-study, which reported a positive effect on English vocabulary learning after trainings of the child's PWM, we aim to develop two gamified intervention activities to train young children's PWM. We consider Dutch as the target language and our target groups cover children learning Dutch as an L2 as well as those with DLD or dyslexia acquiring Dutch as their native speech, both groups aged between four and eight years old. To ensure that the interventions are sufficiently engaging for the target age groups and can be easily integrated into language classrooms and therapeutic settings, the interventions will be designed as touchscreen-based games generated online during actual gameplay, provided that an internet connection is available.

In this presentation, we will illustrate the detailed procedure in developing these games. We will start the presentation with a brief overview of the relevant literature. We will then focus on the detailed procedure used to develop our interventions, beginning with the theoretical rationale underlying the choice of game types. We will describe the careful selection of sound materials for the construction of Dutch nonwords and present the motivations for these choices, followed by the automated generation of nonwords and the criteria used to select the final pool of nearly 2,000 items. We will also provide and discuss an overview of the programming codes underlying the gamified interventions. We will launch and demonstrate the innovative interventions, followed by discussion points and topics for the future.