

## Computerized reading screening to identify dyslexia risk in Italian-Mandarin bilingual children

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With increasing migration across the globe, it becomes more and more difficult for clinicians to distinguish language problems due to unbalanced, bilingual exposure from language and reading disorders, such as Developmental Dyslexia (DD). Clinicians may not be able to examine children's L1, but without a clear picture of language and reading abilities in both languages, it is difficult to provide adequate interventions. The present project aims to implement clinical markers to identify the risk of DD in a multilingual population through bilingual computerized language and reading tests.

In Bigagli & Lorusso's (2014) preliminary study, Chinese-Italian primary schoolers' performance in language and reading tasks in both languages/scripts correlated with results in Italian standardized reading tests. Similarly, in the current project 28 successive bilingual children (L1: Mandarin, L2: Italian) attending Italian public primary schools (grades 3 and 4), living in Prato (Tuscany, Italy) were tested. All children spoke Mandarin at home, in their free time and furthermore received formal reading instruction in Mandarin.

Besides the Italian standardized word and nonword reading subtests (Batteria per la Valutazione della Dislessia e della Disortografia Evolutiva 2, DDE 2, Sartori et al, 2007), they were administered an informal Mandarin reading screening, containing characters from Mandarin reading instruction books for heritage speakers (Hu, 2019, unpublished).

The computerized screening consisted of phonological awareness, morphosyntactic processing and reading subtests. While reading subtests in Italian, a transparent orthography, assessed (non)word identification which relies on phoneme-grapheme conversion (audio-word-matching), Mandarin characters, of which some were manipulated, had to be recognized (judgement task).

For all tasks, accuracy and reaction time were measured automatically, using E-Prime 2.0. Preliminary results suggest that computer-based reading and language tests can reliably assess reading performance in L2 speakers of Italian, appear to capture also a part of general reading abilities (in L1) and to be reliable tools for early detection of at-risk cases for DD.

The collection of more data as well as follow-up-testing of the children tested to determine the predictive value of the screening was interrupted due to the Covid-19 pandemic, data collection and analyses are ongoing.

The most reliable tasks and items are now implemented in the web-based screening platform MuLiMi, to allow for easy access of the screenings across devices and operating systems. Integrating recent research findings in user-friendly soft- and hardware, such fully computerized could be administered by professionals who do not speak the children's L1. Early risk DD identification contributes to reducing the number of misdiagnoses and encourages timely interventions where needed.

### References

- Bigagli, A. & Lorusso, M. L., (2014). Predittori della lettura in italiano L2 in bambini di madrelingua cinese. Lucca, Italy: XXIII Congresso Nazionale AIRIPA.
- Sartori G., Job R., & Tressoldi P. E. (2007). DDE-2 Batteria per la valutazione della Dislessia e della Disortografia Evolutiva - 2. Florenz: Giunti O.S.