

# **The MuLiMi web app - A modifiable, computerized system to identify the risk of Developmental Language Disorder in Spanish-Italian bilingual children**

*Maren Eikerling<sup>1,2</sup>, Maria Luisa Lorusso<sup>1</sup>*

<sup>1</sup>Scientific Institute IRCCS E. Medea, Associazione "La Nostra Famiglia", Bosisio Parini (LC), Italy

<sup>2</sup> University of Milano-Bicocca, Department of Psychology, Italy  
m.eikerling@campus.unimib.it, marialuisa.lorusso@lanostrafamiglia.it

## **Background**

Distinguishing Developmental Language Disorder (DLD) in bilingual children from variation in language acquisition due to heterogeneous language input challenges clinicians (Grimm & Schulz, 2014). To reliably identify the risk of DLD in bilingual children, ideally both languages should be assessed (Armon-Lotem et al., 2015). The problem might be solved by computerized screening tasks automatically assessing both languages (Eikerling et al., 2022).

## **Method**

36 Spanish-speaking children (age 4-6), living and schooled in Italy, were tested remotely using the Italian-Spanish MuLiMi DLD screening. 16 of them had been diagnosed with DLD and received Speech and Language Therapy. L2 as well as L1 language abilities in nonword repetition, grammaticality judgement, dynamic novel word learning and verb comprehension (CLTs, Haman et al., 2017) were assessed. On the MuLiMi screening web-app, examiners upload stimuli into pre-defined language assessment paradigms.

## **Results**

Children with a diagnosis or at risk of DLD underperformed TD children in screening tasks. Significant associations emerged between results obtained in standardized tests and screening tasks declared to measure the same skills. Moreover, performances on various screening tasks assessing the same linguistic areas in the two different languages are associated with each other, but this finding was not consistent across languages when considering children with a DLD diagnosis only.

## **Discussion**

Overall, the computerized Spanish-Italian MuLiMi DLD screening showed the capacity to contribute to the identification of DLD. It is unclear whether the mismatch of screening task performance between the Italian and Spanish screening tasks for DLD children is due to the possible interaction of screening results with language dominance or with language-specific features, or of the MuLiMi screening. Refinement of the tool and further item selection could reduce this mismatch. The interaction with the remote online screening tool was shown to be feasible and motivating for the children (see Hautala et al., 2020).

## **References**

- Armon-Lotem, S., de Jong, J., Meir, N. (Ed.) (2015). *Assessing Multilingual Children. Distinguishing Bilingualism from Language Impairment*. Multilingual Matters: Bristol.
- Eikerling, M., Secco, M., Marchesi, G., Guasti, M. T., Vona, F., Garzotto, F., & Lorusso, M. L. (2022). Remote Dyslexia Screening for Bilingual Children. *Multimodal Technologies and Interaction*, 6(1), 7. <https://doi.org/10.3390/mti6010007>.
- Grimm, A. & Schulz, P. (2014). Specific Language Impairment and Early Second Language Acquisition. *The Risk of Over- and Underdiagnosis*, *Child Indicators Research*, 7: 821–841.
- Haman, E., Łuniewska, M., Hansen, P., Gram Simonsen, H., Chiat, S., Bjekić, J., Blažienė, A., Katarzyna, C., Dabašinskienė, I., Engel de Abreu, P., Gagarina, N., Gavarró, A., Håkansson,

- G., Harel, E., Holm, E., Kapalková, S., Kunnari, S., Levorato, C., Lindgren, J., Mieszkowska, K., Montes Salarich, L., Potgieter, A., Ribu, I., Ringblom, N., Rinker, T., Roch, M., Slančová, D., Southwood, F., Tedeschi, R., Müge Tuncer, A., Ůnal-Logacev, Ö., Vuksanović, J. & Armon-Lotem, S. (2017). Noun and verb knowledge in monolingual preschool children across 17 languages: Data from Crosslinguistic Lexical Tasks (LITMUS-CLT), *Clinical Linguistics & Phonetics*, 31: 11-12, 818–843.
- Hautala, J., Heikkilä, R., Nieminen, L., Rantanen, V., Latvala, J.-M., & Richardson, U. (2020). Identification of Reading Difficulties by a Digital Game-Based Assessment Technology. *Journal of Educational Computing Research*, 58(5), 1003–1028.  
<https://doi.org/10.1177/0735633120905309>.