World Academy of Science, Engineering and Technology
International Journal of Information and Communication Engineering
Vol:16, No:01, 2022

Simo-syl: A Computer-Based Tool to Identify Language Fragilities in Italian Pre-Schoolers

Authors : Marinella Majorano, Rachele Ferrari, Tamara Bastianello

Abstract : The recent technological advance allows for applying innovative and multimedia screen-based assessment tools to test children's language and early literacy skills, monitor their growth over the preschool years, and test their readiness for primary school. Several are the advantages that a computer-based assessment tool offers with respect to paper-based tools. Firstly, computer-based tools which provide the use of games, videos, and audio may be more motivating and engaging for children, especially for those with language difficulties. Secondly, computer-based assessments are generally less time-consuming than traditional paper-based assessments: this makes them less demanding for children and provides clinicians and researchers, but also teachers, with the opportunity to test children multiple times over the same school year and, thus, to monitor their language growth more systematically. Finally, while paper-based tools require offline coding, computer-based tools sometimes allow obtaining automatically calculated scores, thus producing less subjective evaluations of the assessed skills and provide immediate feedback. Nonetheless, using computer-based assessment tools to test meta-phonological and language skills in children is not yet common practice in Italy. The present contribution aims to estimate the internal consistency of a computer-based assessment (i.e., the Simo-syl assessment). Sixty-three Italian pre-schoolers aged between 4;10 and 5;9 years were tested at the beginning of the last year of the preschool through paper-based standardised tools in their lexical (Peabody Picture Vocabulary Test), morpho-syntactical (Grammar Repetition Test for Children), meta-phonological (Meta-Phonological skills Evaluation test), and phono-articulatory skills (non-word repetition). The same children were tested through Simo-syl assessment on their phonological and meta-phonological skills (e.g., recognise syllables and vowels and read syllables and words). The internal consistency of the computer-based tool was acceptable (Cronbach's alpha = .799). Children's scores obtained in the paper-based assessment and scores obtained in each task of the computer-based assessment were correlated. Significant and positive correlations emerged between all the tasks of the computer-based assessment and the scores obtained in the CMF ($r = .287 - .311$, $p < .05$) and in the correct sentences in the RCGB ($r = .360 - .481$, $p < .01$); non-word repetition standardised test significantly correlates with the reading tasks only ($r = .329 - .350$, $p < .05$). Further tasks should be included in the current version of Simo-syl to have a comprehensive and multi-dimensional approach when assessing children. However, such a tool represents a good chance for the teachers to early identifying language-related problems even in the school environment.

Keywords : assessment, computer-based, early identification, language-related skills
Conference Title : ICCIT 2022 : International Conference on Communications and Information Technology
Conference Location : Paris, France
Conference Dates : January 21-22, 2022