

How reliable is assessment of children's sentence comprehension using a self-directed app? A comparison of supported versus independent use.

Pauline Frizelle¹, Ana Buckley¹, Tricia Biancone¹, Darren Dahly¹, Paul Fletcher¹, Dorothy Bishop², Cristina McKean³

¹University College Cork, Cork, Ireland. ²Oxford University, Oxford, United Kingdom.

³University of Newcastle, Newcastle, United Kingdom

Abstract

Background: While most standardized assessments in the field of speech and language therapy are delivered in person, recently there has been a recognition of the advantage of computerized assessments (expedited somewhat by Covid-19). Computerized assessments that can be completed by children independently, offer further benefits, such as screening children at scale; identifying whole class progress; and allowing for test completion in different educational settings without significant levels of staff training.

Aim: This study aims to examine the feasibility of using the Test of Complex Syntax-Electronic (TECS-E), as a self-directed app, to measure sentence comprehension in children aged 4 to 5 ½ years old; how testing apps might be adapted for effective independent use; and agreement levels between face-to-face supported computerized and independent computerized testing with this cohort. The study also explores how young independent testing could be used reliably.

Method: A pilot study was completed with 4 to 4;06-year-old children, to determine the appropriate functional app features required to facilitate independent test completion. Qualitative information was collected on children's level of independence; type of tester support required; and level of engagement. Test features were modified accordingly. The main study was a within subject design whereby participants completed the TECS-E app twice (independently or with adult support) (4 - 4;05 ($n = 22$) 4;06 - 4;11 months ($n = 55$) 5 to 5;06 ($n = 113$)). Test re-test reliability was examined.

Results: Qualitative observations, supported by statistical analyses indicated difficulties completing the test independently for the younger two cohorts. Pearson's correlation indicated adequate test re-test reliability for children between 5 and 5;6 years ($r = .71$). A Bland -Altman analysis revealed a mean difference of -2.56 between scores in the supported versus independent test conditions. The rank ordering of children's understanding of constructions was similar in both conditions.

Conclusion: Independent test completion posed problems for children under 5 years. However, children between 4;06 and 4;11 years understood the process more reliably than the younger cohort. For children 5 years and over TECS-E, when used as a self-directed app, is a reliable method to assess children's understanding of complex sentences.