

Artificial Intelligence & Communication Disorders: Enhancing Access to Language Assessment for Multilingual Children

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Abstract

Purpose: For multilinguals, who comprise 41% of Canadians,¹ language development occurs across two or more languages. Multilingual children are disproportionately under-identified for communication disorders compared to monolingual peers. This is due to monolingual-centric assessment practices and limited tools in the home-language(s).^{2,3} A shift has begun to identify more inclusive strategies, including use of narratives and non-word repetition tasks.^{4,5} However, a barrier to their use is the limited number of bilingual speech-language pathologists (SLPs).^{6,7} Artificial Intelligence (AI) translation is emerging as a powerful tool. However, AI speech and text translation is based on English-centric adult models, thereby influencing their relevance to multilingual children.^{8,9,10}

Research questions: We will examine the extent to which AI-based translation can be used to facilitate home-language assessment scoring, and identify multilinguals at risk for communication disorders.

Methods: Caregivers will complete the Canadian Questionnaire of Language Use and Exposure in Bilingual Preschool-Aged children (C-QUEB) and Alberta Language and Development Questionnaire (ALDeQ). We will use Zoom to assess 50 multilingual children on their home-language narrative storytelling (Edmonton Narrative Norms Instrument [ENNI] and Global Tales Story Task) and non-word repetition (Quasi Universal Non-Word Repetition Task) skills. We will score children on the assessed narrative and non-word repetition measures, based on three home-English language translation conditions: (condition i) AI speech and text translation (via DeepL and Google Translate), (condition ii) translation by a team member, and (condition iii) direct scoring by a bilingual team member in the home-language.

Preliminary findings: We conducted an ANOVA to compare score differences across conditions. Our findings indicate significant differences between direct scoring by a bilingual team member (condition iii), in comparison to AI (condition i; $F = 3.4$; $p < 0.01$). There were no significant differences between human translation scoring (condition ii) and direct scoring (condition iii), as well as between the type of AI translation tool (i.e., whether DeepL or Google Translate; condition i). Our preliminary exploration suggests potential scoring differences based on the type of AI translation used (particularly between Translate GPT and Gemini Translate), the degree of language distance (i.e., whether related to English or an under-resourced language) and the type of linguistic content (i.e., whether abstract or concrete reference).

Significance: The findings will support the majority of English monolingual SLPs in conducting home-language assessment scoring. Our project will promote diversity in developmental and AI research by generating data from under-represented languages.

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