

# The implementation of a tailored language assessment for children with (severe) motor impairments

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## Introduction

To address the need for reliable language comprehension measures for children with severe motor impairments such as Cerebral Palsy (CP) and who are unintelligible or non-speaking, researchers from the Netherlands developed an accessible assessment tool, the Computer-Based instrument for Low motor Language Testing (C-BiLLT) to measure comprehension of Dutch spoken language. Since its development and implementation in the Netherlands, the Dutch version of the C-BiLLT received a lot of attention from families, researchers and clinicians all over the world.

## Conclusion

Thorough cross-cultural adaptation leads to promising Norwegian, German and English versions of the C-BiLLT for children with severe cerebral palsy.



## Methods

Participants: typically developing children (TD) recruited from mainstream kindergartens and primary schools. Care was taken to include children from both inner city and suburbs, as well as children from economically affluent and less affluent areas.

Inclusion criteria: (a) age between 1;6 and 7;6 years; (b) no history of speech or language delay; (c) no history of auditory or visual problems; (d) no history of developmental delay or neurological or chronic disorders, and (e) respectively Norwegian, German or English reported to be the child's first language.

It was aimed to recruit at least eight children per half year group (required to detect a difference of one standard deviation in a normally distributed sample when power is set at .80 and  $\alpha$ -level at 0.05).

Process: 1) forward and backward translation, 2) cultural adaptations of the stimulus photos, 3) analyses of content, linguistic and conceptual equivalence of the translated versions, 4) investigation of validity and reliability of the translated versions.

## Results

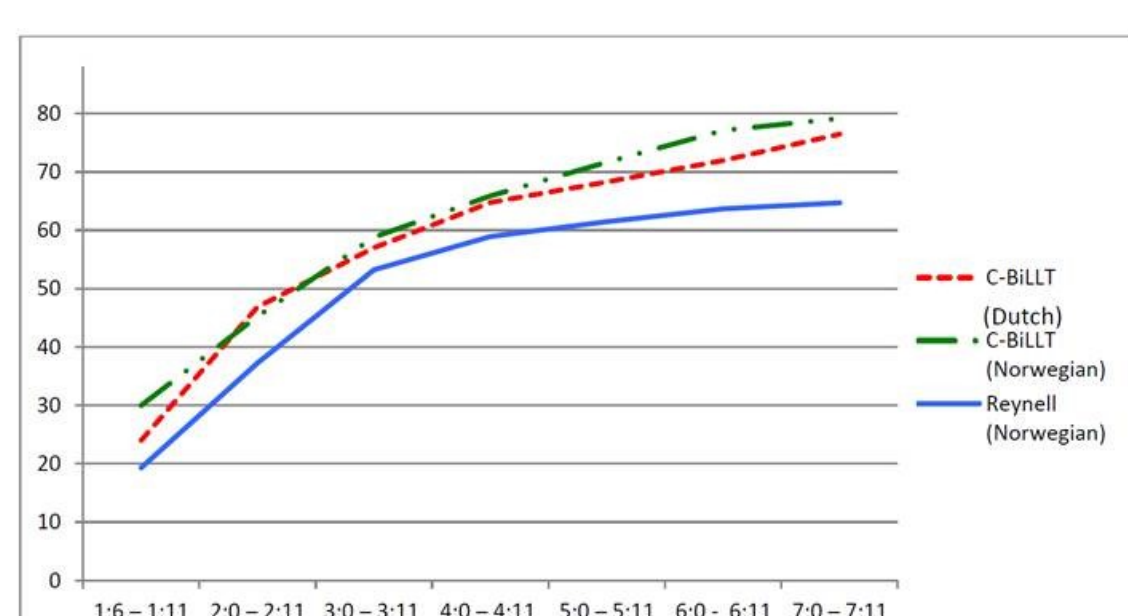


Figure 1. Mean age scores on the Dutch and the Norwegian C-BiLLT, and on the Norwegian Reynell Developmental Language Scales.

The internal consistency of the Norwegian C-BiLLT is excellent (Cronbach's alpha 0.98). Test-retest reliability is good (intraclass coefficient 0.88).

Convergent validity, understood as the correlation between the raw scores on the Norwegian C-BiLLT and the Reynell Developmental language scales<sup>1</sup> is  $r(235)=.94$ ,  $p>.001$ .

Divergent validity, understood as the correlation between the raw scores on the Norwegian C-BiLLT and the Raven's Coloured Progressive Matrices<sup>2</sup>, is  $r(121)=.61$ ,  $p<.001$ . The Norwegian C-BiLLT is a valid tool for the assessment of language comprehension.

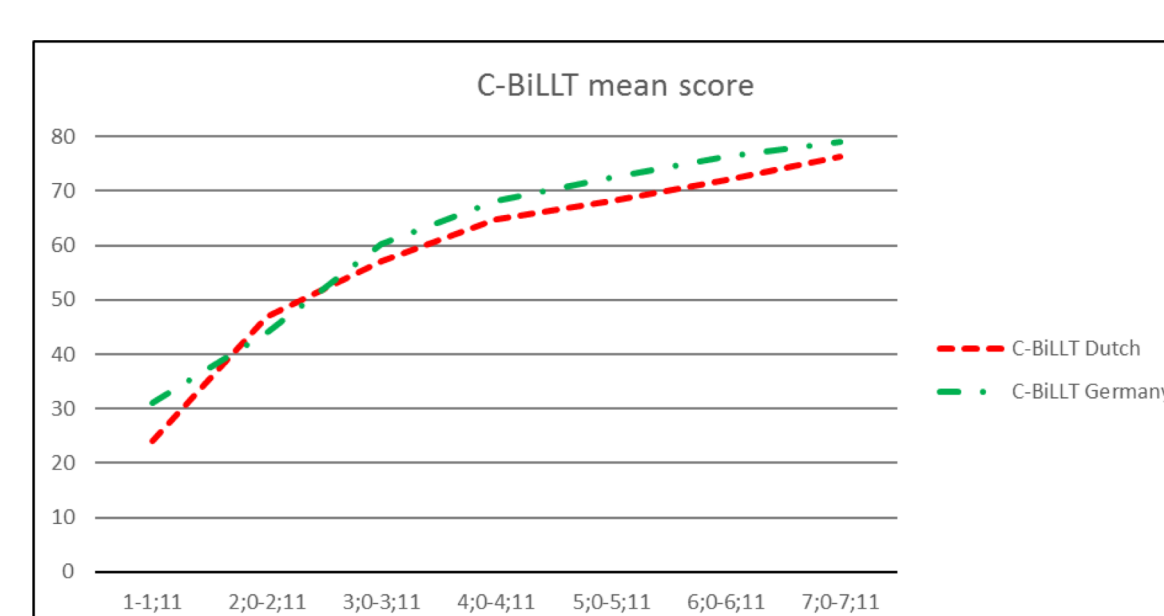


Figure 2. Mean age scores on the Dutch C-BiLLT and German C-BiLLT.

The internal consistency of the German pilot C-BiLLT is excellent (Cronbach's alpha 0.92). Correlation between age and raw scores is  $r(54)=.87$ .

Convergent and divergent validity are currently under investigation.



\*Data collection is currently ongoing.

In Canada, a pilot study ( $n=9$ ) was conducted as part of the validation study to assess the cultural acceptability and linguistic validity of the items as judged by children. As a result, 12 out of 86 items were adapted.

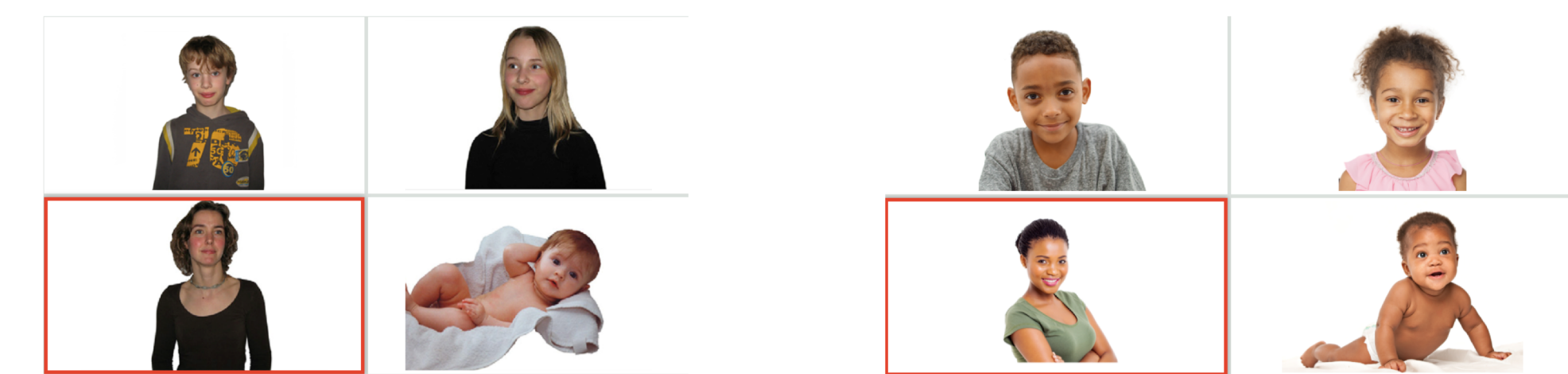


Figure 3. Who used to play outside but doesn't anymore? vs Who wants to play outside but now has to go to work?

Playing outside is perceived differently in Dutch and in English. In Dutch, but not in English, it is understood as a children's activity. This led to a change in the wording of the item (Fig. 3). The English version was also updated in terms of diversity.

