The importance of tracking language development in children with severe cerebral palsy with reliable and valid methods

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We have read the article entitled Longitudinal growth of receptive language in children with cerebral palsy between 18 months and 54 months of age by Hustad et al.[1] published in this journal, followed by the commentary by Nordberg.[2] We commend the authors for bringing the topic of language development in cerebral palsy (CP) to the attention of the reader. While the authors acknowledge that the evidence on the development of cognitive capacities of these children is compromised due to the lack of valid measures, they portray a poor outlook for children with anarthria. Here, we suggest there could be several other reasons why these children may have obtained low scores on the standardized receptive language assessments in this study, other than the mere fact that they were unable to speak.

Our first concern is the data collection, which relates to the sample characteristics. For the participants who could not participate in the standardized receptive language assessment because they lacked the necessary fine motor skills, tests were adapted on an item-by-item and child-by-child basis. Even though this is common clinical practice in the language assessment of this group of children, it is unlikely to yield valid and reliable results.[3] Therefore, children with anarthria and mainly classified as GMFCS level V may simply not have had the chance to show what they understand.

Our second concern is the imbalance in the sample, which may have also impacted the results. The anarthria group was comprised of children with spastic CP (*n*=22), dystonic CP (*n*=2), and mixed CP (*n*=4). The underlying brain damage causes equally severe speech limitations, yet the children's cognitive profiles may differ. A study in which only non-speaking children with CP were included showed that 31% of the children with basal ganglia necrosis (associated with dyskinetic CP) had average or mildly delayed language comprehension skills, while all children with periventricular leukomalacia (associated with spastic CP) had severely delayed language comprehension skills.[4]

Finally, the conversion of language test scores to age-equivalent (AE) values for the analysis is also of concern. While standard and percentile scores were available from the norm-referenced tests, AE scores were used to compare the different groups and to demonstrate change in language comprehension skills, or the apparent absence of it, over time. Even though AE scores may seem a straightforward indication of a child's performance, they can also be misleading and should not be used as a single measure of performance.[5] As AE scores do not provide information on the child's test performance relative to the norm, a small difference in raw scores may result in a large difference in AE scores. This also means that two scores that are both within one standard deviation of the mean can result in AE scores that seem to imply an eight-month developmental difference.

We are happy to inform the reader that the accessible receptive language test mentioned by Nordberg in her commentary has been translated into Norwegian, German, and English, with validation studies underway. Results from cross-sectional studies with non-speaking children with CP in which this instrument was used, show that the inability to speak does not necessarily mean a lack of language comprehension. Moreover, findings suggest that the development of receptive language in non-speaking, severely disabled children occurs at a slower, but not necessarily deviant, rate.[6] Instead of assuming they may have reached their

limits, it is important to continue to study receptive language development and to track development in children with anarthria with the most reliable and valid methods available.

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