Brazilian version of the Shriners Hospital Upper Extremity Evaluation (SHUEE): Cultural Adaptation and Evaluation of Psychometric Properties

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OBJECTIVE
To validate the upper extremity (UE) assessment tool, Shriners Hospital Upper Extremity Evaluation (SHUEE), for individuals with hemiplegic cerebral palsy (HCP), in the Brazilian population.

METHODS
The translation and cultural adaptation was performed following the stages proposed by the American Academy of Orthopaedic Surgeons.

- The evaluated psychometric properties were reliability and convergent validity. Reliability was determined by internal consistency (Cronbach’s Alpha Coefficient, α-C), ceiling and floor effect, sensitivity to change (Student’s Paired t test), intraobserver and interobserver reliability (Intraclass Correlation Coefficient, ICC).

- Sensitivity to change was evaluated measuring changes that occurred in the first evaluation, in 5 individuals, treated with botulinum toxin and physical therapy. Tests were done 2 – 4 months after treatment.

- Inter and intraobserver reliability were tested with 5 physical therapists previously trained in SHUEE. They blindly examined videos from 10 randomized patients, in two different occasions, two weeks apart.

- Convergent validity was performed using Spearman’s Correlation Coefficient examining correlations between the items of SHUEE: Spontaneous Functional Analysis (SFA) and Dynamic Positional Analysis (DPA) with Pediatric Motor Activity Log (PMAL), Pediatric Evaluation of Disability Inventory (PEDI) and Manual Ability Classification System (MACS).

RESULTS
On the translation stage there were small disagreements between translators on grammar and vocabulary, with no effect on the semantic equivalence of the content. They were discussed and harmonized. Since SHUEE is a practical content of UE evaluation there were no problems with idiomatic and cultural equivalence (colloquialisms). Therefore, no cultural adaptations were necessary.

The SHUEE showed good psychometric properties with good and excellent α-C (Table 1). The convergent validity (Table 2) indicated significant correlation of the SFA and the DPA with MACS, PMAL and PEDI. The sensitivity to change showed significant difference between the pre and post-treatment on the score of DPA (Table 3). SHUEE showed excellent intra and interobserver reliability with ICC greater than 0.9 (Table 4).

CONCLUSIONS
Our results showed that the Brazilian Portuguese version of SHUEE demonstrated a good reliability and convergent validity, suggesting that it is a reliable tool for the upper extremity evaluation of Brazilian children and adolescents, 3 to 18 years old, with HCP.

Table 1 - Psychometric characteristics of the SHUEE in children and adolescents with hemiplegic cerebral palsy

<table>
<thead>
<tr>
<th>Measures</th>
<th>Before</th>
<th>After</th>
<th>Difference</th>
<th>P value</th>
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<tbody>
<tr>
<td>Dynamic Positional Analysis</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MACS</td>
<td>-0.68 (0.00)</td>
<td>-0.54 (0.01)</td>
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<tr>
<td>PMAL (How often scale)</td>
<td>0.68 (0.00)</td>
<td>0.83 (0.00)</td>
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<tr>
<td>PMAL (How well scale)</td>
<td>0.86 (0.00)</td>
<td>1.00 (0.00)</td>
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<tr>
<td>PMAL (Spontaneous use)</td>
<td>0.80 (0.00)</td>
<td>0.76 (0.00)</td>
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<tr>
<td>PEDI (Functional skill: Self-care)</td>
<td>0.68 (0.00)</td>
<td>0.62 (0.00)</td>
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<tr>
<td>PEDI (Caregiver assistance: Self-care)</td>
<td>0.75 (0.00)</td>
<td>0.63 (0.00)</td>
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</tbody>
</table>

Table 2 - Convergent validity of SHUEE

Table 3 - Sensitivity to change of SHUEE after treatment with botulinum toxin and physical therapy

Table 4 - Intrarobserver and interobserver reliability

Data expressed as mean±standard-deviation, with the minimum and maximum values in parentheses n=4.

*Values expressed as mean±standard-deviation, with the minimum and maximum values in parentheses n=4