Reliability properties of the UN-moving-task, an ecological assessment of Unilateral Neglect in patients with acquired brain injury: Preliminary results

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INTRODUCTION

Unilateral neglect (UN) is a frequent problem in individuals with brain injury. UN has been described as a peripersonal or extrapersonal disorder. Although many tasks assess UN in peripersonal space, neglect in extrapersonal or far space is rarely assessed. The UN-moving-task, an ecological test of UN in a real corridor and involving multi-tasking (see Figure 1), was developed and exhibits excellent discriminant validity (Poncet et al. 2012). However, other important psychometric properties of this test have yet to be studied.

OBJECTIVE

To further evaluate the psychometric properties of this test, this study explored reliability of the UN-moving-task.

METHOD

Patients with a unilateral hemispheric brain vascular lesion (left or right) with UN were recruited in two rehabilitation units (in Paris, France & Montréal QC, Canada). A convenience sample of healthy matched controls was recruited. In the UN-moving-task, participants were asked to go through a corridor (1.30 meters wide, 20 meters long), while pointing at each of the 18 magazine covers displayed, distributed at 3 levels of height, on the two walls.

Two examiners recorded the number of omissions on each side. One OT and two physiatrists participated as raters in this study; they were familiar with the use of the UN-Moving-Task. During the task, all participants wore an Eye Tracking Tobii, recording what their eye captures (i.e. magazine covers) (see Figure 2).

Test-retest reliability was determined based on scores obtained by the same judge in 2 evaluations 20 to 30 minutes apart, using Intra-Class Coefficients (ICC, one factor random). The re-test was performed by the participants in a second corridor of the rehabilitation unit.

Inter-rater reliability was determined by comparing scores obtained by the 2 examiners in the same test, using ICC.

RESULTS

Preliminary results were calculated from a cohort of 29 participants recruited from the IURDPMP (Gingras-Lindsay-de-Montréal), including 18 participants with stroke (12 participants with right stroke (9 men) and 6 with homonymous hemianopia; mean age 45.2 yrs., SD=18.4); and 14 control subjects (mean age 45.7 yrs., SD=18.2; 6 men).

Test-retest reliability

For all participants (n=29) and for the population with stroke and UN, the test-retest reliability was good (ICC =0.82 and 0.84) (table 1). For control subjects (n=14), the test-retest reliability was average (ICC=0.58).

Inter rater reliability

Inter rater reliability was excellent (ICC=0.99) for all participants (table 2).

CONCLUSION

Test-retest reliability was good for participants with stroke, unlike for control subjects. These results can probably be explained by the fact that UN is an observable deficit in attention to and awareness of one side of the field of vision. Thus, participants with UN may not be able to adapt to the test as easily as the control subjects.

Inter rater reliability was excellent, which can be explained by the fact that the test is standardized, simple to implement, and its rating system is dichotomous (seen / not seen).

If the results obtained from the reliability of the UN-moving-task findings are confirmed with a larger cohort (n = 50), as well as in two locations, it will be a useful clinical tool to evaluate UN on the move.

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Figure 1. UN-Moving-Task

Figure 2. Example what eye captures with Eye Tracking Tobii

Table 1. Omission of magazine covers. Test-retest

<table>
<thead>
<tr>
<th>Population</th>
<th>Test-retest reliability</th>
<th>Inter rater reliability</th>
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</thead>
<tbody>
<tr>
<td>All participants (n=29)</td>
<td>ICC: 0.82, 95% CI: 0.497, 0.923</td>
<td>ICC: 0.99, 95% CI: 0.992, 0.998</td>
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<tr>
<td>Stroke population (n=18)</td>
<td>ICC: 0.84, 95% CI: 0.534, 0.945</td>
<td>ICC: 0.99, 95% CI: 0.994, 0.999</td>
</tr>
<tr>
<td>Control subjects (n=14)</td>
<td>ICC: 0.58, 95% CI: 0.561, 0.579</td>
<td>ICC: 0.99, 95% CI: 0.958, 0.996</td>
</tr>
</tbody>
</table>

Table 2. Omission of magazine covers. Inter rater reliability

Legend: ICC: Intra Class correlation
95% CI: Confidence Internal