SMAAV: A neuropsychological battery for assessing semantic memory impairment on action verbs

Objective
The poster presents the structure and the norms for cognitively intact adults of the SMAAV neuropsychological test (“Semantic Memory Assessment on Action Verbs”). The battery was designed to be used to assess the lexical retrieval skills and conceptual knowledge deterioration exploiting the semantic properties of action verbs.

The battery
The test was made from a selection of data belonging to the IMAGACT interlinguistic ontology of action [Moneglia et al., 2014]. The items were derived from a subset of verbs (the Italian lemma “girare”, its hyponyms and semantic relatives), by applying pragmatic variations to the action types.

SMAAV has been structured in two subtests, to point out lexical erosion patterns: a visual confrontation naming test (25 stimuli) and a comprehension-lexicalization multiple choice test (11 stimuli). The aim is to distinguish semantic memory breakdown and lexical retrieval difficulties.

Stimuli consist of short video clips (3–5 s) depicting movements and actions.

Psychometric validation
The standard setting (still ongoing) has currently involved 45 persons, according to a cross-sectional study design.

Test Scoring

<table>
<thead>
<tr>
<th>Subtest 1: visual confrontation naming</th>
<th>Item named correctly: +2 points</th>
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</thead>
<tbody>
<tr>
<td>- Item named correctly: +2 points</td>
<td>- Lacking answer, regionalism, phonological paraphasia or mispronunciation: +1 point</td>
</tr>
<tr>
<td>- Incorrect response: -2 points</td>
<td>- General verb only: +1 point</td>
</tr>
<tr>
<td>- Incorrect response/no response:</td>
<td>- Correct response: +2 point</td>
</tr>
</tbody>
</table>

BONUS: If the subject give a complex response (e.g. both correct verbs, the hyponym and general verb...) a +0.5 bonus is added to the score.

Basic score
- Correct response: +2 point
- General verb only: +1 point
- Incorrect response/no response: -2 points
- Lacking answer, regionalism, phonological paraphasia or mispronunciation: +1 point
- Correct response: +2 point

Bonus
- If the subject give a complex response (e.g. both correct verbs, the hyponym and general verb...) a +0.5 bonus is added to the score.

Subtest 2: multiple choice comprehension test
For each item, four response options are provided: two correct verbs in hyponym/hypernym relation (e.g. to turn, to whirl), an extremely general verb (e.g. relation (e.g. to turn, to whirl), an incorrect verb.

BASIC SCORE:
- Incorrect response/no response: -2 points
- General verb only: +1 point
- Correct response: +2 point

BONUS: If the subject give a complex response (e.g. both correct verbs, the hyponym and general verb, the hyponym and the general verb...) a +0.5 bonus is added to the score.

Psychometric validation
The standard setting (still ongoing) has currently involved 45 persons, according to a cross-sectional study design.

Conclusions
The standard setting is a critical component of the test development process. Therefore, more data are needed. SMAAV might be used for the early diagnosis of Mild Cognitive Impairment and the neuropsychological evaluation of acute stroke and Traumatic Brain Injury patients.

Cut-off score has been determined [ μ-2σ ]

- Adults: 41 points
- Elderly: 32 points

Furthermore some statistically significant trends and correlations have been investigated (e.g. score/age, score/education).

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