Counting what counts: Quantifying essential information with ANELT-CU

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Conclusion. The construct validity of the Amsterdam-Nijmegen Everyday Language Test (ANELT, Blomert et al. 1995) can be further improved by substituting the current, qualitative scoring procedure by a new, quantitative one, which is based on Content Units (i.e., ANELT-CU). In comparison to the current score, the new one:
- is more sensitive to measure improvements in verbal effectiveness over time;
- allows a measure of verbal efficiency as well, yielding a more complete picture of verbal functional communication.

Introduction

The Amsterdam-Nijmegen Everyday Language Test (ANELT, Blomert et al. 1995) measures verbal effectiveness in persons with aphasia (PWA) by instructing them to give a spoken response to (orally presented) scenarios of daily life situations, such as:

"Suppose you are at the dry cleaner’s. When you come to collect this, you get it back like this [tester hands PWA shirt with burn hole]. What would you say?"

The PWA responses are scored on two 5-point scales, ranging from very bad to very good:
1. A-scale: the comprehensibility of the message
2. B-scale: the intelligibility of the utterances

In the ANELT, verbal effectiveness is scored qualitatively on the A-scale. The current scoring procedure is concerned with subjective judgement rather than with a quantitative measure of this parameter based on counts of information units that can be objectively identified.

It is not clear which & how much information is essential in each scenario to be assigned a particular score.

Research question. Does substituting the traditional, qualitative score (i.e., ANELT-traditional) by a new, quantitative one (i.e., ANELT-CU) further improve the construct validity of the ANELT, as this may:
- improve its sensitivity to detect change in verbal effectiveness over time (Grande et al., 2008);
- provide a quantitative score of verbal efficiency as well, yielding a more complete picture of verbal functional communication.

Method (continued)

Design. Split-plot design with two fixed factors:
1. Between-participant factor Group, 2 levels:
   - Dutch PWA (n = 10, all had predominantly expressive language disturbances; average time post-onset 12 weeks (range 5-48 weeks))
   - Non-aphasic speakers of Dutch (n = 20). None of them had participated in the study conducted to compose the ANELT-CU list.
2. Within-participant factor Time: T1 and T2 (time interval 8 weeks)

Main results

Is ANELT-CU able to tell aphasic speakers apart from non-aphasic speakers?
Yes, both at T1 and T2, the non-aphasic speakers scored significantly higher than the PWA. This also held for ANELT-traditional (see Figures 1 and 2).

Is ANELT-CU more sensitive than the current ANELT A-scale to detect relevant clinical change in verbal effectiveness?
Yes, on the ANELT-CU (but NOT on ANELT-traditional) the non-aphasic speakers performed stable over time and the PWA showed increased performance (see Figures 1 and 2). ANELT-CU also yielded a higher $d_{paired}$ value (1.36) than ANELT-traditional (.31).

Can verbal efficiency be measured with ANELT-CU?
Yes, by calculating the average number of CUs produced per minute (CU/min). The PWA on average significantly increased verbal efficiency from T1 ($M = 4.50; SD = 2.44$) to T2 ($M = 6.83; SD = 4.26$), $p = .005, d_{paired} = -.89.$

References

All pictograms taken from sclera.be.

Method

Replicating and appending to the study of Blomert (1990), Ruiter et al. (2011):
1. Orthographically transcribed the responses of Dutch-speaking healthy controls (n = 24) to the ANELT scenarios.
2. Composed a list of the propositions produced by at least 30% of the non-aphasic speakers. A proposition (e.g., spoiled (shirt)) can be put into words in various manners, such as: “You ruined my blouse” or “Burn hole in shirt”.
3. Subdivided each proposition into Content Units (CUs; Yorkston and Beukelman; 1980). For example, the proposition spoiled (shirt) consists of two CUs: spoiled (CU 1) and shirt (CU 2). This resulted in a list of CUs for each ANELT scenario (i.e., ANELT-CU)
4. Scored the responses of the PWA (n = 10) with ANELT-CU.