

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 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

Replicating and appending to the study of Blomert (1990), Ruiter et al. (2011):

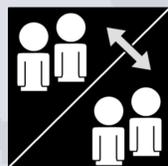
- (1) Orthographically transcribed the responses of Dutch-speaking healthy controls ($n = 24$) to the ANELT scenarios.
- (2) Composed a list of the propositions produced by at least 30% of the non-aphasic speakers. A proposition (e.g., *spoiled (shirt)*) can be put into words in various manners, such 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.

Method (continued)

Design. Split-plot design with two fixed factors:

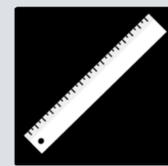
- (1) Between-participant factor *Group*, 2 levels:
 - Dutch PWA ($n = 10$, all had predominantly expressive language disturbances; average time post-onset 12 weeks (range 5-48 weeks))
 - Non-aphasic speakers of Dutch ($n = 20$). None of them had participated in the study conducted to compose the ANELT-CU 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).

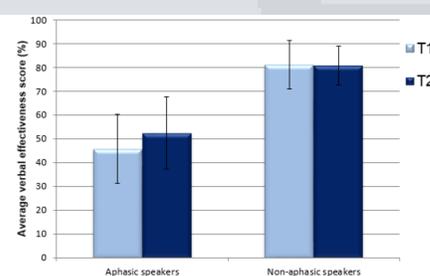


Figure 1. Average verbal effectiveness (SD) on ANELT-CU for both groups at T1 and T2

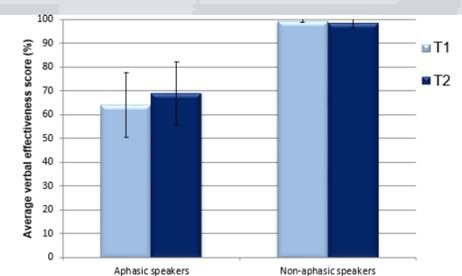


Figure 2. Average verbal effectiveness (SD) on ANELT-traditional for both groups at T1 and T2



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

- Blomert et al. (1995). Lisse: Swets & Zeitlinger.
Grande et al. (2008). *Int. Journal of Language and Communication Disorders*, 43, 408–426.
Ruiter et al. (2011). *Aphasiology*, 25(8), 961–975.
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All pictograms taken from sclera.be.



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