Speaking in ellipses: Teletreatment for chronically agrammatic speakers

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Introduction: The *Dutch and adapted version of Reduced Syntax Therapy* (REST; Ruiter et al., 2010) is a compensation therapy for chronically agrammatic speakers. It aims at the continuous production of ellipses, which are grammatically well-formed but incomplete utterances (e.g., *problem solved*, *Tim drinking coffee*, *Ann reading in bath*). Ellipses lack finiteness. The results of the study by Ruiter et al. (2010), in which REST was delivered face-to-face, suggest that when elliptical style is applied regularly, chronically agrammatic speakers get their message across more efficiently (in comparison to the error-strewn production of full sentences). In other words, functional communication improves.
A telehealth version of the REST (henceforward referred to as *e*REST) was developed with financial support of the Netherlands Organisation for Health, Research and Development (ZonMw).

Objective: Pilot-study (*N* = 1) into the efficacy of *e*REST: Does *e*REST lead to a continuous use of elliptical style and consequently to an increase in functional communication?

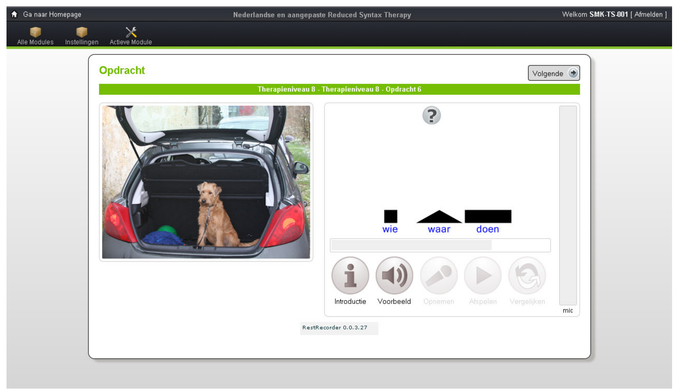

Figure 1: An example of *e*REST therapy level 8 (target utterance: *Dog sitting in trunk)*

Training procedure: *e*REST is made available to the person with aphasia (PWA) via the internet. The protocolised programme consists of 10 therapy levels and comprises the following steps:
1) At the start of each new level, the PWA first listens to audio examples of the elliptical utterances over the headset. The computer screen shows a picture and visual cues of the target utterance.
2) The PWA then describes the pictures one after another and uploads his responses to the server. After describing a picture, the PWA can compare his own response to the audio example, but he cannot correct it.
3) After the PWA has completed all items, the aphasia therapist scores the PWA's responses in *e*REST (90% ellipses produced → new therapy level; otherwise the same level is presented again).

Methods: Pre- and post measurements (T1 and T2 respectively) consisted of a picture description task (PDT) over which the following parameters were calculated: (a) percentage of ellipses produced, and (b) verbal efficiency (operationally defined as the average number of Content Units produced per minute (CUs/min; Yorkston & Beukelman, 1980)).

Subject: TS: a 70 year old male, 7 months post-onset of **Broca's aphasia** and apraxia of speech, caused by an ICVA in the LH (AAT: overall severity of the aphasia, *H* = 50.43, *z* = .05).

Results (*N* = 1):

1. *Learning to use elliptical style on a regular basis*
   TS successfully completed 6 of the 10 therapy levels. That is, he was able to produce elliptical style on at least 90% op the pictures of these therapy levels.

2. *Effects of eREST on grammatical output*
   As illustrated in Figure 2, participant TS significantly increased the percentage of ellipses produced on the PDT from T1 to T2, *LR* (1) = 21.548, *p* = .000, which represents quite a large effect (*OR* = 29.36).

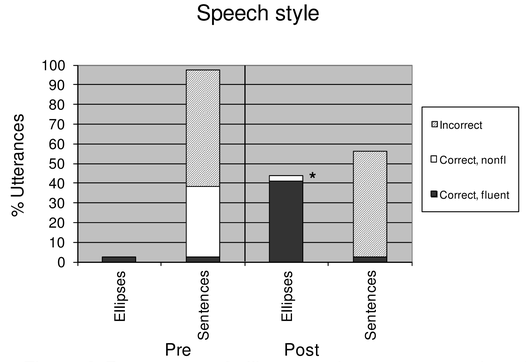

Figure 2. Percentage of ellipses and sentences produced by TS on the PDT at T1 and T2

3. *Effects of eREST on functional communication*
   The average number of CUs produced per minute (CUs/min) increased from 8,38 at T1 to 23.98 at T2, *OR* = 1.65. Thus, verbal efficiency improved. Nevertheless TS still produced the same amount of relevant information (the percentage of CUs produced was 85.6% at T1 and 80.65% at T2, *ns*).

Preliminary conclusion: The results of this pilot-study suggest that *e*REST – as well as the face-to-face version of the *Dutch and adapted Reduced Syntax Therapy* – improves verbal efficiency in persons with chronic Broca's aphasia; however, replication of this study in a larger group of people with aphasia is warranted.

References:

- Ruiter, M. B., Kolk, H. H. J., & Rietveld, A. C. M. (2010). Speaking in ellipses: The effect of a compensatory style of speech on functional communication in chronic agrammatism. *Neuropsychological Rehabilitation, 20*, 423–458.
- Yorkston, K. M., & Beukelman, D. R. (1980). An analysis of connected speech samples of aphasic and normal speakers. *Journal of speech and hearing disorders, 45, 27–36.*