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Background Word-finding deficits are frequent in aphasia, and retrieval of verbs and nouns may be impaired irrespective of aphasia-subtype¹. Therapy for noun anomia with Computer-assisted-treatment (CAT) has shown significant effects on naming in chronic and acute aphasic participants². Here, we examined whether a newly developed CAT for verbs may improve lexical retrieval of verbs in confrontation naming and propositional speech.

Aims The aims of this study were 1) Does CAT improve the ability to produce trained verbs 2) Does training generalize to untrained verbs ? 3) Does training transfer to propositional tasks 4) Is the improvement maintained after the end of the treatment phase ?

Methods & Procedure

Participants – 14 french speaking participants mean age 52.3 years; 5 women, 10 men; 1-48 months post-onset, with aphasia of different subtypes (5 Broca, 3 Wernicke, 1 anomic, 3 Transcortical Motor, 1 Transcortical Sensory, 1 Conduction) and varying degrees of verb naming impairment took part in the study.

Assessment – 1. Confrontation naming tasks:

105 action pictures divided in 3 lists³, 100 pictures of nouns², 2. **Picture description tasks:** i) **unrelated pictures:** 4 complex pictures without direct connection with the verbs worked in therapy⁴ i) **related picture:** we developed a verb action picture containing 49/105 verbs of the Baseline Verb naming list (ListA n=17; ListB n=16; ListC n=16).

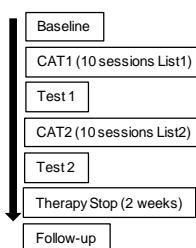


Verb-Unrelated pictures



Verb-Related picture

Therapy Procedure



Therapy Program – We developed an errorless computer assisted written naming therapy. Three lists of 35 action pictures with comparable mean values for name agreement, image agreement, visual complexity and age of acquisition were used. On each trial an image depicting an action was presented on a computer screen together with empty boxes corresponding to the number of letters of the target word. Participants were required to type the word while being free to request an oral (verb name) and/or a graphemic cue (each letter of the verb).



Results 1 - Verb confrontation naming

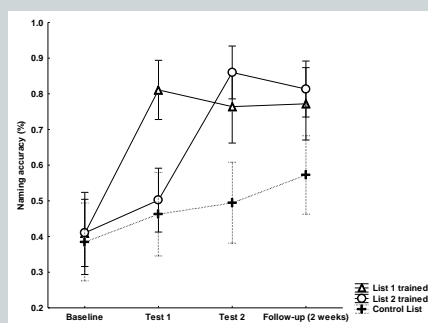


Figure 1: Verb naming accuracy for List 1, List 2 and Control List at Baseline, Test1, Test2, and follow-up

We observe a highly significant Interaction ($p < 0.001$) between Lists and Tests (Baseline, T1, T2, Follow-up).

Summary

Computer Assisted Therapy for verb anomia 1) improves confrontation naming for treated items 2) the improvement in verb naming is significant for the verb-related picture description only 3) improves the production of informative verbs in picture description, thus we observe a transfer to connected speech 4) the improvement remains stable after two weeks without treatment

Conclusion

These findings suggest that computer assisted program not only improves the ability to name verbs on confrontation but also improves the informativeness and verb production in connected speech. Our data confirm previous findings⁵ suggesting that naming accuracy may transfer to connected speech for the same items.

Further Steps: * Effects of CAT verbs at 6-12 months * Confirm with more participants the effect in verb-related vs verb-unrelated picture * Analysis of another elicitation context: free narrative and verb fluency.

Results 2 – Connected Speech: picture description

We investigated **A. Fluency and Informativeness** with the CIU analysis⁴ (standardized rule-based procedure aiming to calculate (a) words per minute (b) percent of word that are correct information units) **B. Verb Naming** in connected speech (analysis of the number of informative verbs and nouns produced in each test session) **C. the effect of picture type : related vs unrelated** to the verbs trained in therapy.

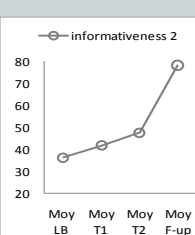


Figure 2. Informativeness: mean % of Content information Units (CIU)

Overall informativeness in picture description showed a substantial increase across the training interval ($p < .05$) (data averaged across 5 participants).

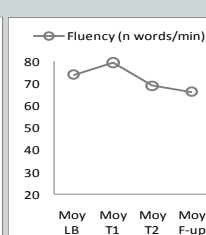


Figure 3. Fluency: number of words per minute

No change in fluency is observed between the baseline test and the following tests (T1, T2, F-up) (data averaged across 5 participants).

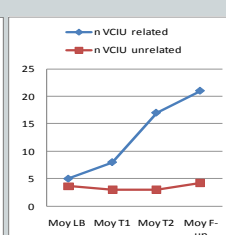


Figure 4. Number of informative verb produced in picture description

In picture description verb naming improved only for verbs that were related to the studied actions, suggesting transfer of learning effects to an untrained task (data averaged across 2 patients). No change in the number of verb production is observed for the non-related pictures.

References

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