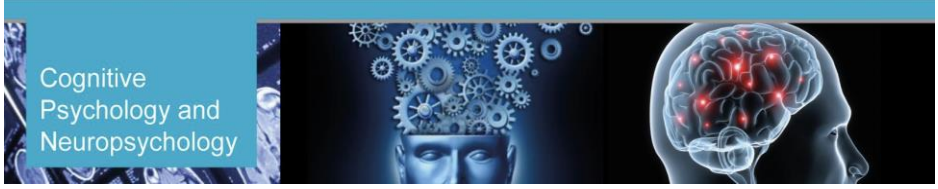

Investigating the effect of Semantic Feature Analysis on anomia in early Alzheimer's disease: Presentation of two cases studies

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INTRODUCTION

Alzheimer's disease (AD) is one of the most common neurodegenerative diseases. In the early stages of the disease, a semantic memory deterioration can be observed, manifesting itself through lexico-semantic difficulties as anomia, semantic paraphasia and circumlocutions. Semantic Feature Analysis (SFA), proposed by [1] and developed by [2-3], aims to reduce anomia in patients with aphasia by reinforcing lexico-semantic network. However, studies regarding the efficiency of SFA in AD are scarce [4-5]. The aim of this study was to investigate the effect of SFA on anomia in early AD.

METHODOLOGY

POPULATION

Two study cases were conducted (table 1)

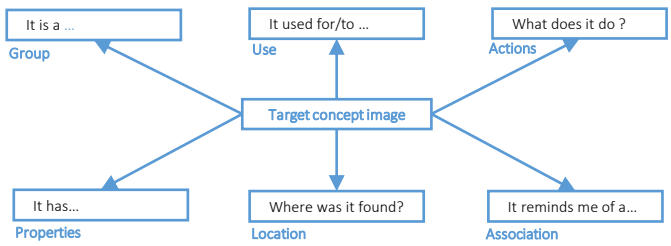
	Participant MS (♀)	Participant MV (♀)
Age	87	87
MMSE	24	20
Education level	Elementary school	Higher education
Anxiety	Normal	Normal
Depression	Normal	Normal
BECS-GRECO		
Naming	z = - 2,14*	z = - 6,36*
Semantic Matching	z = - 3,73*	z = - 5,14*
6-items Questionnaire	z = - 6,78*	z = - 9,41*

Table 1: Cases studies

Z-score = (score – mean) /standard deviation
* = deficient score

MATERIAL

Figure 1: SFA chart



PROCEDURE

Naming abilities of participants were assessed by a naming task of 100 pictures during the pretest phase. Then, 15 concepts among the failed pictures were trained with SFA chart (figure 1) for eight weeks. Twice a week, participants attended a 60-minutes session. Finally, the naming abilities were reassessed in the posttest and follow-up phases.

RESULTS

To compare naming task performances at different assessment phases, the Q of Cochran statistic was used. Z-score were used for two by two comparisons.

Participant MS. Results showed a significant improvement ($Q(2) = 19.5$; $p < .001$) in naming performances, particularly between pretest and posttest phases ($z = 3.34$; $p < .001$ *) (figure 2). Moreover, the qualitative analysis of lexical errors (figure 3) showed a decrease of the non-response rate. Indeed, MS produced more semantic paraphasias, as well as more circumlocutions.

Figure 2: Naming performance of MS at different assessment phases

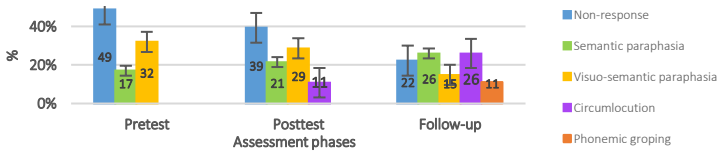


Figure 3: Percentages and types of lexical errors produced by MS

Participant MV. No significant improvement in naming was observed ($Q(2) = 1.28$; $p > .05$) (figure 4). However, the qualitative analysis of lexical errors showed a change in lexical production (figure 5). Indeed, the non-response rate decreased and more semantic paraphasias and circumlocutions were observed.

Figure 4: Naming performance of MV at different assessment phases

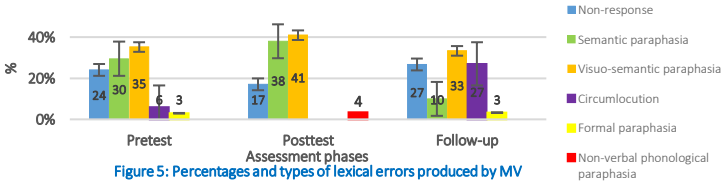


Figure 5: Percentages and types of lexical errors produced by MV

DISCUSSION AND CONCLUSIONS

In this study, we explored the benefits of SFA in two case studies, MS and MV. The method was efficient only for MS, showing a significant improvement in naming as well as a sustained benefit in the follow-up. We also observed a semantic reorganization, with fewer non-responses and an increase in lexical productions. In contrast, MV's naming performances did not significantly change. This lack of response could be partly explained by a more severe general cognitive and semantic decline. While we observed no improvement in MV, there was an increase in lexical productions, albeit erroneous in posttest phase. In conclusion, the SFA-based treatment of anomia yielded significant positive evolutions in one of our AD participants, reinforcing her lexical-semantic network, given that the semantic deterioration was not too severe. Our initial findings provide evidence-based recommendations for managing anomia in AD, though more research is needed to support our preliminary results.

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