

**INTRODUCTION**

Anomia occurs early in **Alzheimer's disease** (AD) and affects communication skills of patients. This research investigates the efficacy of three methods of treatment on anomia in early stage AD. In a first study, **Elaborated Semantic Feature Analysis** (ESFA, Papathanasiou et al., 2006) was investigated. Based on **abstractive models of semantic memory** (cf. the semantic network model of Collins & Loftus, 1975), ESFA aims to improve anomia **by activating and strengthening concepts** of the semantic network and their features. The second study will investigate **PRISM**, based on an **embodied approach to lexical retrieval**. Anomia will be treated by **sensory-motor stimulation** (with images, sounds, smells or videos). And the third study will focus on a **mixed method** (ESFA-PRISM), based on a **hybrid approach**. **A semantic hub** co-activating semantic knowledge and sensory-motor traces will be stimulated. In this poster, the first study is presented.

**METHODOLOGY**

**POPULATION**

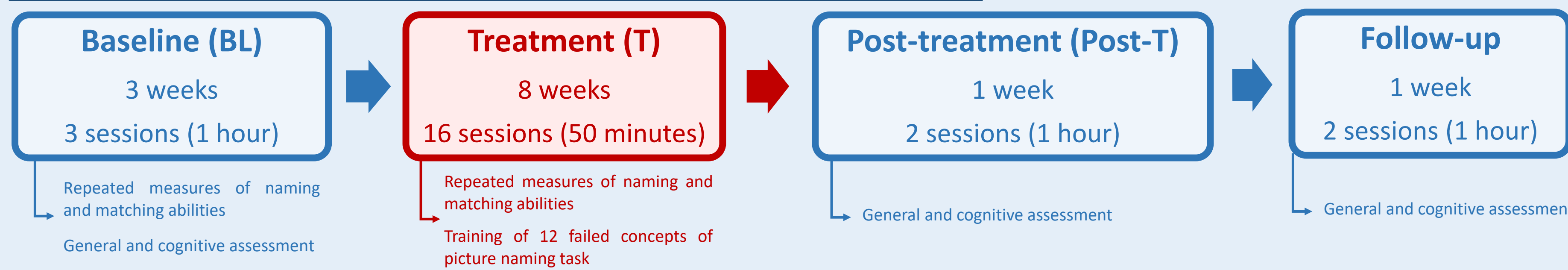
6 patients (3 men and 5 women, mean age = 82) at the **early stage** (mean MMSE = 22) with lexical-semantic deficits were recruited.

Inclusion criteria	Exclusion criteria
✓ French as mother tongue	X Uncorrected visual/auditory disorders
✓ Diagnostic of AD	X Neurological and psychiatric history
✓ MMSE > 20	X Other neurodegenerative diseases
✓ Lexical-semantic deficits	X Pervasive anxiety-depressive disorders

	P1	P2	P3	P4	P5	P6
Age	84	77	74	85	85	88
Gender	♂	♂	♂	♀	♀	♀
Education level	4	2	4	2	2	4
MMSE	21	22	21	28	24	22
BECS-GRECO	15/40*	37/40	36/40*	20/40*	33/40*	38/40
CCT (mean)	29,33/64*	49,67/64*	56/64*	42,67/64*	51,67/64*	49/64*
MINI-QCS	6/12*	9/12	12/12	8/12	8/12	9/12

\* significantly deficient score

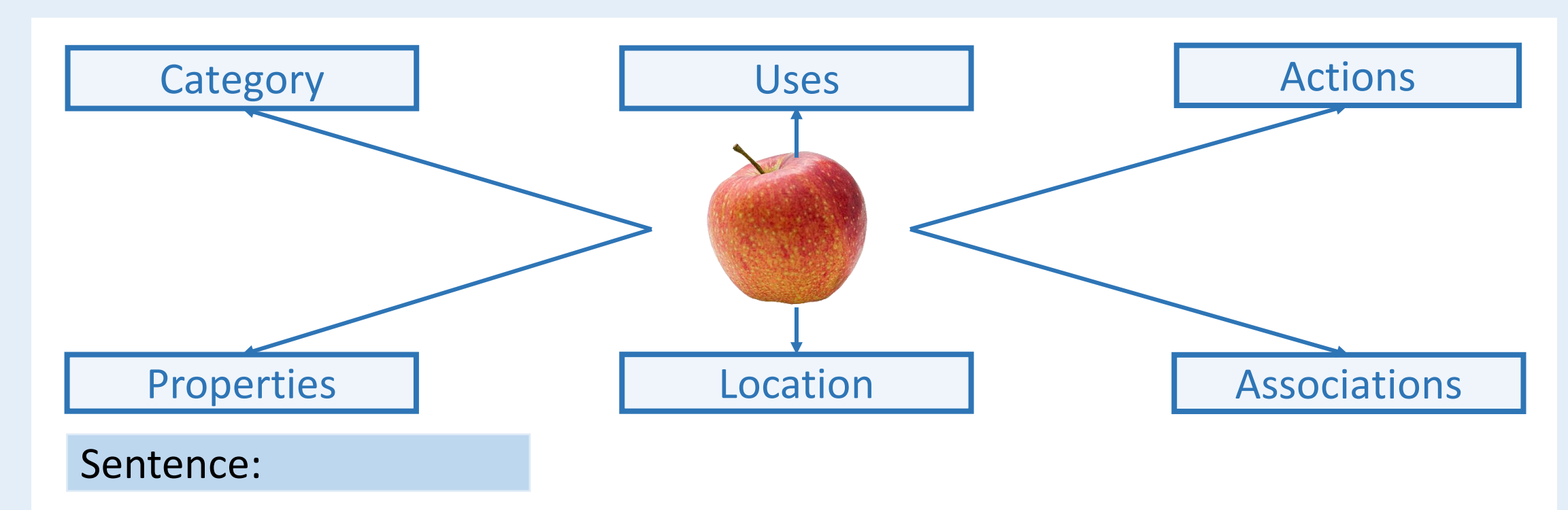
**EXPERIMENTAL DESIGN** → Single Case Experimental Design



**MATERIAL**

Assessment	Tests/Questionnaires
General cognitive functioning	Mini Mental State Examination
Depression / Anxiety	Geriatric Depression Scale 15 / COVI
Quality of life	Alzheimer's disease-Quality of life
Executive functions	Frontal Assessment Battery
Episodic memory	5 words of Dubois
Lexical-semantic abilities	Pictures naming task of BECS-GRECO Pictures naming task (100 items) Camel and Cactus test MINI-QCS Verbal fluency
Speech	Speech task of GréMOTS

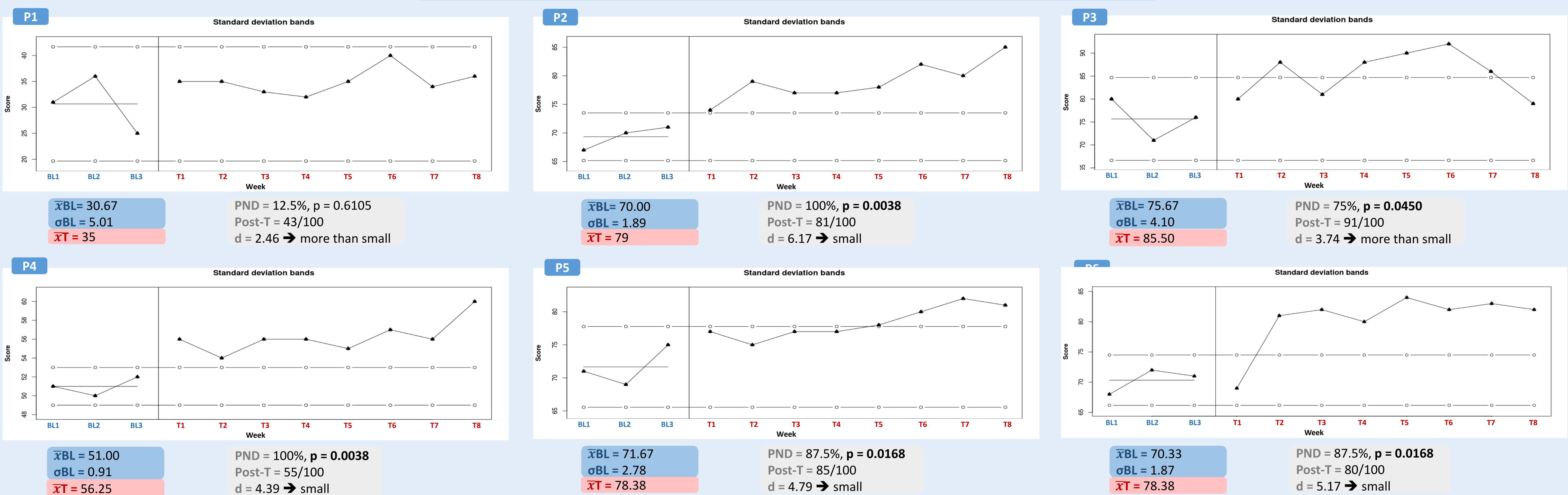
→ Semantic feature analysis form :



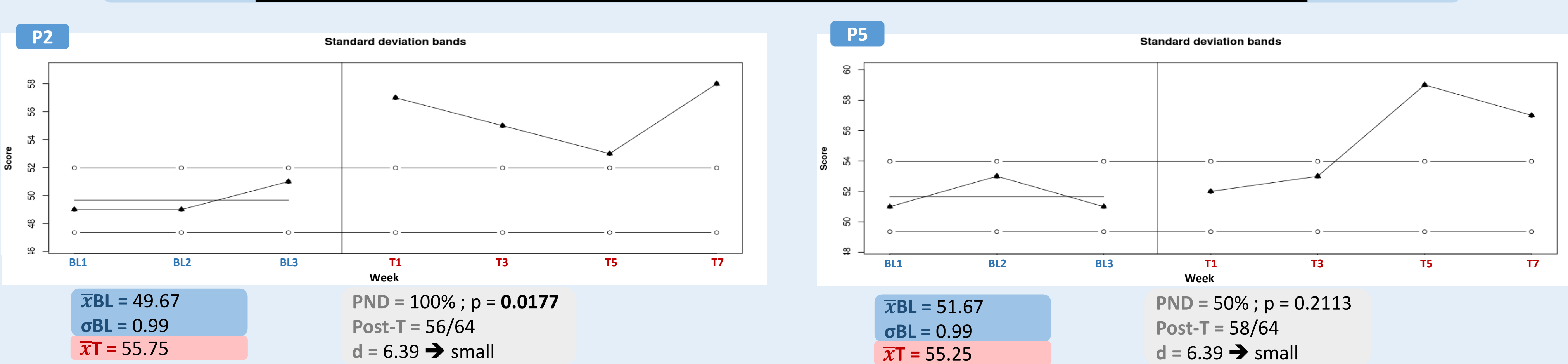
**RESULTS**

The data were analysed with plots that represent an envelope of two standard deviations around the mean of the baseline phase (BL) according to Krasny-Pacini and Evans (2018). When at least two consecutive treatment phase scores lie outside the envelope, it is possible to conclude that there is a therapeutic effect. In addition, the PND (Percentage of Nonoverlapping Data) indicate the rate of non-overlap of data between the baseline and treatment phases. Finally, the effect sizes  $d$  are calculated using the following formula :  $d = \frac{x_{PostT} - \bar{x}_{BL}}{\sigma_{BL}}$ , where  $x_{PostT}$  is post-treatment score,  $\bar{x}_{BL}$  and  $\sigma_{BL}$  are the mean score and the standard deviation of BL.

**Progression of participants' naming abilities**



**Generalization of the progression on semantic matching abilities (CCT)**



**Lexical-semantic performance before and after treatment**

	Tests	Pre-T	Post-T
P1	BECS-GRECO	15/40	16/40
	MINI-QCS	6/12	7/12
P2	BECS-GRECO	37/40	37/40
	MINI-QCS	9/12	7/12
P3	BECS-GRECO	36/40	40/40
	MINI-QCS	12/12	12/12
P4	BECS-GRECO	20/40	22/40
	MINI-QCS	8/12	10/12
P5	BECS-GRECO	33/40	32/40
	MINI-QCS	8/12	11/12
P6	BECS-GRECO	38/40	36/40
	MINI-QCS	9/12	10/12

Test Q' (Michael, 2007)  $p > .05$

**DISCUSSION**

This study aimed to investigate the effects of ESFA on anomia in AD. The results show that ESFA had a positive effect on anomia for most of participants. The significant improvement in naming skills after the intervention program is shown in the plots and PND. Moreover, a generalization is observed on semantic matching abilities for two participants. Indeed, the CCT scores are increased during treatment phase. In the future, we will analyze the potential generalization to untrained items and other cognitive functions. Additionally, we will compare the effects of ESFA to other treatments, such as sensorimotor interventions based on semantic memory. Finally, comparing semantic-based methods to non-semantic-based methods will enable us to better understand the specific effects of our specific semantic interventions.