

# FORMAL THOUGHT DISORDER, VERBAL FLUENCY AND SCHIZOPHRENIA: EXECUTIVE OR SEMANTIC DYSFUNCTION?

Francisco Gotor<sup>1</sup>, Reyes Navarro<sup>1</sup>, Olalla Santamaria<sup>1</sup>, Alvaro Barrera<sup>2</sup>

<sup>1</sup> Department of Psychiatry, Hospital Universitario Nuestra Señora de Valme, Seville, Spain

<sup>2</sup> Warneford Hospital, Oxford, OX3 7JX, UK

## BACKGROUND

Latest research suggests that formal thought disorder (FTD) is strongly associated with an executive dysfunction and, to a lesser extent, with a non-lexical semantic anomaly [1,2]. Both semantic and phonological fluency impairments are a robust finding amongst schizophrenia patients [3].

In this study we compare the verbal fluency of schizophrenia patients with marked FTD schizophrenia patients with no FTD and non-clinical participants whilst controlling for general cognitive ability. Verbal fluency is characterised by the number of items uttered, semantic efficiency, average clusters size, number of switches. The hypotheses of the study were that the FTD schizophrenia patients would have lower verbal fluency, lower semantic efficacy, lower cluster average size, and significantly less switching compared with non-FTD patients and non-clinical participants.

## METHODS

33 outpatients (29 male; mean age: 39.94, SD: 7.9; range: 27 to 51) were recruited. They met the DSM IV-TR schizophrenia criteria. Clinicians rated patients' speech with the overall score of 'positive' FTD on the Comprehensive Assessment of Symptoms and History. 18 patients had a score of one or less (i.e. mild or questionable FTD) and 15 patients had a score of three or more (i.e. moderate, marked, or severe FTD). 18 non-clinical participants (16 male; mean age: 42.78, SD: 9.58; range: 25 to 60) were recruited. For the semantic fluency task participants were asked to generate names of animals. For the phonological fluency task participants were asked to generate words beginning with the letter S. Cluster size and switching were calculated for the semantic and the phonological fluency tasks. The mean cluster size was calculated by summing the size of each cluster and dividing by the number of clusters.

An estimation of general intelligence was performed with the The Word Accentuation Test (WAT).

## RESULTS

A multivariate analysis showed different semantic fluency among the three groups ( $F = 7.382$ ;  $df = 2$ ;  $P = 0.002$ ). FTD patients ( $P = 0.001$ ) and non-FTD patients ( $P = 0.044$ ) had significantly poorer semantic fluency in comparison to control participants. The three groups significantly differed in phonological fluency ( $F = 5.888$ ;  $df = 2$ ;  $P = 0.005$ ). FTD patients ( $P = 0.004$ ) but not the non-FTD patients ( $P = 0.381$ ) were significantly impaired in phonological fluency in comparison to the non-clinical participants.

Using the WAT estimated IQ as covariate. The three groups had significantly different semantic fluency ( $F = 3.85$ ;  $df = 2$ ;  $P = 0.028$ ) but did not have significantly different phonological fluency ( $F = 2.886$ ;  $df = 2$ ;  $P = 0.066$ ). Bonferroni-corrected pairwise comparisons showed that FTD patients were significantly impaired in semantic fluency in comparison to control participants ( $P = 0.024$ ). The semantic fluency of non-FTD patients was not significantly different from that of the non-clinical participants ( $P = 0.374$ ). FTD and non-FTD patients had no significantly different semantic fluency ( $P = 0.524$ ).

The semantic efficiency of FTD patients ( $n = 15$ ; mean = 7.8; SD = 3.54), non-FTD patients ( $N = 15$ ; mean = 8.1; SD = 5.64), and control participants ( $n = 18$ ; mean = 10.11; SD = 7.177) was not significantly different ( $F = 0.546$ ;  $P = 0.653$ ).

Schizophrenia patients as a group had no significantly different semantic cluster size (mean = 2.584; SD = 1.224) or semantic switching (mean = 4.61; SD = 2.304) compared to control participants (mean = 2.772; SD = 1.202;  $t = -.530$ ;  $df = 35.608$ ;  $P = 0.599$ ). Similarly, schizophrenia patients as a group had no significantly different phonological cluster size (mean = 83.94; SD = 28.498) or phonological switching (mean = 83.94; SD = 28.498) compared to non-clinical participants (mean = 83.94; SD = 28.498;  $t = -1.098$ ;  $df = 26.623$ ;  $P = 0.5282$ ).

## CONCLUSION

Our results indicate that, when estimated IQ and cognitive factors common to semantic and phonological fluency are taken into account, there is no association between FTD and a semantic fluency deficit in schizophrenia. Our findings support a dysexecutive model of FTD.

## REFERENCES:

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