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## Interhemispheric processing in ambiguous word recognition

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## Introduction

Several studies have shown that ambiguous words are recognized faster than unambiguous ones in central viewing conditions (Borowsky & Masson, 1996). Many accounts of this so-called ambiguity effect hypothesize an activation feedback from the different meanings to the lexical entry representing the ambiguous word. However, recent results challenged this account showing a disadvantage for ambiguous words having unrelated meanings (homonymy), and an advantage for polysemic words, having related senses (e.g., Rodd et al., 2002).

A divided visual field study was conducted to test hypotheses about the contribution of interhemispheric processing to the ambiguity effect for homonyms.

## Method

### Material

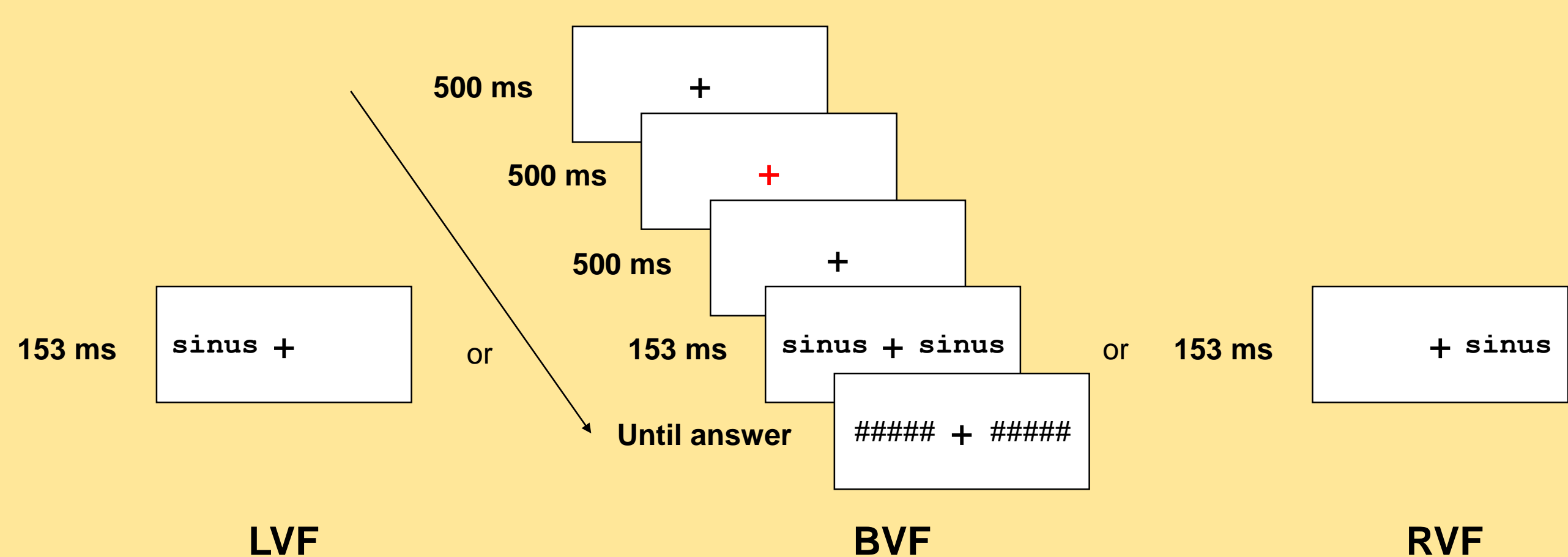
	Low-polarity	High-polarity*
<b>ambiguous</b>	sinus e.g. bat	parquet e.g. yellow
<b>Matched**</b>	argus	prairie
<b>unambiguous</b>	e.g. bet	e.g. yarrow

\*dominant meaning frequency clearly higher than subordinate meaning one.

\*\*on familiarity, frequency, letters, phonemes & syllables number, orthographic & phonological unicity points, orthographical & phonological neighborhoods, bigram frequency.

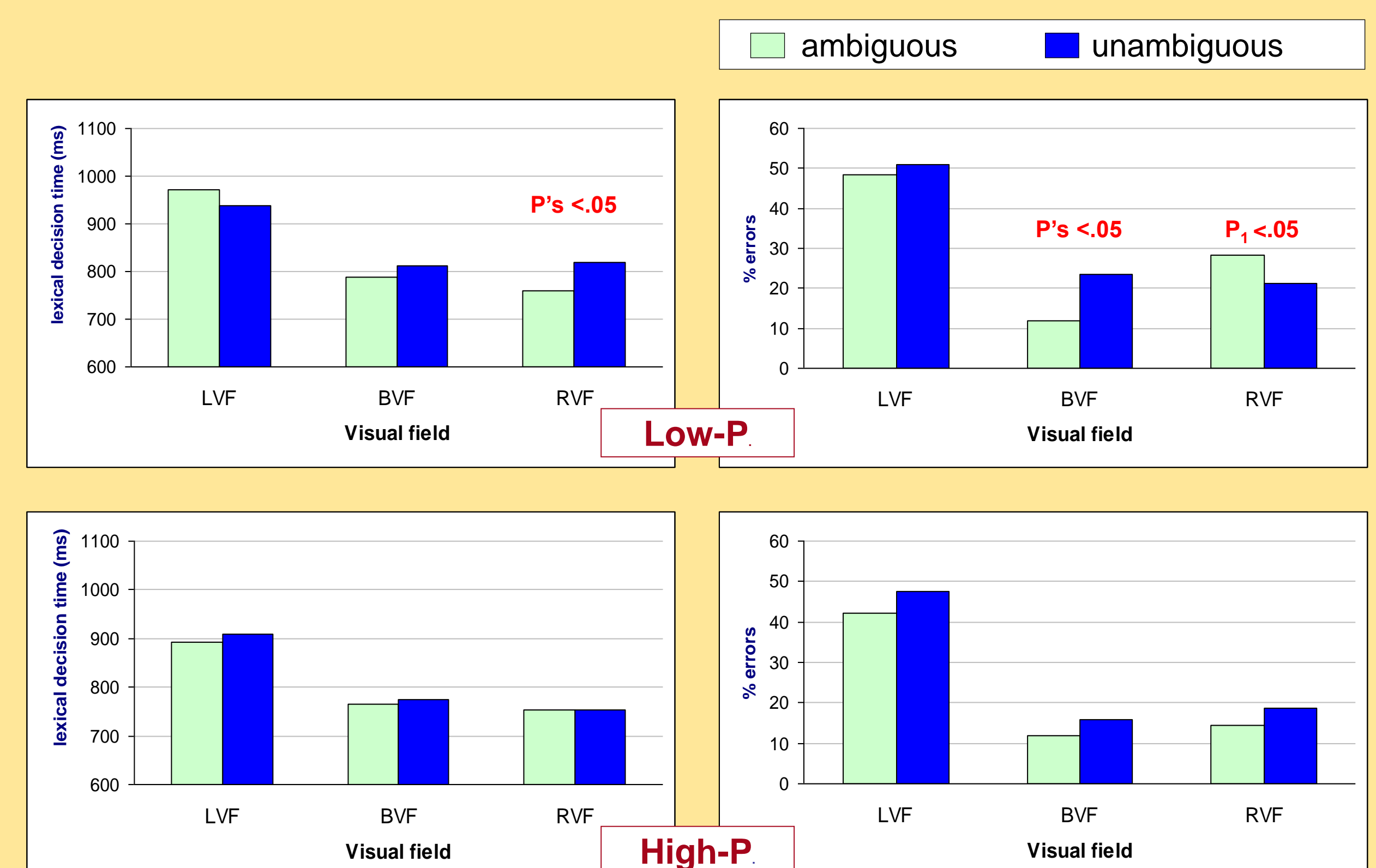
### Procedure

1. Edinburgh test (subjects - N=26 - were right-handed)
2. Alouette test (subjects were not dyslexic)
3. Lexical decision (eyes at 60 cm from the screen)



## Results

### Ambiguity effect



### Bilateral gain (vs. the better of the two visual fields)

Gain	ambiguous		unambiguous	pseudowords
	Low-P.	High-P.		
RT	no	no	no	yes
% errors	yes	no	no	no

## Discussion

Only low-polarity ambiguous words exhibited a bilateral gain (Pulvermüller, 1999): Lexical decisions on these words were more accurate in the BVF condition than in the RVF condition. In addition, the ambiguity effect was only evidenced in bilateral presentation for low-polarity ambiguous words. Surprisingly, responses on pseudowords in the BVF condition were faster and more accurate than in the RVF condition: This bilateral gain is interpreted in the "horse race" model framework (Raab, 1962).

Our study confirms the ambiguity effect for homonyms, but this effect seems restricted to moderately polarized ambiguous words (e.g., *bat*) in BVF condition. Therefore, semantic feedback provided by bilateral activation of the two meanings (e.g., *bat*: animal; *bat*: baseball) to the lexical processing adequately explains the ambiguity effect. To conclude, our results suggest cooperative interhemispheric processing for words and competitive one for pseudowords (see Collins, 2002, for a different view).

### References

- Collins, M. (2002). Interhemispheric communication via direct connections for alternative meanings of Ambiguous Words. *Brain and Language*, 80, 77-96.  
 Pulvermüller, F. (1999). Words in the brain's language. *Behavioral & Brain Sciences*, 22, 253-336.  
 Raab, D. H. (1962). Statistical facilitation of simple reaction times. *Transactions of the New York Academy of Sciences*, 24, 574-590.  
 Rodd, J., Gaskell, G., & Marslen-Wilson, W. (2002). Making Sense of Semantic Ambiguity: Semantic Competition in Lexical Access. *Journal of Memory and Language*, 46, 245-266.