L'activation automatique des représentations langagières en mémoire à court terme verbale

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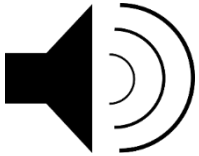
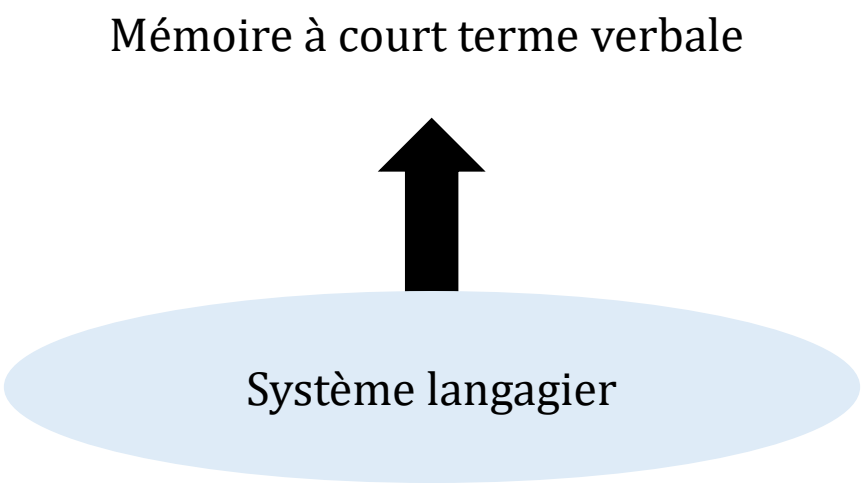
Encodage:



Mouton – Pomme – Table – Marée – Sol – Lampe

Rappel



Martin, Saffran, & Dell (1996)
Majerus (2013)

Effets psycholinguistiques:

Effet de lexicalité (mots *vs.* nonmots)

Effet de fréquence lexicale (mots fréquents *vs.* mots peu fréquents)

Effet de similarité sémantique (mots sémantiquement liés *vs.* non-liés)

Effet d'imageabilité (mots imageables *vs.* peu imageables)

Ultra-rapid access to words in the brain

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Abstract

Rapid information processing in the human brain is vital to survival in a highly dynamic environment. The key tool humans use to exchange information is spoken language, but the exact speed of the neuronal mechanisms underpinning speech comprehension is still unknown. Here we investigate the time course of neuro-lexical processing by analysing neuromagnetic brain activity elicited in response to psycholinguistically and acoustically matched groups of words and pseudowords. We show an ultra-early dissociation in cortical activation elicited by these stimulus types, emerging ~50 ms after acoustic information required for word identification first becomes available. This dissociation is the earliest brain signature of lexical processing of words so far reported, and may help explain the evolutionary advantage of human spoken language.

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Activating meaning in time: The role of imageability and form-class

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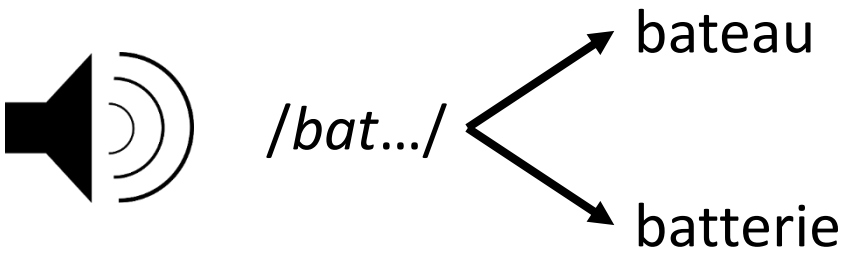
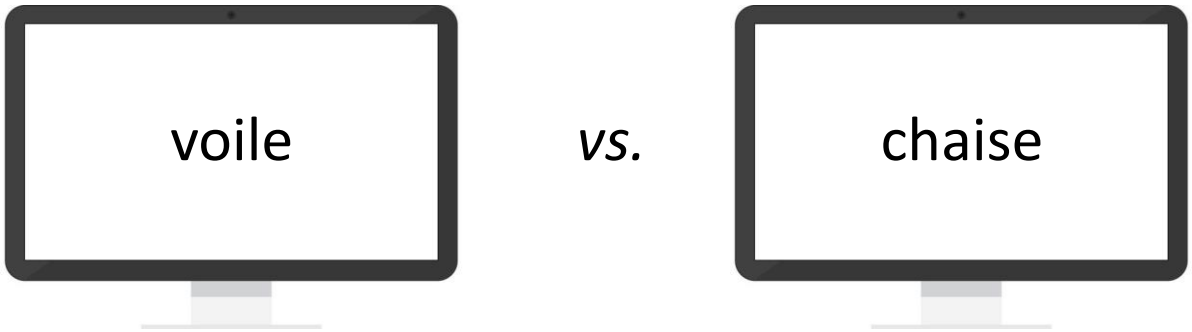
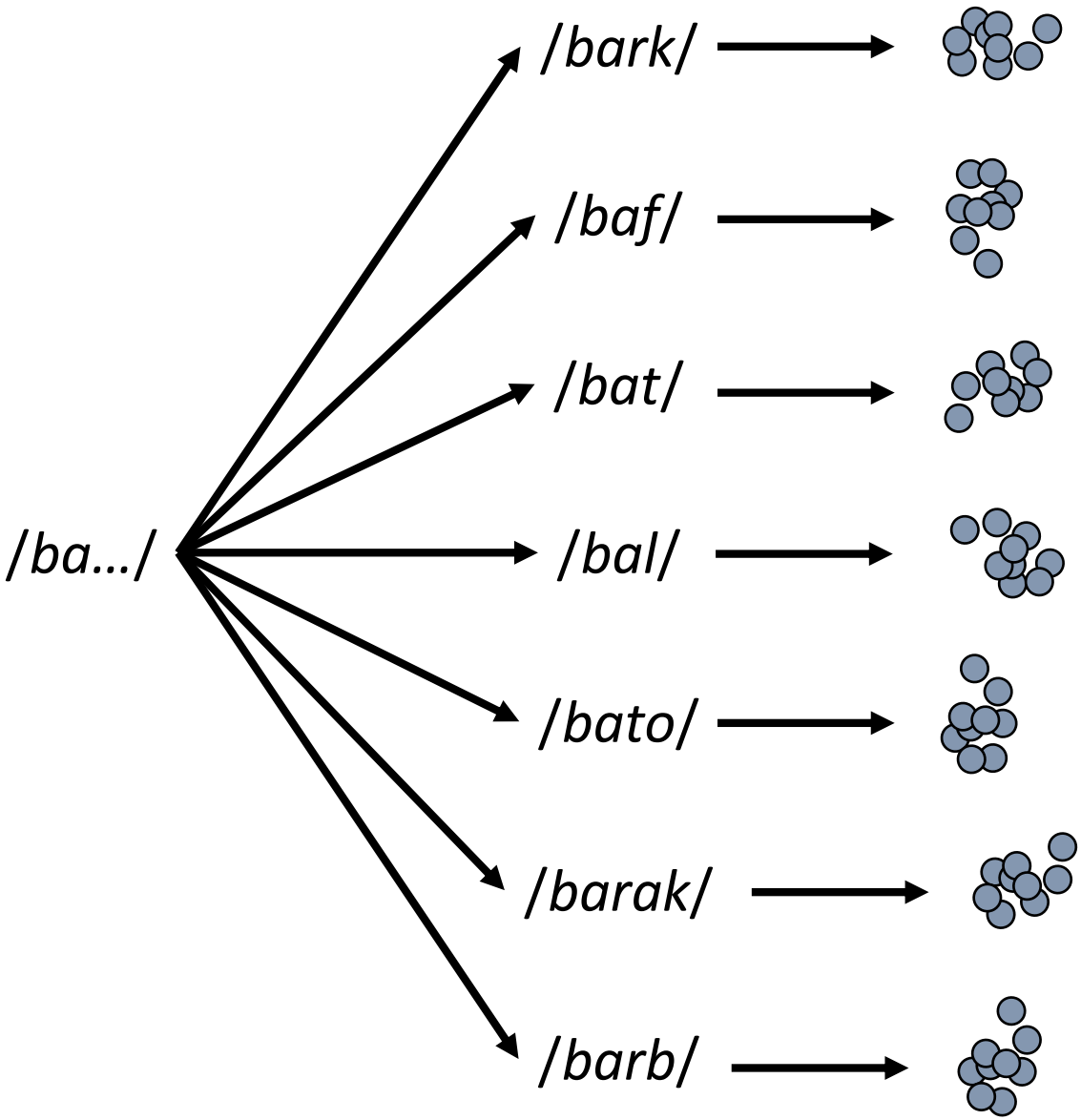
A number of studies have shown that the meanings of spoken words are activated early in processing, well before all of the word has been heard. However, these studies have not explicitly taken into account a number of variables which are known to affect word recognition processes. Two important variables are a word's imageability and its form-class. In the experiments reported here we use a cross-modal priming task to investigate the role that these variables play on the time-course with which word meanings are activated. We present visual target words for lexical decision at different points through the duration of spoken primes. In one study the spoken primes were either abstract or concrete words, and in a second they were either nouns or verbs. We found significant priming for all types of words early in the duration of a spoken prime. We discuss these results in terms of various models of semantic activation, concluding that distributed models provide the best fit to the data.



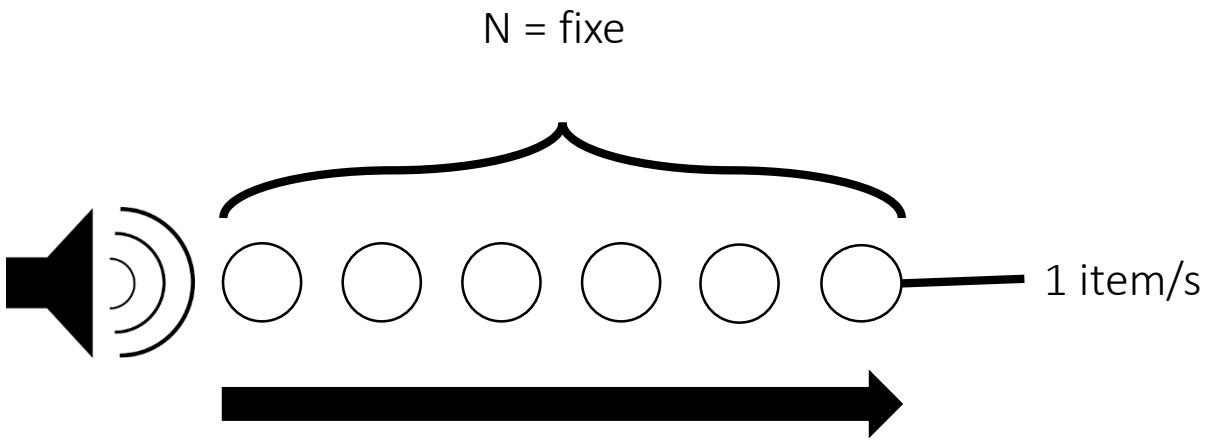


Zwitserlood (1989)
Tyler, Moss, Galpin, & Voice (2002)

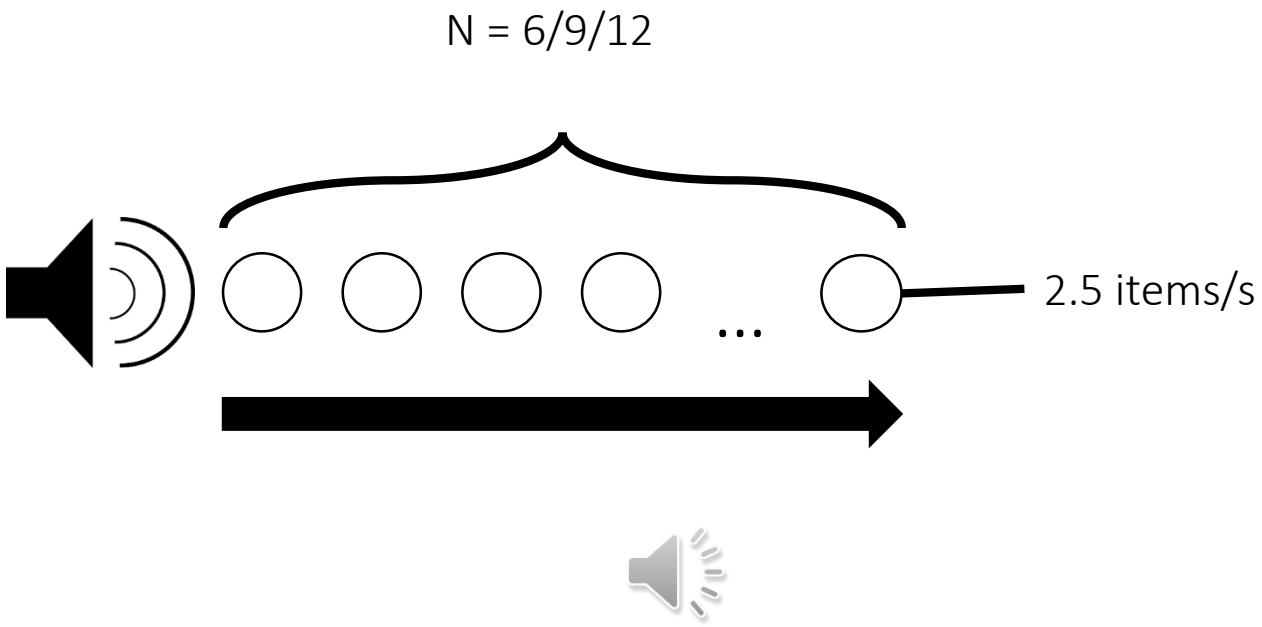


Marslen-Wilson (1987)
Zhuang et al. (2014)

Procédure d’empan rapide (running-span)

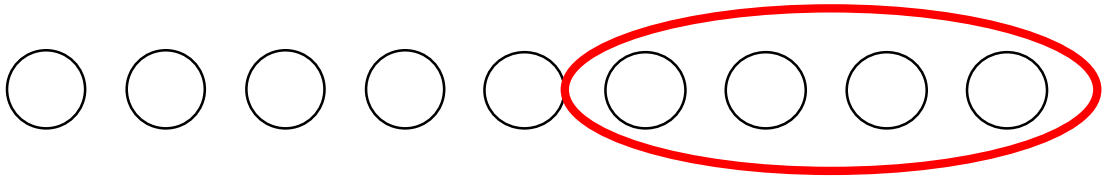


Procédure d’empan rapide (running-span)



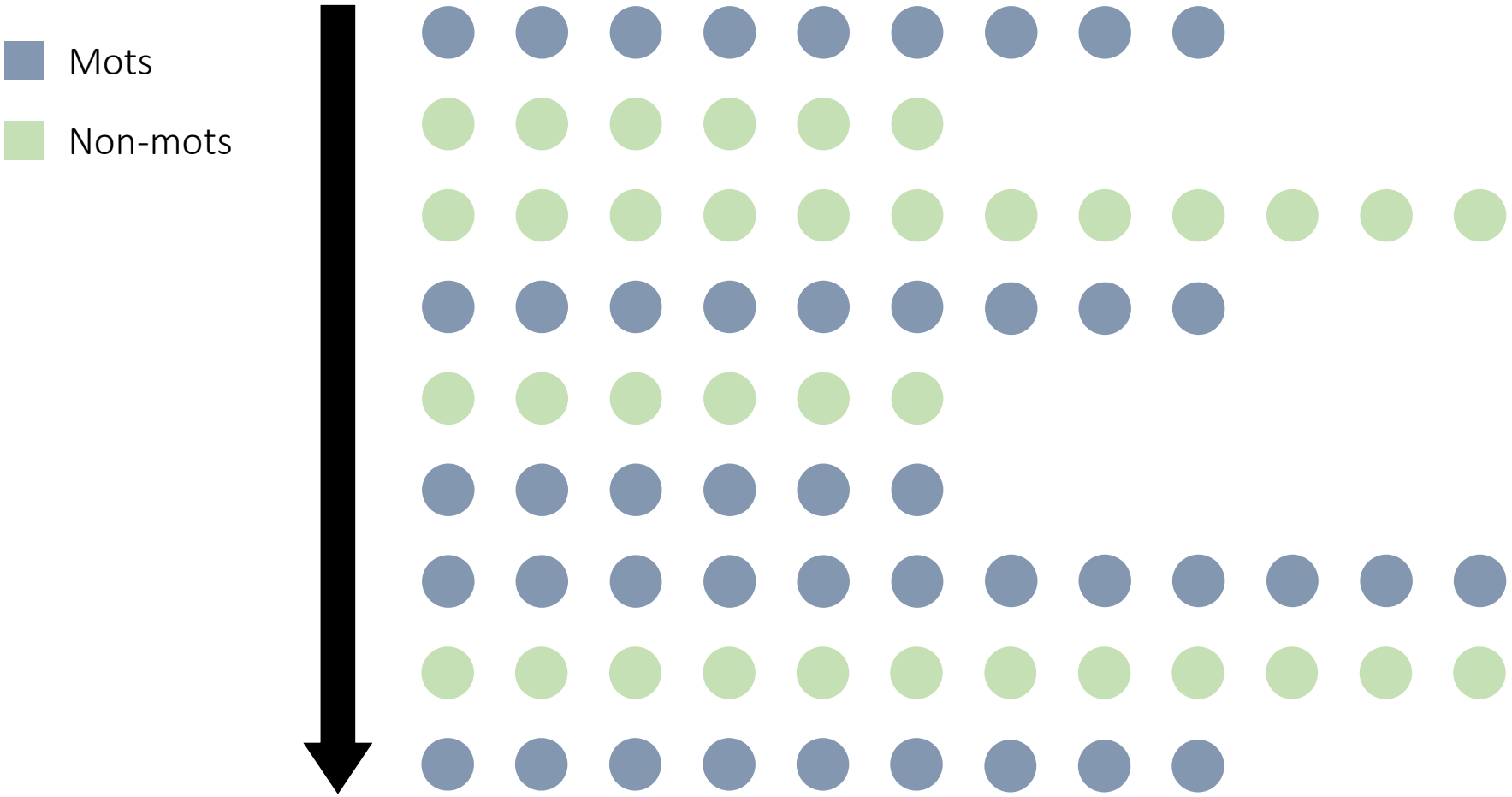
Pollack, Johnson, & Knaff (1959)

Procédure d’empan rapide (running-span)



Pollack, Johnson, & Knaff (1959)

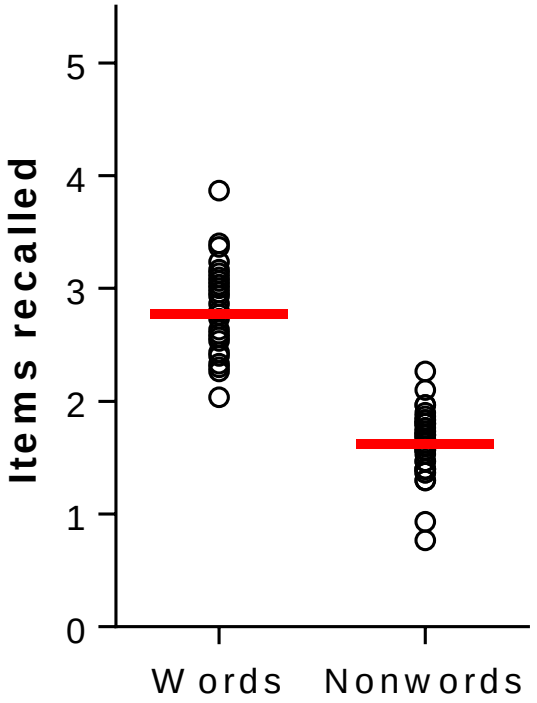
Procédure d’empan rapide (running-span)



Effet de lexicalité

Ex:

chat
vs.
blum

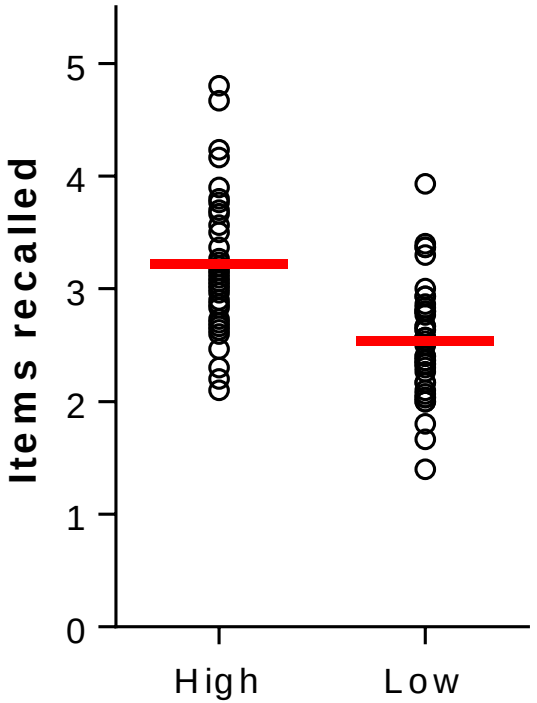


$p < .001$, $d = 2.996$
$BF_{10} = 4.678^{e}+17$
N = 39

Effet de fréquence lexicale

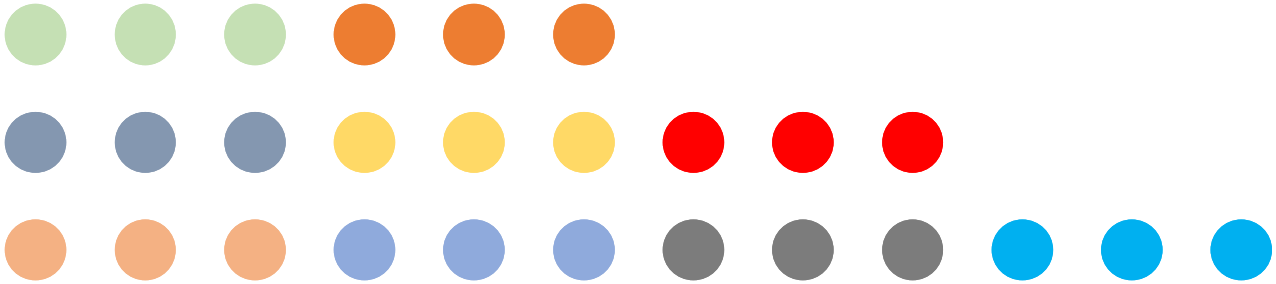
Ex:

chose
vs.
nacre

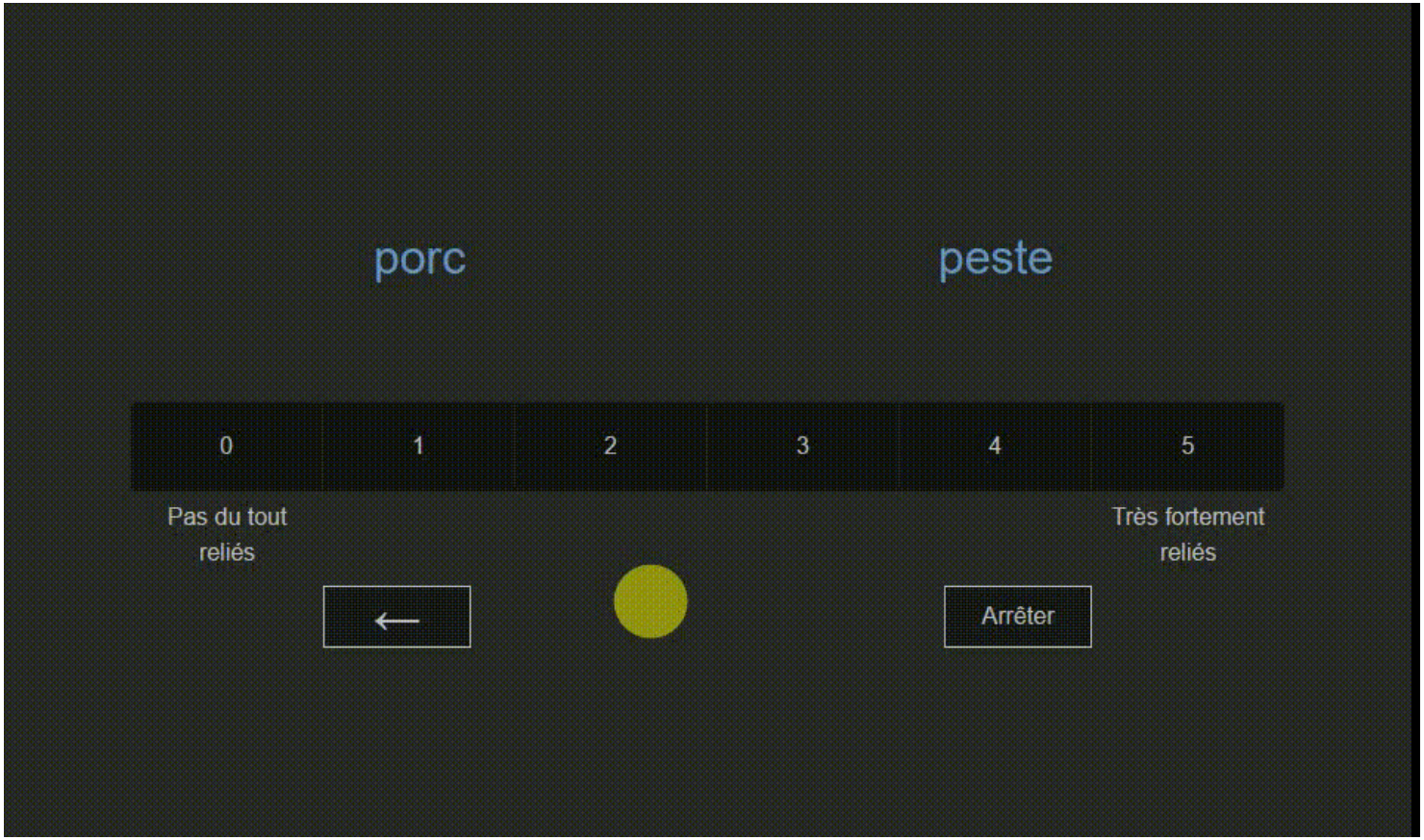


$p < .001$, $d = 2.237$
$BF_{10} = 5.567e+14$
N = 43

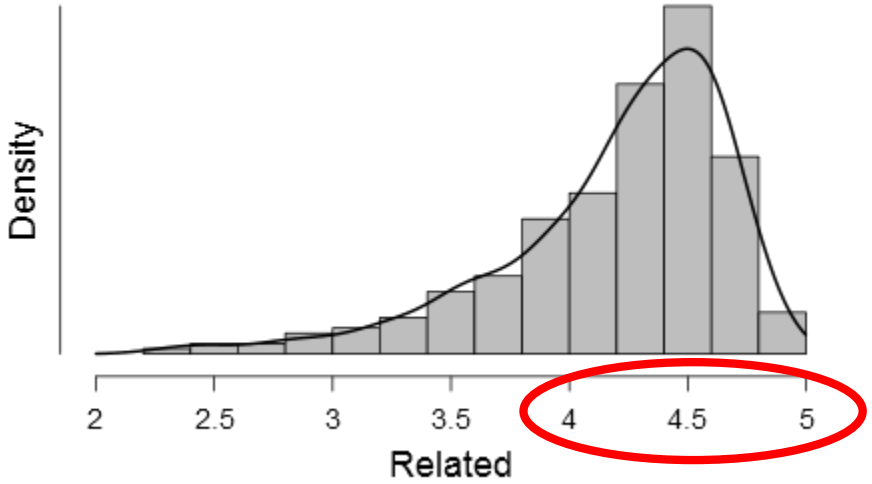
Effet de similarité sémantique

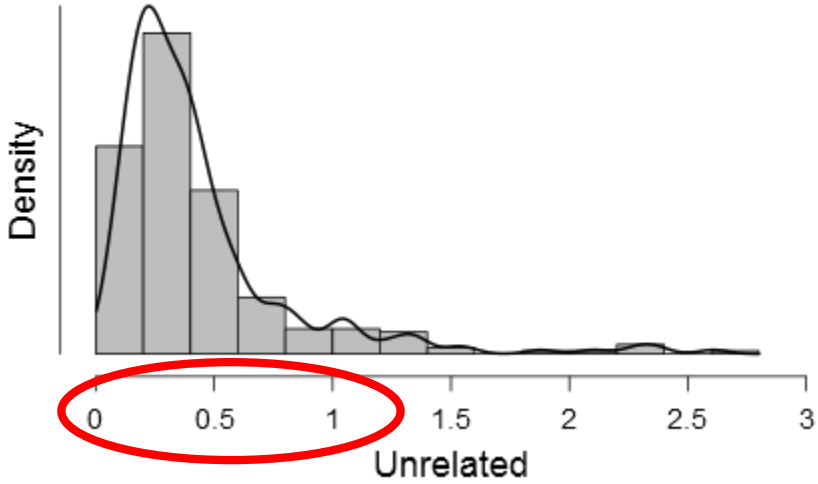


Effet de similarité sémantique



Effet de similarité sémantique



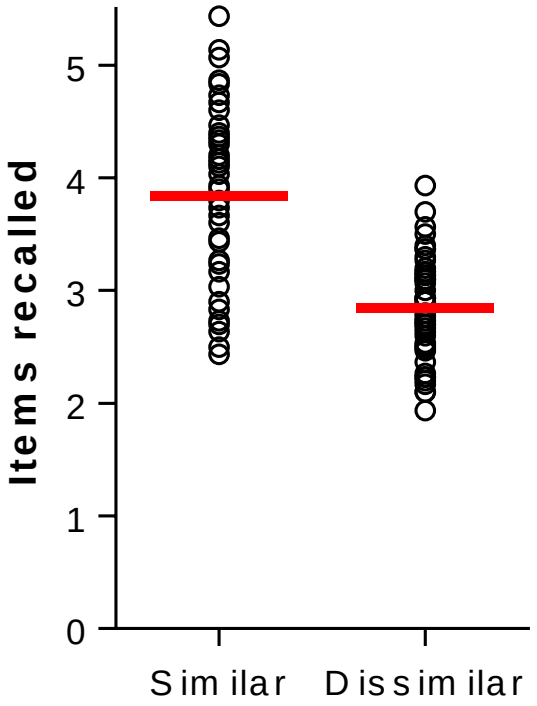


N = 173

Effet de similarité sémantique

Ex:

arbre – feuille – branche
vs.
coule – lard – pneu

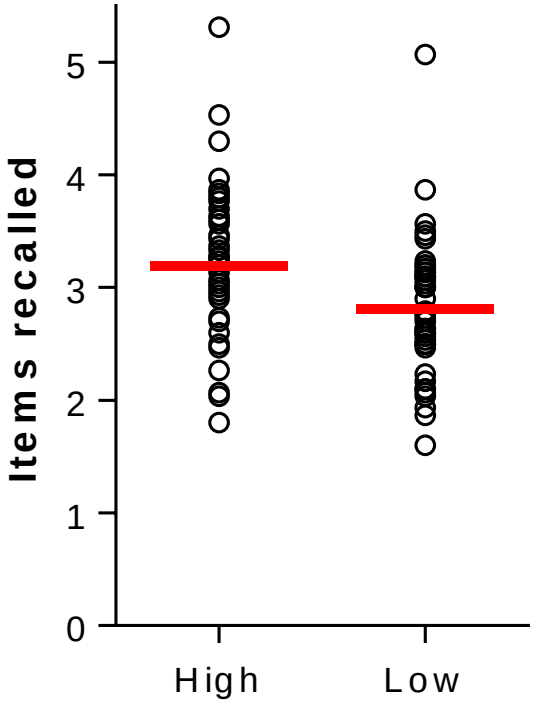


$p < .001$, $d = 2.273$
$BF_{10} = 8.422e+16$
N = 47

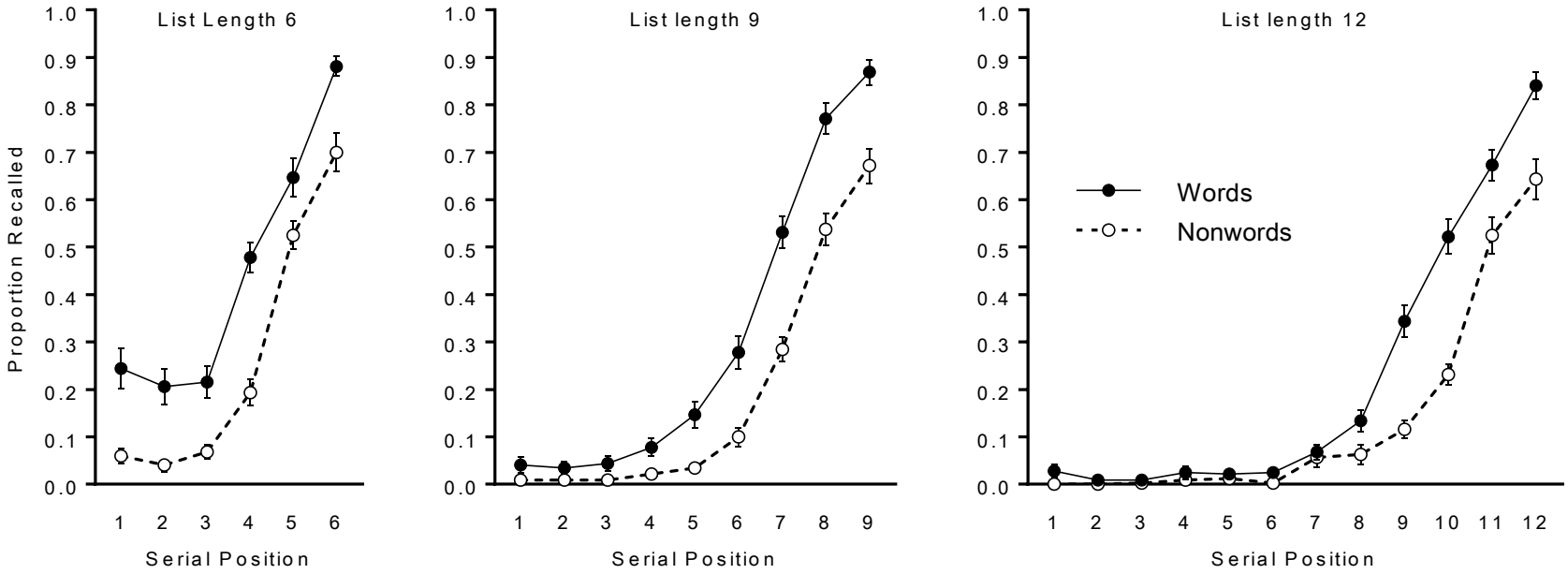
Effet d'imageabilité/concrétude

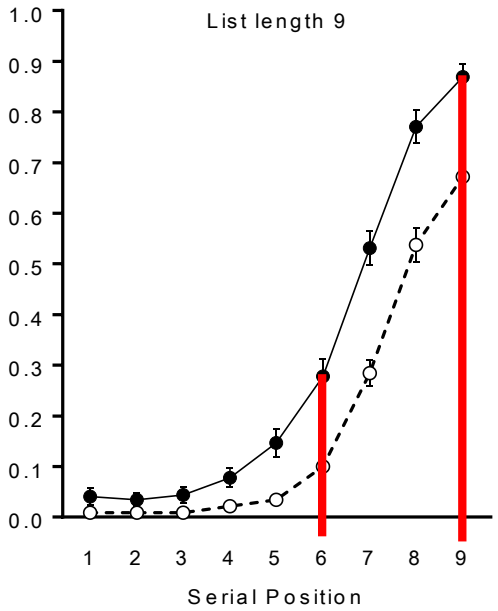
Ex:

crêpe
vs.
preuve

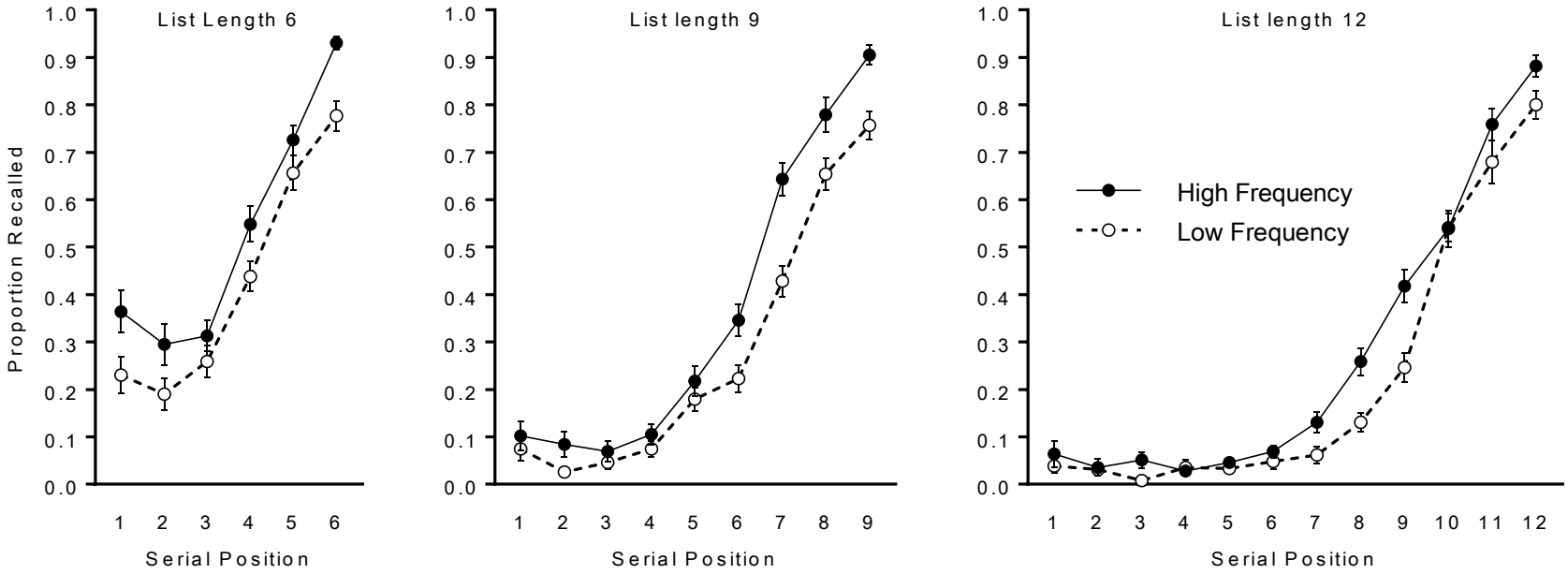


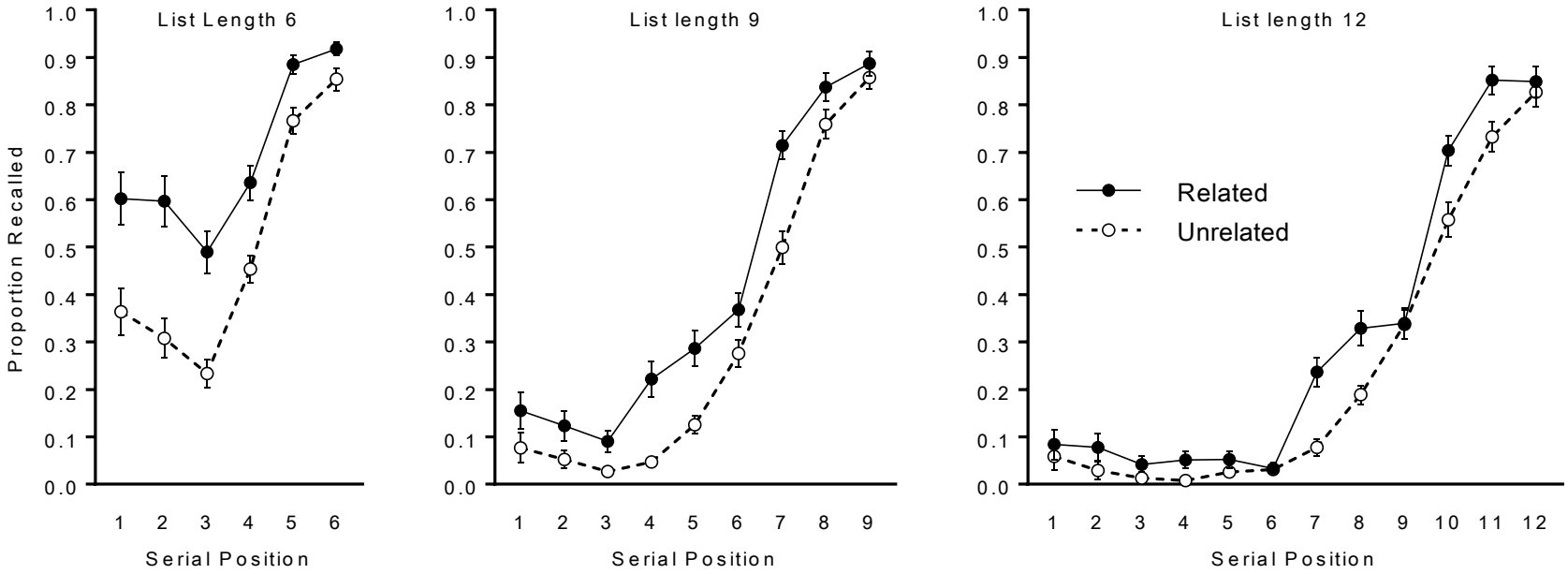
$p < .001$, $d = 1.164$
$BF_{10} = 2.207e+7$
N = 46

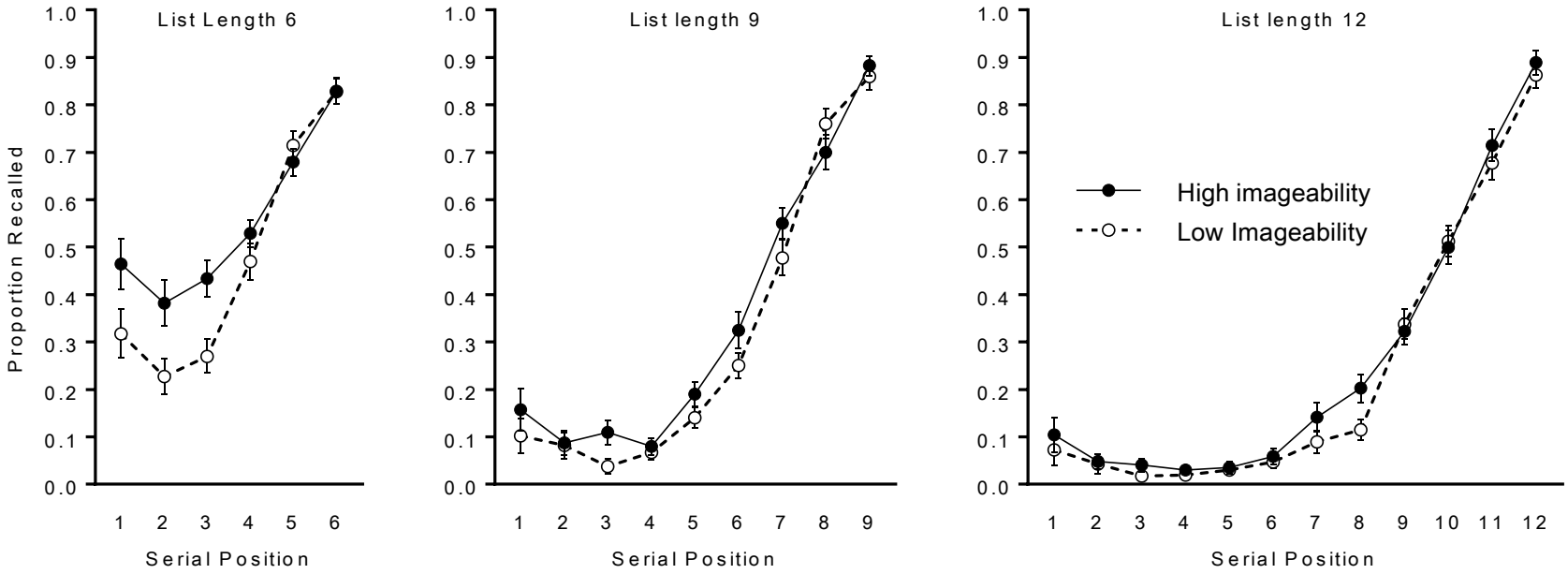

List Length 6
List length 9
List length 12
Proportion Recalled
Serial Position
Words
Nonwords

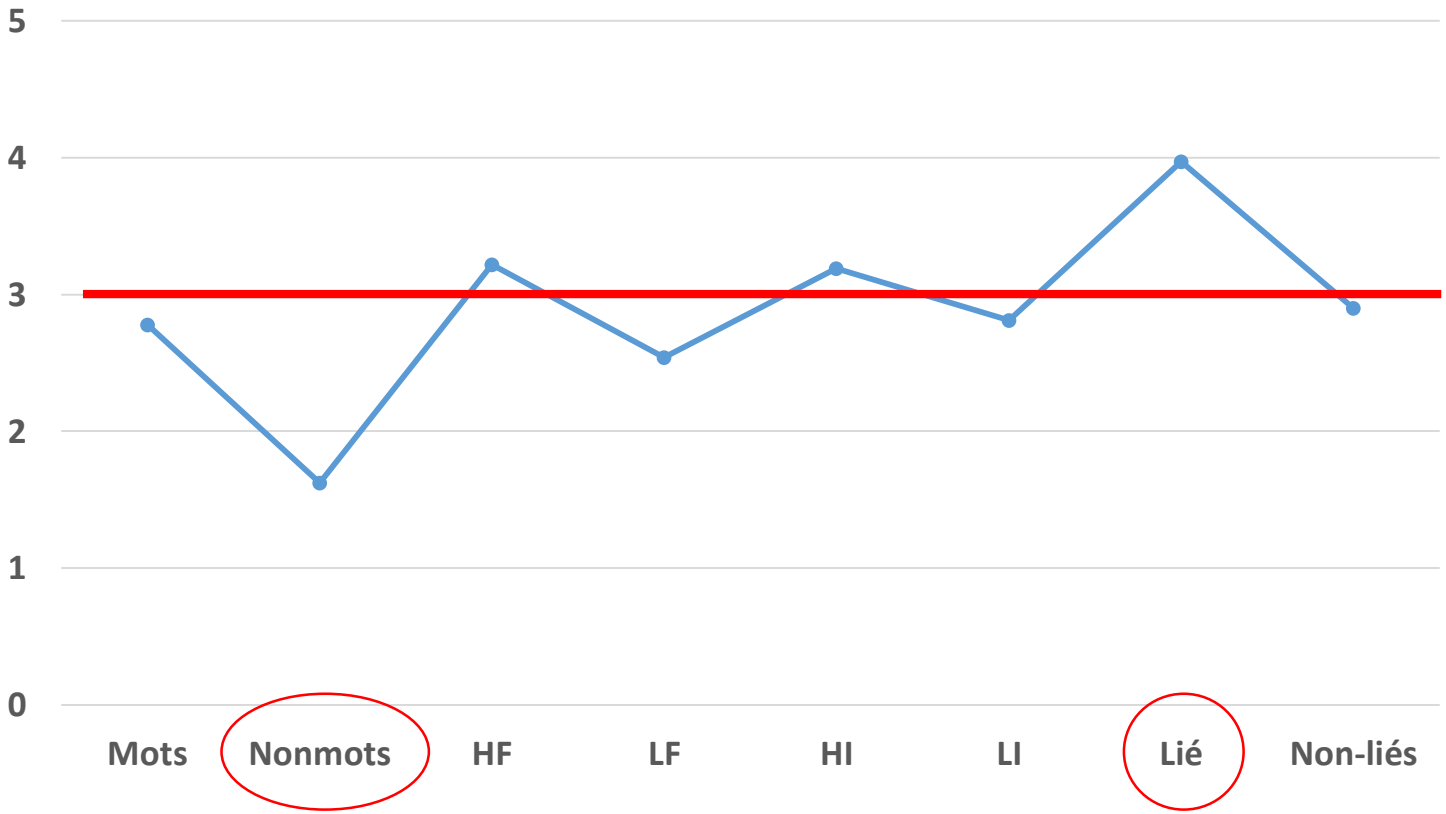

List length 9
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
1 2 3 4 5 6 7 8 9
Serial Position

< 2000 ms


List Length 6
List length 9
List length 12
Proportion Recalled
Serial Position
High Frequency
Low Frequency


List Length 6
List length 9
List length 12
Proportion Recalled
Serial Position
Related
Unrelated


List Length 6
List length 9
List length 12
Proportion Recalled
Serial Position
High imageability
Low Imageability



Cowan, N. (2010). The magical mystery four how is working memory capacity limited, and why?. *Current directions in psychological science*, *19*(1), 51-57.

- Le système langagier peut accéder aux représentations sémantiques de manière précoce, avant même la fin du signal acoustique

- Cet accès précoce aux informations sémantique se manifeste également en mémoire à court terme

- Les représentations activées au sein du système lanagiers, pourvu qu'elles ne fassent pas l'objet d'un maintient actif, sont volatiles et très éphémères

- Ceci est d'autant plus le cas que ces représentations sont moins riches ou moins robustes

Merci pour votre attention.

Références

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Encoding and Retention of Semantic and Phonemic Information in Short-Term Memory[1]

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A probe recognition task was used to evaluate the relative effectiveness of semantic and phonemic encoding in STM. On each trial a list of 10 words was presented at a rate of either 350, 700, or 1400 msec per word. Recognition was tested with a probe which could be a homonym, a synonym, or identical to one of the words in the list. Th for all three probe types were similar in shape, supporting the hypo encoding is possible in STM. An interaction between type of encodin indicating that encoding is a time-dependent serial process.

THE QUARTERLY JOURNAL OF EXPERIMENTAL PSYCHOLOGY, 2014
http://dx.doi.org/10.1080/17470218.2014.966248

Automatic semantic encoding in verbal short-term memory: Evidence from the concreteness effect

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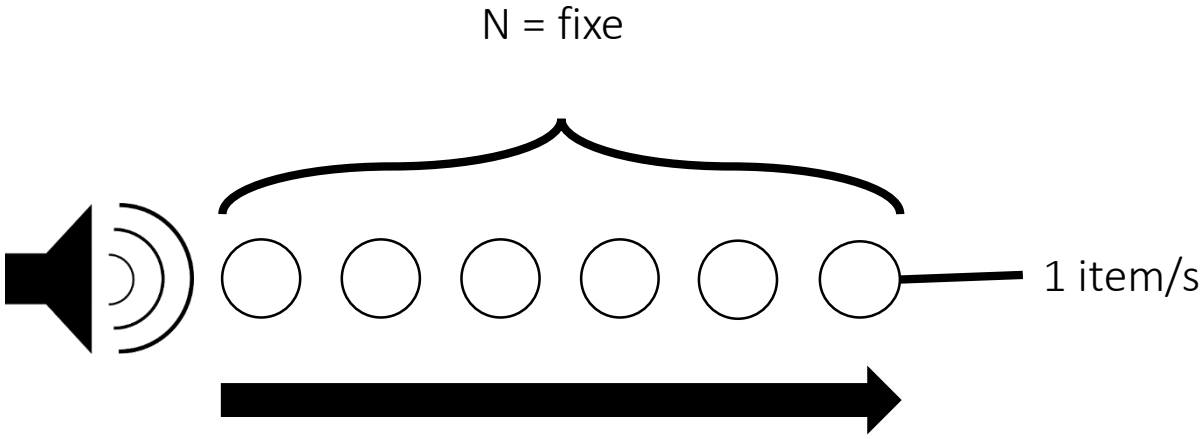
[3]Department of Psychology, University of York, York, UK

The concreteness effect in verbal short-term memory (STM) tasks is assumed to be a consequence of semantic encoding in STM, with immediate recall of concrete words benefiting from richer semantic representations. We used the concreteness effect to test the hypothesis that semantic encoding in standard verbal STM tasks is a consequence of controlled, attention-demanding mechanisms of strategic semantic retrieval and encoding. Experiment 1 analysed the effect of presentation rate, with slow presentations being assumed to benefit strategic, time-dependent semantic encoding. Experiments 2 and 3 provided a more direct test of the strategic hypothesis by introducing three different concurrent attention-demanding tasks. Although Experiment 1 showed a larger concreteness effect with slow presentations, the following two experiments yielded strong evidence against the strategic hypothesis. Limiting available attention resources by concurrent tasks reduced global memory performance, but the concreteness effect was equivalent to that found in control conditions. We conclude that semantic effects in STM result from automatic semantic encoding and provide tentative explanations for the interaction between the concreteness effect and the presentation rate.

Keywords: Verbal short-term memory; Concreteness effect; Immediate serial recall; Presentation rate; Dual task paradigm.


N = fixe
1 item/s