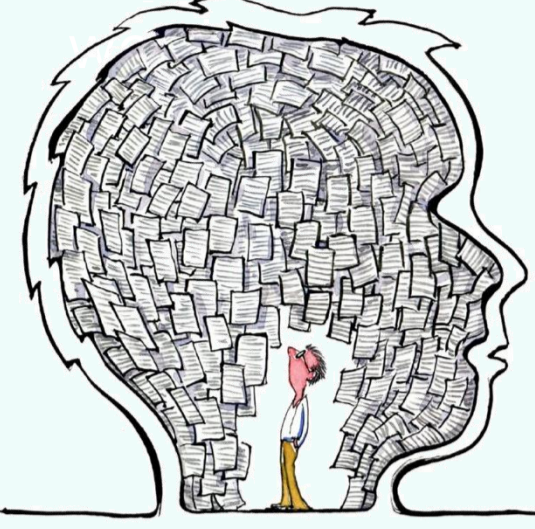


## Introduction

Word retrieval is used every day to select the correct word from a store of words in our brain, to correctly label what we see or think. However, there are various factors that can impact whether we are quicker or slower to retrieve words.



Howard et al [1] described 'Cumulative Semantic Interference' (CSI) as responses getting slower as more members from a category are introduced (e.g. lion>hyena>zebra>elephant). So, LION - the first named - will be faster than ELEPHANT - the fifth item from the category.

They produced a computational account of the effect - arguing that when you named a picture, there was:

- 'shared activation' at a semantic (meaning) level- when you see a picture of a LION there is greatest activation at a semantic level for LION but other members of the category are also (although less) activated.
- Priming of the link from semantics to lemma (stored word/words) for items that were named.
- Competition between activated lemmas that drive speech production.

There are currently differing accounts of the mechanisms underlying this. These are their predictions:

1. Roelofs [2] and Belke [3] suggest the locus of the effect is at a semantic level or meaning level.
2. Howard et al [1] and Oppenheim et al [4] locate the interference effect to word production. However, these two accounts differ slightly in how the competition between member of the same semantic category occurs.

## Aims

To further test these differing accounts this research project aimed to investigate:

1. If during a comprehension task, responses get slower when more members from a category are introduced (e.g. lion>zebra>hyena> elephant)
2. If the time taken for a speaker to name a picture (e.g. lion) is affected by a previous attempt at judging if the same word and a picture match (e.g. "lion" + picture of a lion)
3. If hearing the word whilst completing a picture-word verification task prior to a picture naming task impacts the response time when naming the picture during a naming task.

# Does hearing a word affect word retrieval and production?

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“lion”



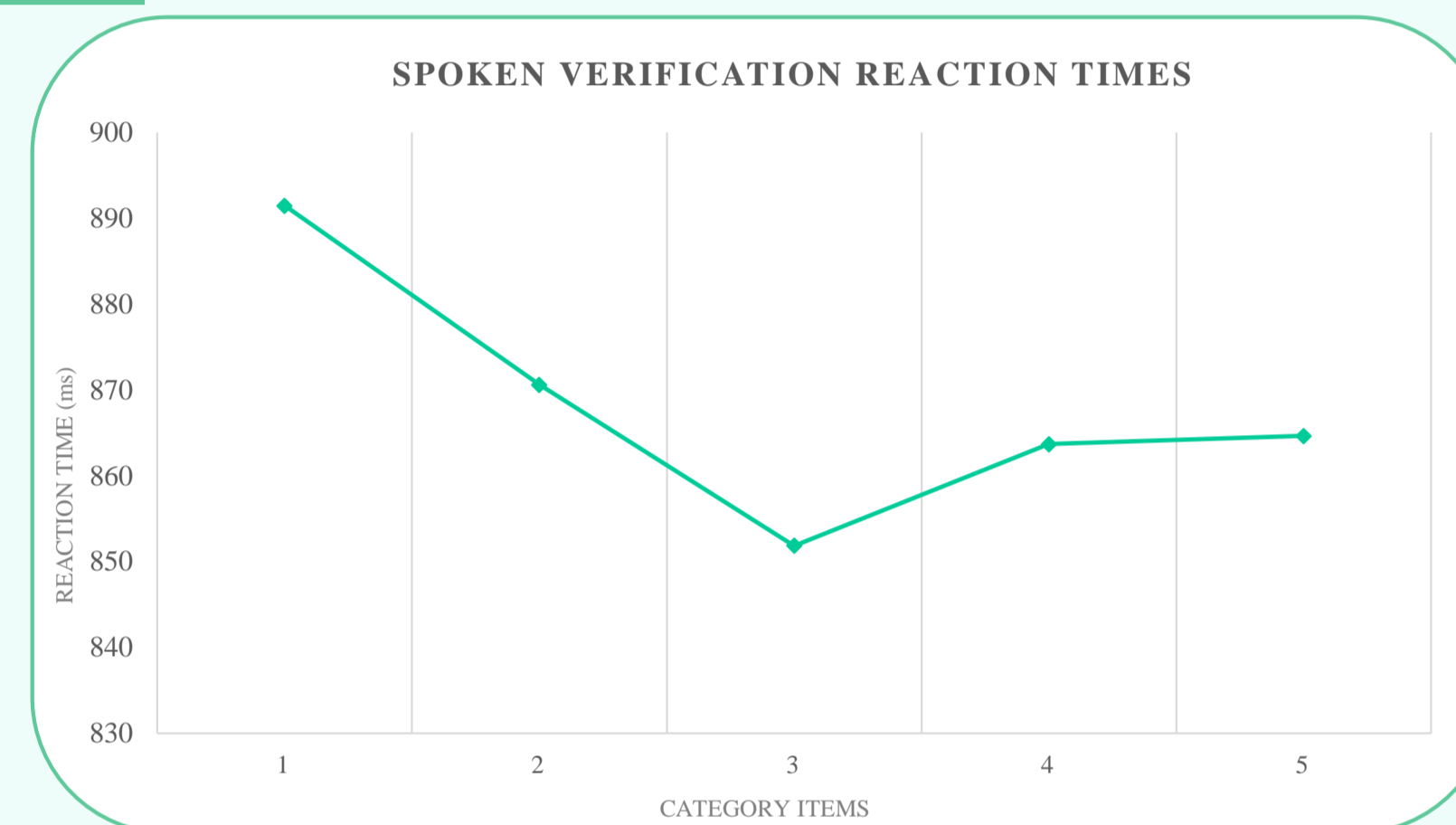
## Methods

24 participants between the ages of 16-70 years took part in the study. All speakers were normal, healthy speakers without any speech or language difficulties.

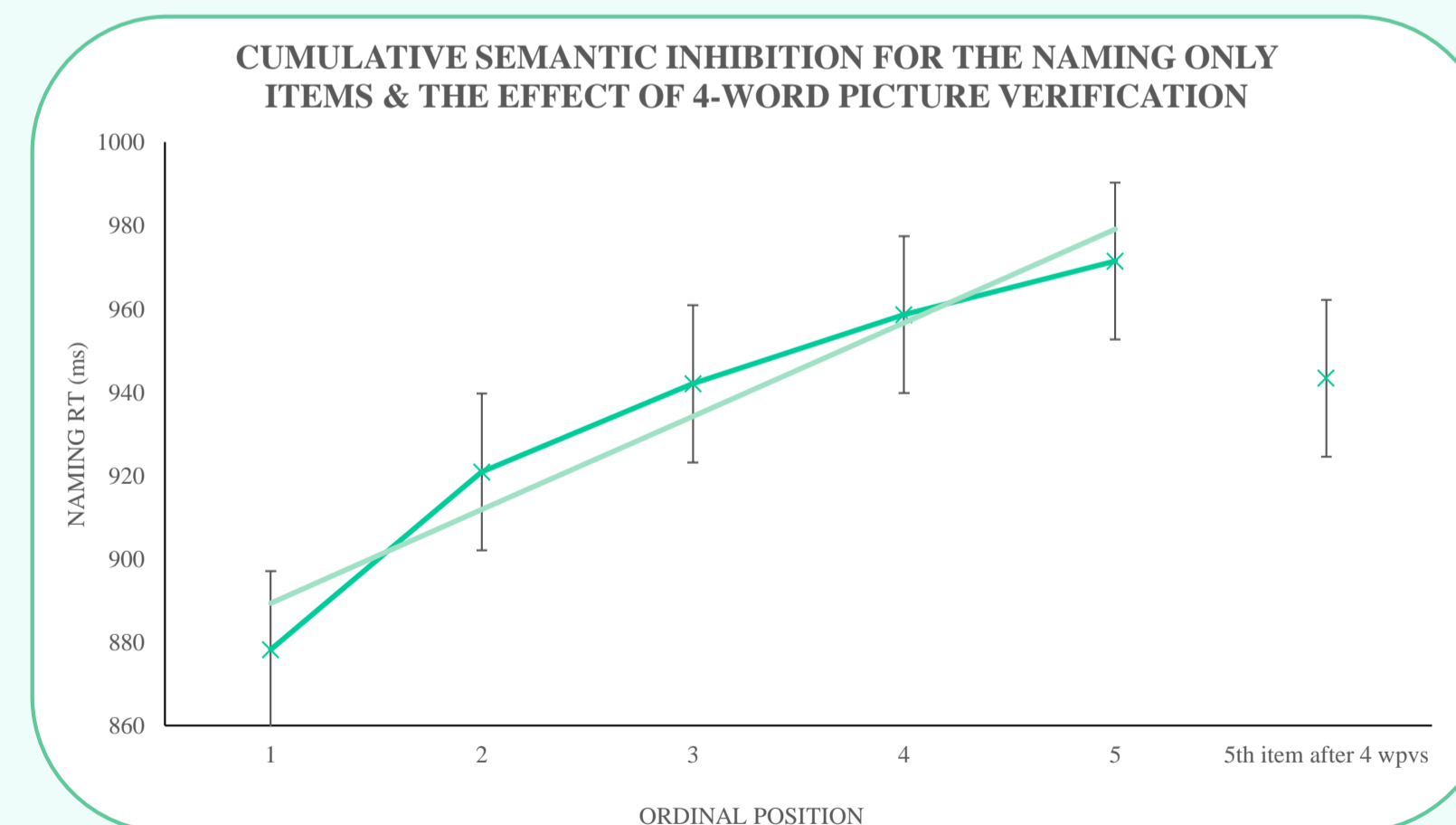
Three tasks were completed over the course of three weeks, with one experiment being completed each week..

**Results from experiment 1 and 2 are discussed in depth for this purpose of this poster.**

## Results



Experiment 1- As seen in figure 1, there is facilitation (assistance) from the first item from the category, leading to faster word retrieval. There are no significant differences across items 2-4.



Experiment 2- Figure 2 shows naming results slow approximately linearly by 22ms per item from a category. This accords with multiple previous results.

The fifth item from a category, when the previous four items from that category have been presented for word-picture verification has a mean RT of 943ms. This is significantly slower than the first item of a category where the items were presented only for naming.

## Discussion

Experiment 1- The results of experiment one suggest that within a category, seeing the first item assisted comprehension of the second item. However, there were no significant changes across remaining items.

There is long-lasting facilitation from the first item in a category, with no effect of lag in auditory word-picture verification.

This is incompatible with the Roelofs [2] and Belke [3] account that predicts cumulative inhibition. Thus, suggesting category items may share a node or set of nodes that activate and assist retrieval of other category items.

Experiment 2- The results from the second experiment showed reaction times for naming category items is slower when a decision has been previously made through auditory verification (hearing a word and deciding if correct or incorrect picture label).

This is in line with Howard et al's [1] prediction that word-picture verification would slow naming of the final item from that category. Roelofs'[2] account would also imply a similar prediction. However, this account would propose that the fifth item after four trials of word-picture verification should be the same as the fifth item in naming.

The results of this study help develop our understanding of how words are produced in typical 'healthy speakers'. Furthermore, they may allow us to determine how words are retrieved by people with language difficulties and ultimately inform the choices made regarding treatment of these individuals when receiving speech and language therapy.

## Acknowledgments

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