

An Investigation into the Semantic Priming of High Frequency Pseudohomophones

Does semantic priming have an effect on the latency of naming high frequency pseudohomophones compared to pseudowords?

Introduction:

"The lexical route takes us directly to a word's entry in the lexicon...there is also a grapheme-to-phoneme conversion (GPC) route, which is used for reading nonwords." (Harley 2014:211)

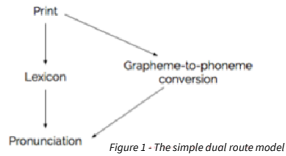


Figure 1 - The simple dual route model

The dual route model demonstrates that there is **no interaction between the two routes**.

However, the **pseudohomophone effect** challenges the dual route model and suggests that there is interaction because pseudohomophones are **quicker to name and slower to reject**. This means that the visual representation of words has an effect on the reading of some pseudowords.

Rubenstein (1971) conducted a **lexical decision task**, which supported the pseudohomophone effect because results showed that pseudohomophones were slower to reject. The pseudohomophones that took the longest to reject were high frequency.

In our study we are testing the **quicker to name** aspect of the pseudohomophone effect. We also wanted to see whether **semantic priming** had an effect on the latency of naming **high frequency pseudohomophones**. This is because research shows that sometimes, semantic priming decreases the latency of participants during naming tasks due to **spreading activation** in the lexicon (La Heij et al 1985:62).

Background Research:

	Howard et al. (2008)	Mullati et al. (2012)
Study	A picture naming task to test lexical retrieval and 'inhibition from semantically related primes' (2008: 466). e.g. the retrieval of 'cow' is inhibited by the prior retrieval of 'sheep' when there is at least two intervening items between them.	A naming task that questioned whether: 'the latency of reading a target word aloud increases as a function of the number of words orthographically or phonologically similar to the target word that had been previously read aloud' (2012: 662).
Experiment	Subjects named 120 pictures drawn from 24 semantic categories. They measured the latency of naming the pictures after a picture prime of the same semantic category appeared. The prime was always a minimum of two pictures before the target and an average of seven.	Participants were asked to read the individual words as quickly as possible to test the latency of orthographically and phonologically primed words.
Results	Results showed that: ' subjects' naming latencies were slowed by 30ms for each preceding member of the category ' (2008: 464). They discovered that the cumulative semantic inhibition effect is much longer lasting than the facilitation effect (activation), which disappears quickly and does not survive after more than one unrelated prime.	Their findings showed that reading was slowed by an additional 6ms for every preceding lexical item that was similar to the target. Mullati et al. say that these results are an example of the cumulative similarity based interference effect . They draw a parallel with Howard et al's picture naming task and say that it is reasonable to suggest inhibition exists in the system of reading.

Our Mismatch Theory:

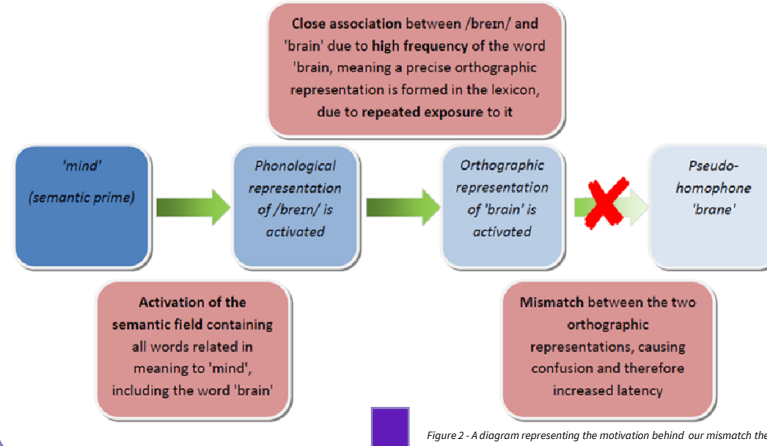
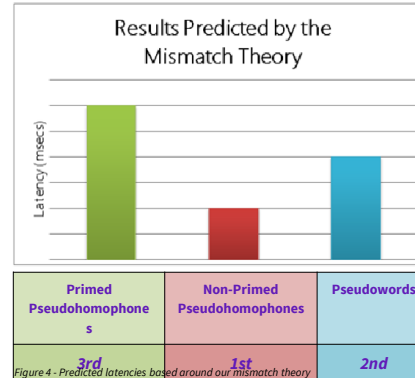
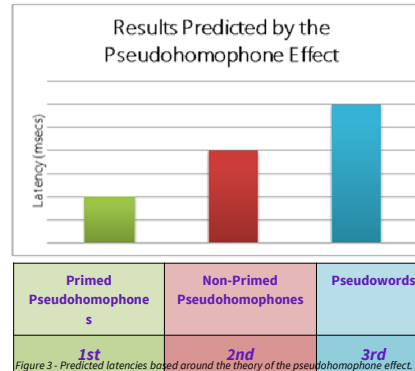


Figure 2 - A diagram representing the motivation behind our mismatch theory

Predicted Results:



If semantic priming increases activation and therefore leads to a shorter latency, we would **predict** primed pseudohomophones to be named the quickest.

We would also expect both primed pseudohomophones and non-primed pseudohomophones to be named **quicker** than pseudowords. These results are **intuitive** as a result of the **pseudohomophone effect**, which predicts that pseudohomophones are quicker to name than pseudowords.

Due to the **orthographic mis-match provoked by the semantic prime**, this longer latency would be evident in the results.

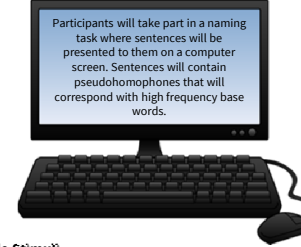
This would mean primed pseudohomophones would be named the **slowest**, despite the previous intuition.

The non-primed pseudohomophones would be named the **fastest** as there are no priming effects causing any confusion between the orthographic representations.

Pseudowords would fall **somewhere in-between** these two extremes as, due to being nonsense words, they can't be primed as they don't relate to any real words in the lexicon.

Methodology:

- The sample of participants will include **35 mixed sex university students**.
 - We have chosen this sample as we do not believe gender to be a factor that will influence our results but believe that having a sample that is representative of both genders is still a stronger one.
- The participants will be aged between **18 and 21 years**.
 - This is being controlled so as to not allow reading ability to affect how participants perform on the task.
- Participants will all be **native English speakers**.
 - To account for any possible cultural differences.



Participants will take part in a naming task where sentences will be presented to them on a computer screen. Sentences will contain pseudohomophones that will correspond with high frequency base words.

"You will be presented with a sentence which you must read aloud. At the end of every sentence, there will be a non-word which will be entirely made-up and, therefore, will not be in your vocabulary. We would like you to read as quickly as you can"

Ethical Considerations

This experiment does not present any physical or psychological dangers to participants. All participants will have to provide informed consent and they will be provided with a detailed information sheet and the option to withdraw at any point.

Sample Stimuli

- Pseudohomophone + priming**
For his second year of University, Kevin took the module 'Mind, Body and Brane.'
- Pseudohomophone - priming**
Peter and his son decided to take a look at the burds.
- Pseudoword**
Brenda decided the perfect ingredient to compliment her chicken would be melp.

Discussion:

Our study could provide further evidence to support Howard & Mullati's finding that priming **inhibits** rather than **facilitates** naming words.

Our study builds upon previous research by focusing on **semantic priming**, particularly developing on Mullati's work on orthographic and phonological priming.

Wider theoretical implications:

If our predicted results are found, a **modification to the original dual-route model is necessary**. The modification needs to account for **interaction** between the two routes. The interaction is the proposed influence of real words (e.g. 'brain') on pseudohomophones (e.g. 'brane'). See Figure 5.

Although the **pseudohomophone effect also predicts interaction** between the two routes, our mis-match theory is **inconsistent** with the pseudohomophone effect. This is due to its prediction that pseudohomophones are **quicker to name** than pseudowords, which conflicts with our prediction that they are **slower to name** due to the **orthographic mismatch**.

Limitations and ideas for further study:

- We are only focusing on **high frequency pseudohomophones** -> could compare low and high frequency pseudohomophones in future replications
- We have **limited** our participant selection to **18-21yrs** -> different ages could have different responses
- We consistently placed the pseudohomophones at the end of each sentence -> would be worth considering in future work as **sentence position** could affect the results

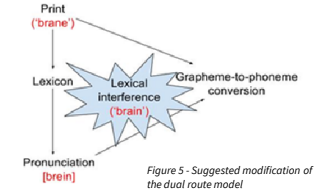


Figure 5 - Suggested modification of the dual route model

References:

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Hypothesis: "The latency of naming high frequency pseudohomophones will be higher than pseudowords due to semantic priming causing an orthographic mismatch"