How are compound words stored in the mental lexicon?

Elle Aspell-Sheppard, Jessica Beever, Bronte Howard and Danny Norton

RESEARCH QUESTIONS

RQ1: Are compound words stored as two separate lexical entries in the mental lexicon?

RQ2: Does the semantic transparency of the compound word affect how quickly we access the word?

HYPOTHESIS

H1: Compound words are stored as two separate entities within the mental lexicon, alluding to the Partial Decomposition Model with access to compound words being slower than simple.

H2: Notions of semantic transparency will allow for quicker access of the compound words which are opaque as opposed to semantically transparent terms.

INTRODUCTION TO SEMANTIC TRANSPARENCY

TRANSPARENT

When the meaning of both components directly correspond with the target.

E.g. Blackbird

OPAQUE

When the meaning of both components do not directly correspond with the target.

E.g. **Buttercup**

Libben (2006)

NB: Semantically opaque terms will be notated in **bold**. e.g. **buttercup.**

ETHICS

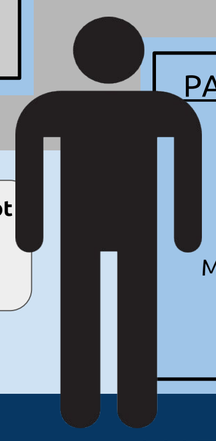
There is a **very low risk** of any psychological or physical harm being inflicted on the participant's or the researcher, and there are no issues regarding personal safety as the study will be conducted on the University campus.

Written consent from **all** participants will be received before the study begins.

We will **not** be using participants who could be considered to be vulnerable.

All of the data collected will **not** be shared with anybody else, and will be kept in a secure location when not in use.

PRE-TEST METHOD



PARTICIPANTS

Native speakers of English

No known language impairment

Mixed age gender

PROCEDURE

1. Participants given definition of semantic transparency/opacity.
2. Presented with list of compound words
3. Asked to give a transparency rating on a scale (below)

X 20

1 (very opaque) ——— 9 (very transparent)

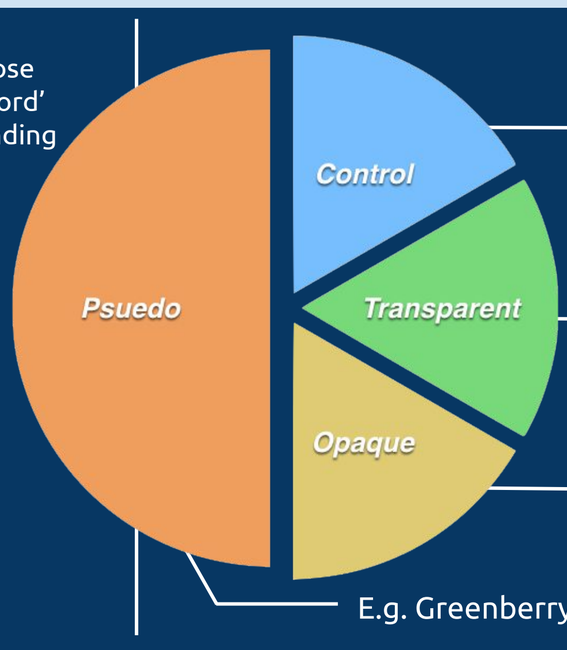
METHODOLOGY

Lexical Decision Task

PROCEDURE

1. The Participant will see an individual word on the screen
2. Participant will choose either 'word' or 'non-word' and press the corresponding button
3. Time between the word appearing and the participant pressing the button will be recorded

Next word appears on the screen



MATERIALS

E.g. Business
2-3 syllables long, used to standardise reading length of words.

E.g. Blackbird

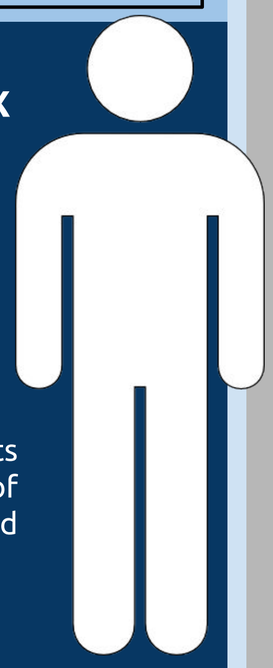
E.g. B**uttercup**

E.g. Greenberry

Total: 120 words

PARTICIPANTS

30 X



No known case of dyslexia or aphasia

Native English Speakers

Undergraduate students at the University of Sheffield

Mixed age & gender

Motivated by Juhasz et al. (2003)

EXPECTED RESULTS

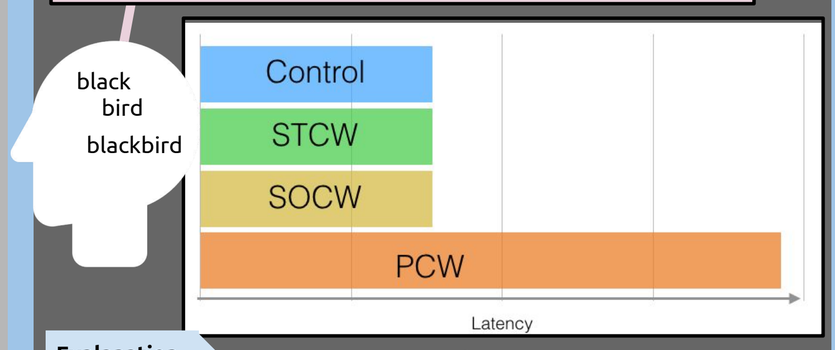
KEY

STCW = *Semantically Transparent Compound Words*
SOCW = *Semantically Opaque Compound Words*
PCW = *Pseudo Compound Words*

Full Listing Hypothesis

The Full Listing Hypothesis **(FLH)** is the theory that every word and morpheme has its own separate entry in the mental lexicon. (Butterworth, 1983)

In this example, 'blackbird' as well as the two parts of the compound 'black' and 'bird' are all stored as separate entries in the mental lexicon.



Explanation

1st: Control, STCW, SOCW

Why?: Because each has their own entry in the mental lexicon.

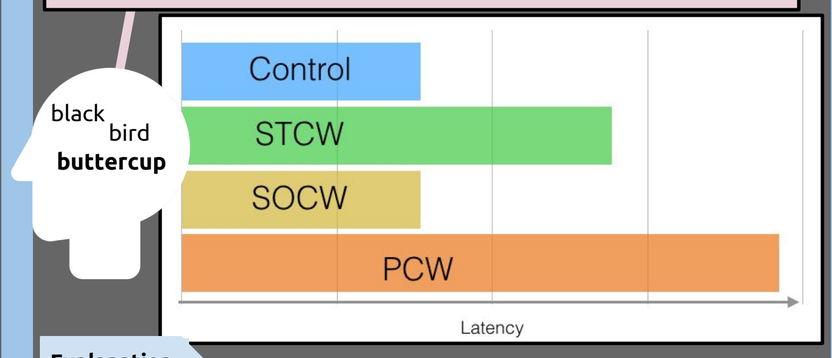
2nd: PCW

Why?: Because participants must access the two separate parts of the word, and then compound them together, and then decide whether it is an existing word or not.

Partial Decomposition Model

The Partial Decomposition Model **(PDM)** states that all irregular words and morphemes are stored in our mental lexicon as separate entities, but all regular words and morphemes decompose once activated. (Taft, 1981)

In this example, the SOCW '**buttercup**' is stored as one entry in the lexicon, but what would be STCW 'blackbird' has been decomposed into two separate entities 'black' and 'bird'.



Explanation

1st: Control & SOCW

Why?: Because each has their own entry in the mental lexicon.

2nd: STCW

Why?: Because the compound word has been decomposed, participants must access the two separate parts of the word, and then compound them together.

3rd: PCW

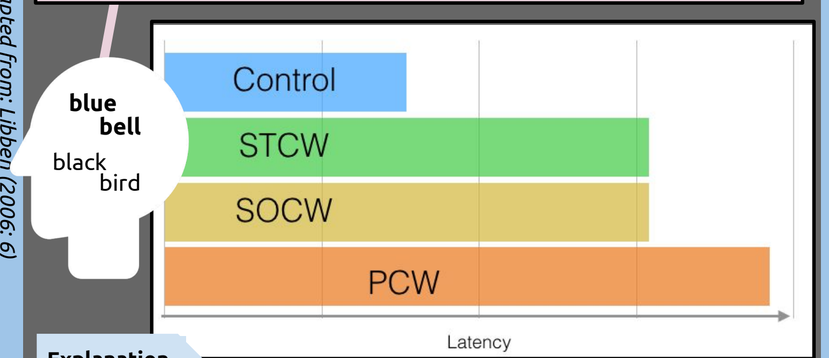
Why?: Because participants must access the two separate parts of the word, and then compound them together, and then decide whether it is an existing word or not.

Examples adapted from: Libben (2006: 6)

Full Decomposition Model

Motivated by the Partial Decomposition Model, the Full Decomposition Model (FDM) predicts that all compound words are decomposed into their separate words - whether they are semantically transparent or opaque.

In this example, both the STCW 'blackbird' and the SOCW '**bluebell**' have been decomposed and are listed as two separate entities in the mental lexicon.



Explanation

1st: Control

Why?: Because each has their own entry in the mental lexicon.

2nd: STCW & SOCW

Why?: Because the compound word has been decomposed, participants must access the two separate parts of the word, and then compound them together.

3rd: PCW

Why?: Because participants must access the two separate parts of the word, and then compound them together, and then decide whether it is an existing word or not.

FURTHER CONSIDERATIONS

- **Headedness:** The importance of the first component of the compound word assigns grammatically category and holds a key role in lexical access. (Libben & Jarema, 2006). These ideas can relate to the opacity and transparency of the compound word, which may affect the rate of access. It was therefore necessary to be judicious in choosing our test stimuli; an expansion of our experiment would provide an interesting debate towards understanding the properties of compounds.
- **Base and stem frequency:** In determining rate of recognition, a more common compound word is likely to be accessed quicker than those which occur less frequently in the speaker's everyday language use. (Harley 2014)
- **Cross-linguistic implications:** Future directions of our work could include transferring our experiment to a cross linguistic context, in order to see if cognitive processes involved in the storage and representation of English compounds are generalizable across languages.

SUMMARY

- In this experiment we aimed to study the nature of compound words and hoped to shed light on the issue of how they are stored and processed in the mental lexicon.
- More specifically, our main objective was to uncover whether compounds are stored separately or as a whole lexical unit and whether transparency underlies this process in representation and access.
- Our results will provide an interesting context in the FLH and Decomposition debate.

Questions are still open to the debate concerning compound word storage and access, and the results from this experiment could provide a significant perspective, particularly in the support from our results of opposing theoretical models.

REFERENCES

- Libben, G. et al (2006) The Representation and Processing of Compound Words, Oxford University Press: New York
- Harley, T. (2014) The Psychology of Language: From Data to Theory, Routledge: Oxford
- Juhasz, B. J., et al. (2003) 'The Effects of Morphology on the Processing of Compound Words: Evidence from Naming, Lexical Decisions and Eye Fixations' in *British Journal of Psychology*, 94, pp. 223-244