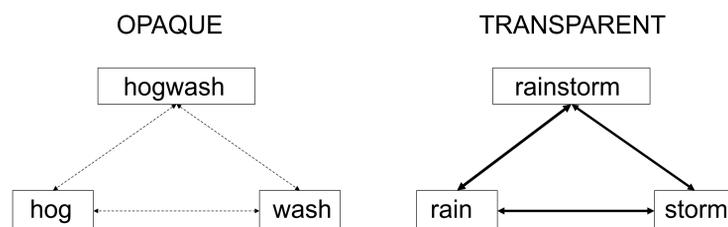


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Background

English noun-noun compounds vary in degree to which the meanings of the compound is predictable from the meaning of their constituents.



THE EFFECT OF SEMANTIC TRANSPARENCY

Eye-tracking studies report shorter gaze durations for transparent complex words [1-2] but results are mixed [3-4].

Facilitative effects at odds with theory of naïve discriminative reading [5]. Transparent compounds cue orthographic strings that are more likely to be used in similar lexical environments. Thus more transparent compounds require more effortful discrimination between meanings, which leads to slower processing.

WHAT ABOUT INDIVIDUAL DIFFERENCES?

Naïve discriminative learning (NDL) [5] predicts that meaning discrimination becomes easier with more experience.

RESEARCH AIMS

Goal a: Does reading experience modulate effects of semantic transparency?

Diagnostic a: Interactions between semantic transparency and measures of individual differences in *reading experience*.

Goal b: Reading is a multifaceted skill: are other component skills of reading associated with semantic transparency effects?

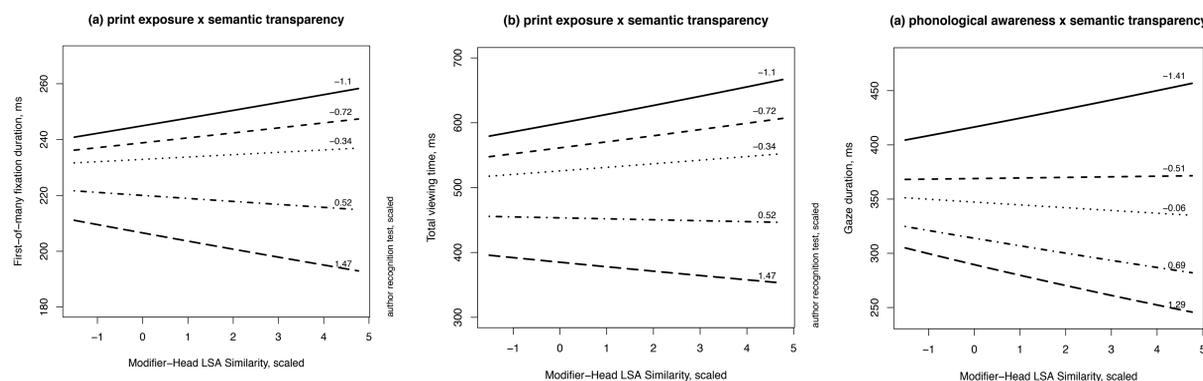
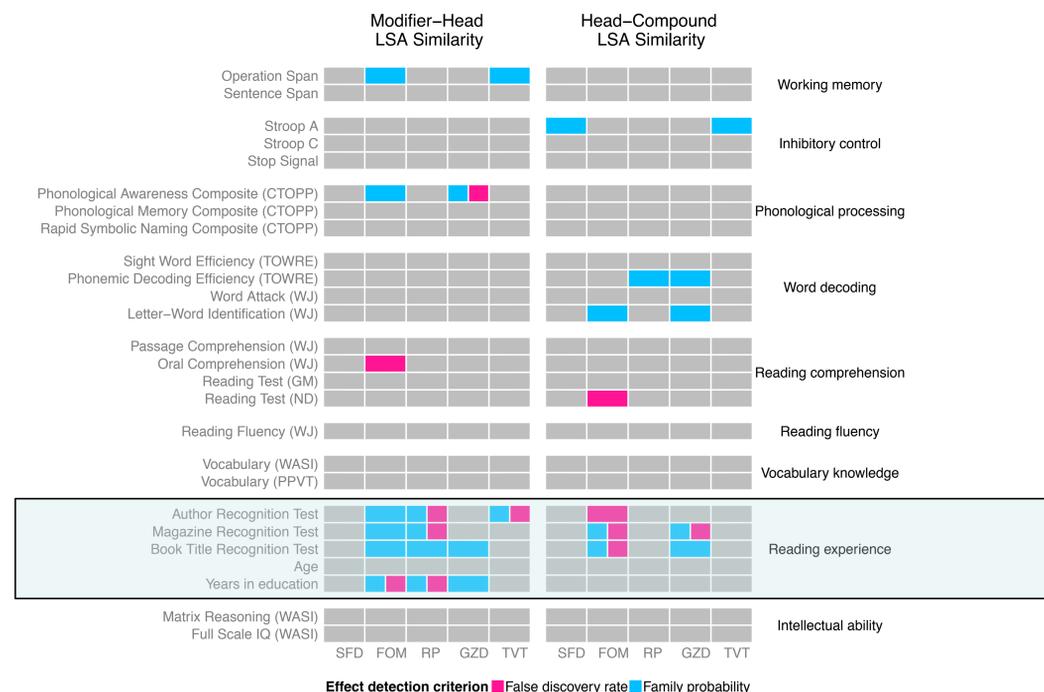
Diagnostic b: Interactions between semantic transparency and measures of individual differences in *working memory, inhibitory control, phonological processing, word decoding, reading comprehension, fluency, vocabulary knowledge* and *IQ*.

HYPOTHESES

- For highly transparent compounds, more reading experience leads to better discrimination skills between competing semantics of constituents and full-forms.
- For highly transparent compounds, less reading experience imposes more cognitive load on discriminating between competing semantics of constituents and full-forms.

Methods

- Silent sentence reading for comprehension, while eye-movements were tracked with EyeLink 1000.
- Participants: 138 participants (74 females; age range 16-26) from non-college bound community.
- Administered battery of 26 test of verbal and non-verbal skills associated with reading proficiency.
- Stimuli: 500 compounds embedded within context neutral sentences.
- Semantic transparency gauged using Latent Semantic Analysis (LSA) [6] for 3 semantic relations: Modifier-Head (car-wash), Head-Compound (wash-carwash), and Modifier-Compound (car-carwash).



Results and Discussion

Maximal differences between reading experience (and other tests) found in processing patterns of highly transparent compound words.

- Less experienced readers are slower when processing semantically transparent compounds (e.g., *houseplant*).
- More experienced readers are faster when processing semantically transparent compounds and relatively slower at processing opaque compounds.

Reading experience is most associated with semantic transparency of Modifier-Head (car-wash) and Head-Compound (wash-carwash) semantic relations.

Effects occur relatively early (FOM; RP; GZD) but also later (TVT) in the eye-movement record.

Conclusions

- Skilled readers are able to better discriminate between closely related meanings and thus are able to process transparent compounds more quickly.
- Poor readers hindered by greater semantic relations and thus are slower at processing transparent compounds relative to opaque compounds.
- Role of structure varies from **interference** to **aid** depending on:
 - individual semantic composition of the word.
 - individual reading experience.

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