

The effects of contextual diversity on lexical processing: A scoping review

Rebecca Norman, Jenifer M. Rodd, J.S.H. Taylor

University College London



Background

Diversity is thought to be an organising principle of the lexicon

Defined differently over time:

- Adelman et al. (2006): number of documents in which a word appears
- Jones et al. (2012), Hoffman et al. (2013): degree of semantic overlap between the contexts in which a word appears

Impacts both word form and meaning processing (Hoffman & Woollams, 2015)

No current synthesis of the findings

Aim: review how different measures of diversity influence lexical processing

Research Questions



1. What different terms have been used to refer to diversity?
2. How has diversity been operationalised across studies?
3. Does diversity benefit word form processing and what factors might modulate this?
4. Does diversity benefit word meaning processing and what factors might modulate this?

Methods: Protocol

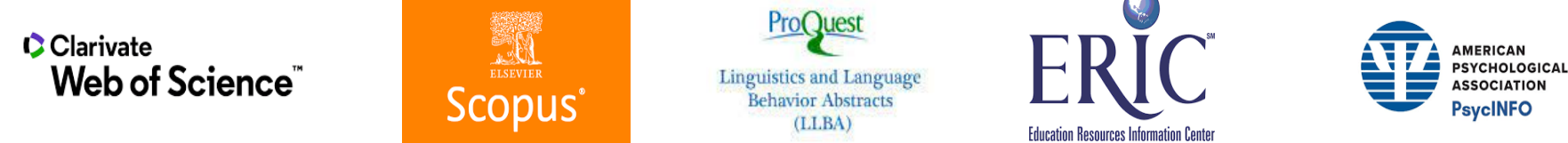


Developed in accordance with JBI and PRISMA guidelines
Preregistered with OSF



Methods: Search strategy

Search Scope	Search Terms
Titles, abstracts, keywords	"contextual diversity" OR "semantic diversity" OR "semantic distinctiveness" OR "document count" OR "context* varia*" OR "semantic varia*" OR "context* informativeness" AND word*

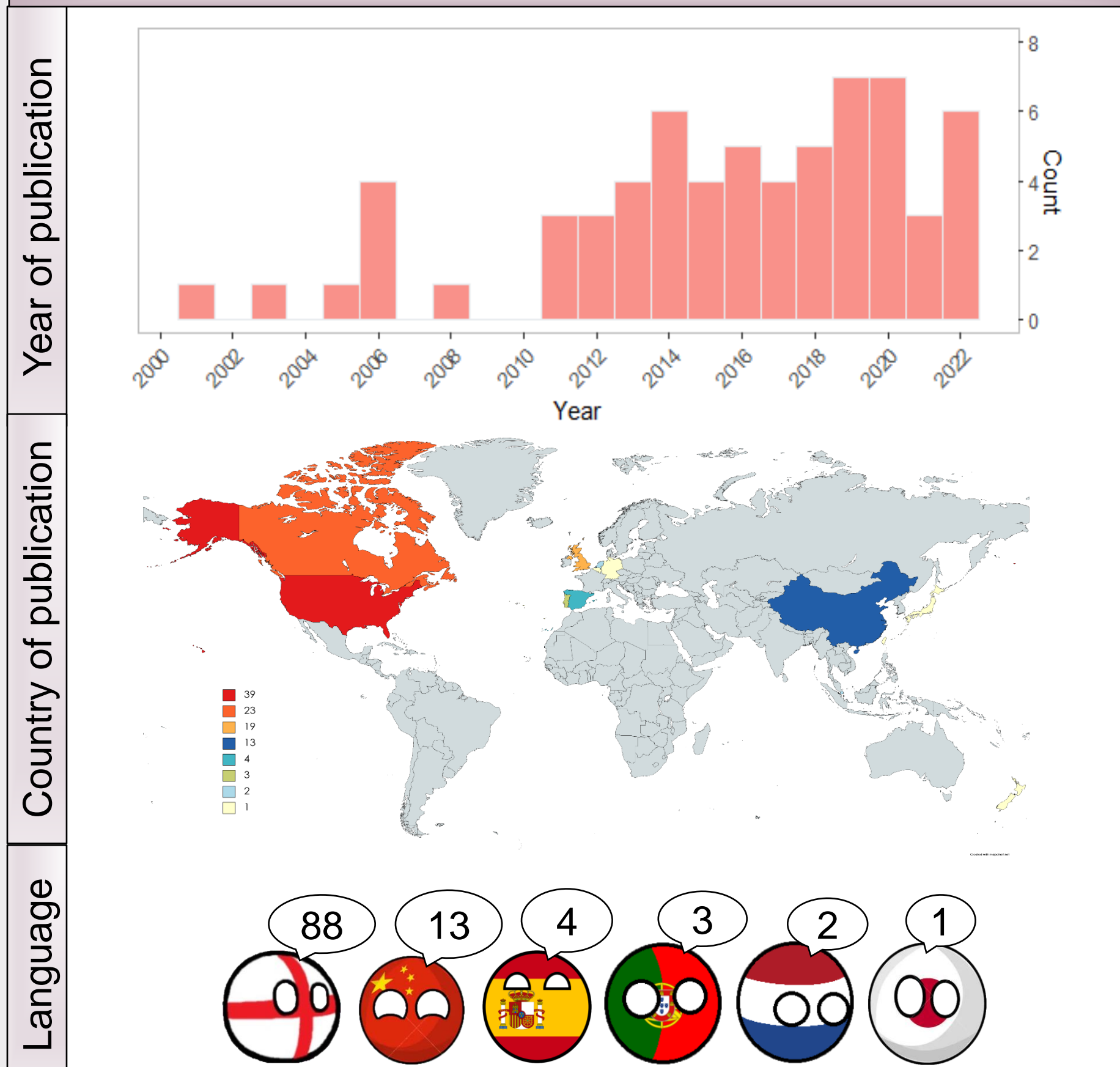


Methods: Inclusion criteria

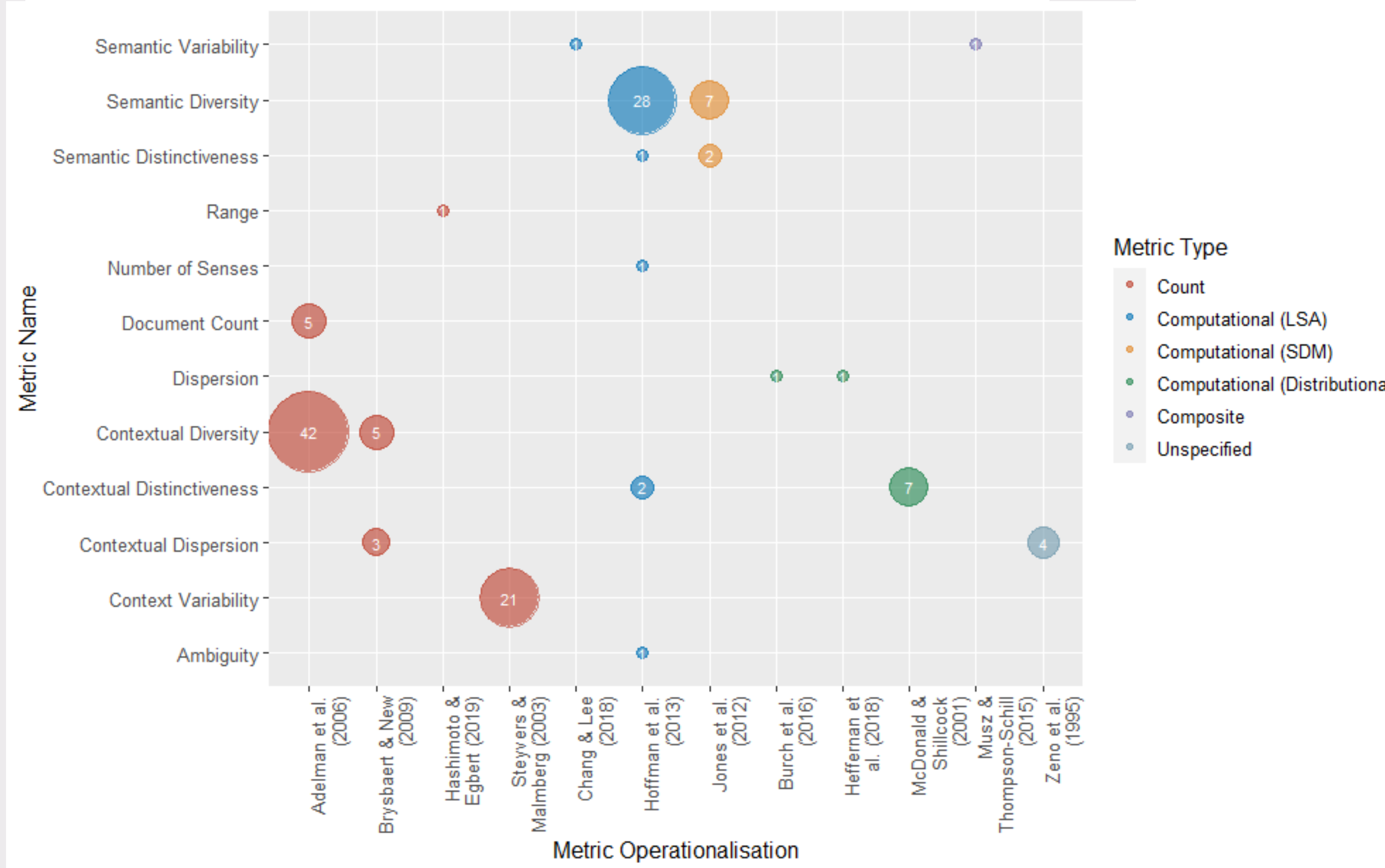
- Include a behavioural outcome measure
- Report how diversity was defined and operationalised
- Report how diversity was manipulated
- Report original findings
- Available in English
- Included in a peer reviewed journal



Results: Evidence characteristics



Results: Operationalisations and terminology



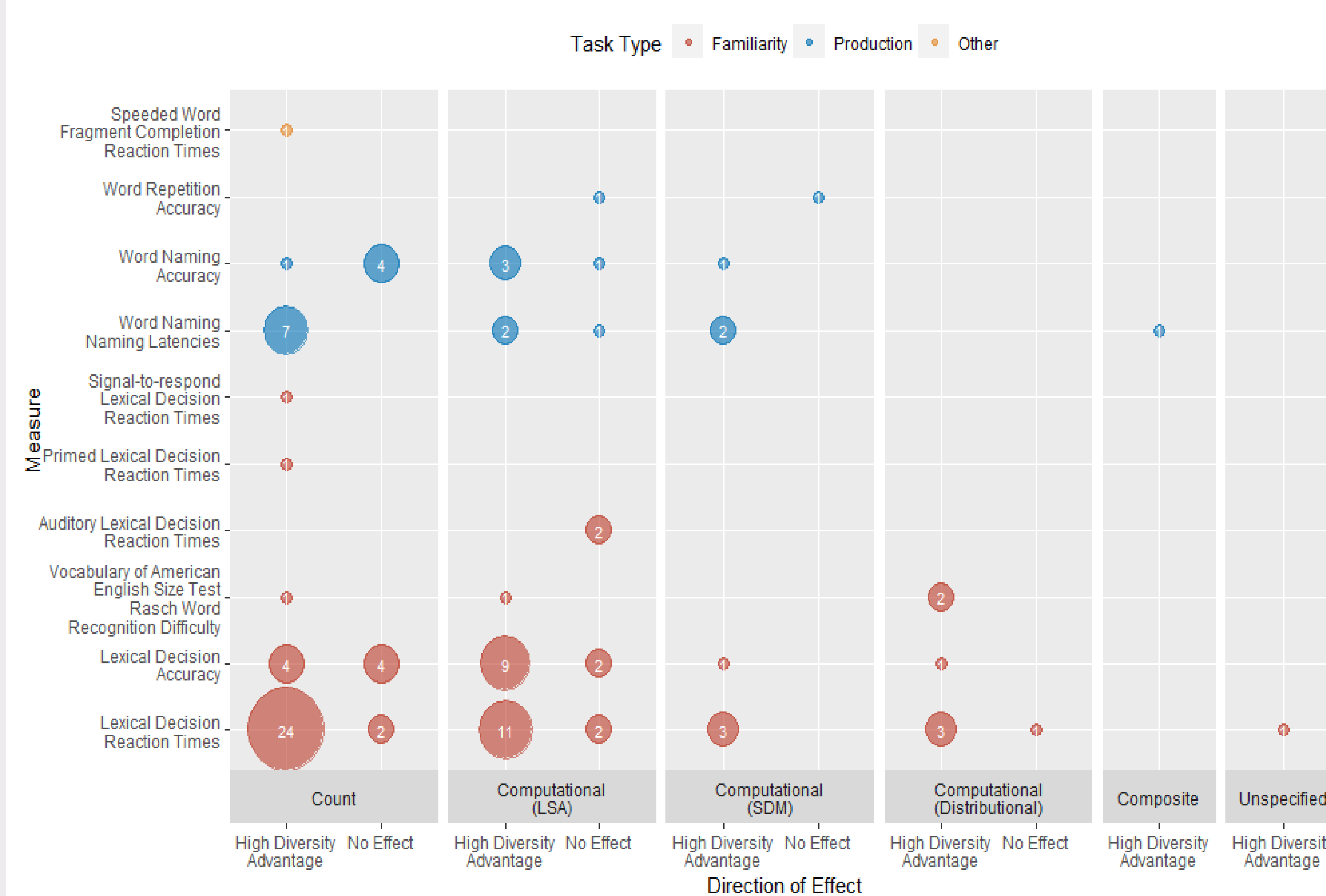
Operationalisations and terminology do not always correspond

Four metric categories:

- Count:** count of unique contexts in which a word appears
- Computational:** level of topic overlap between contexts in which a word appears assessed via computational procedures (LSA, SDM, Distributional)
- Composite:** combination of one or more metrics
- Unspecified:** exact calculation unretrievable

All metrics use same definition of high (more/more varied contexts) and low (fewer/uniform contexts) diversity

Results: Form processing



Tasks grouped by processes involved

- Familiarity judgement:** consistent high diversity advantage
- Word production:** consistent high diversity advantage
- Other:** high diversity advantage

High diversity benefits word form processing across tasks and operationalisations

Results: Meaning processing



Tasks grouped by processes involved

- Semantic Decision:** high diversity advantage for concrete/abstract decisions for count-based metrics; Low diversity advantage for explicit meaning judgements for LSA-derived metrics
 - Picture Naming:** inconsistent
- Degree of semantic precision required may impact performance



Effects of diversity on word meaning processing are dependent upon task and operationalisation

Conclusions

High diversity facilitates form processing regardless of operationalisation

Diversity effects on word meaning processing linked to semantic precision required

High count-based diversity facilitates general semantic category judgement - increases general accessibility of a word (e.g., Adelman et al., 2006; Jones et al., 2012)

High LSA-derived diversity impairs tasks requiring precise word meaning selection- experiencing words in diverse semantic contexts leads to variable representations (e.g., Hoffman & Woollams, 2015)