



# Ambiguity in Object Naming and Lexical Categorization for English Monolinguals

Gabrielle Ma & Benjamin Zinszer  
Department of Psychology



## Introduction

### Malt et al. (1999)

- Asked English, Spanish, and Mandarin speakers to name and sort images of household containers
- Distinguishing between concepts and words
  - **Object naming:** low correlation between languages in how objects were grouped
  - **Sorting:** high correlation between languages
- Small difference between language in organization of concepts
  - Recognition of properties, then connect objects to the word (name)

→ *Translations of objects names aren't equivalent between languages, even if categorization is similar*

### Malt (2019)

- Distinguished psychological difference between **word meaning** and **general purpose knowledge**
  - Thoughts and non-linguistic understanding of objects is consistent
- *Word choice is what varies in context and languages while semantic knowledge is preserved*

### Hebart et al. (2019)

- THINGS image database created to represent many **object concepts**
    - Asked participants to name category
  - BUT images *selected* for fit to **dominant names** and study does not consider word meaning or other possible underlying concepts within category
- *Database is inaccurate representation of the ambiguity in real world when naming objects and does not generalize to other languages*

**\* Previous studies of word production relied on dominant names and distributions to understand naming disagreements and category judgements**

**\* Present study looks at lexical semantic variation to uncover cognitive underpinnings of word production with realistic levels of uncertainty**

**Question:** How does language influence the categorization of objects into named groups?

- Are measures of category/name ambiguity reliable for objects in English?
- How does typicality and familiarity of object play a role in lexical categorization?

## Method

### Current Participants

- 27 English monolinguals
  - 33% women, 67% men
  - Age 28-51 years (mean: 35y)
- Amazon Mechanical Turk
- compensated \$2 for 12 min survey

### Old (2013) Dataset

- 20 English monolinguals @ Penn State Univ. (mean age: 19.4 y, 2/18 M/F)
- 24 Mandarin monolinguals @ South China Normal Univ. (21.0 y, 6/18 M/F)

### Image Set

- Object images from a 2013 study of translation ambiguity (407 images)
- vehicles, clothing, dishes, tools, furniture
- 150 images in current study selected for:
  - **differing norms** between groups (2013)
  - a wide range of name ambiguities

### Survey

1. Language History questionnaire
  - Language exposure
  - Language proficiencies
  - Age, gender, residence
2. 150 images:
  - “What is this?”
  - “How typical is this example of a \_\_\_\_?”

What is this?

Type your one word response:

couch

Don't know

Prefer not to answer / Skip

How typical is this example of a couch?

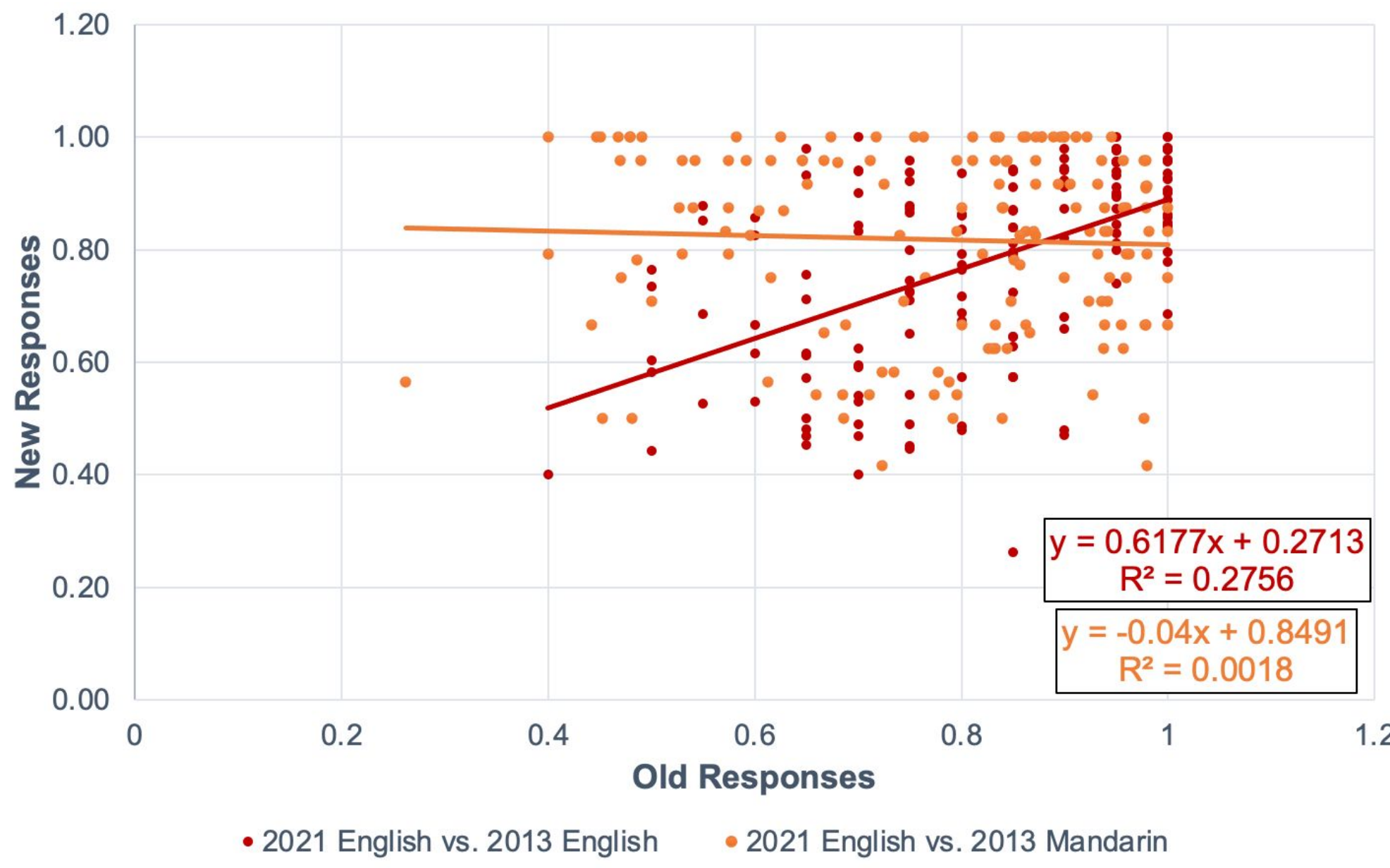
Very Atypical 1 2 3 4 Very Typical

## Results

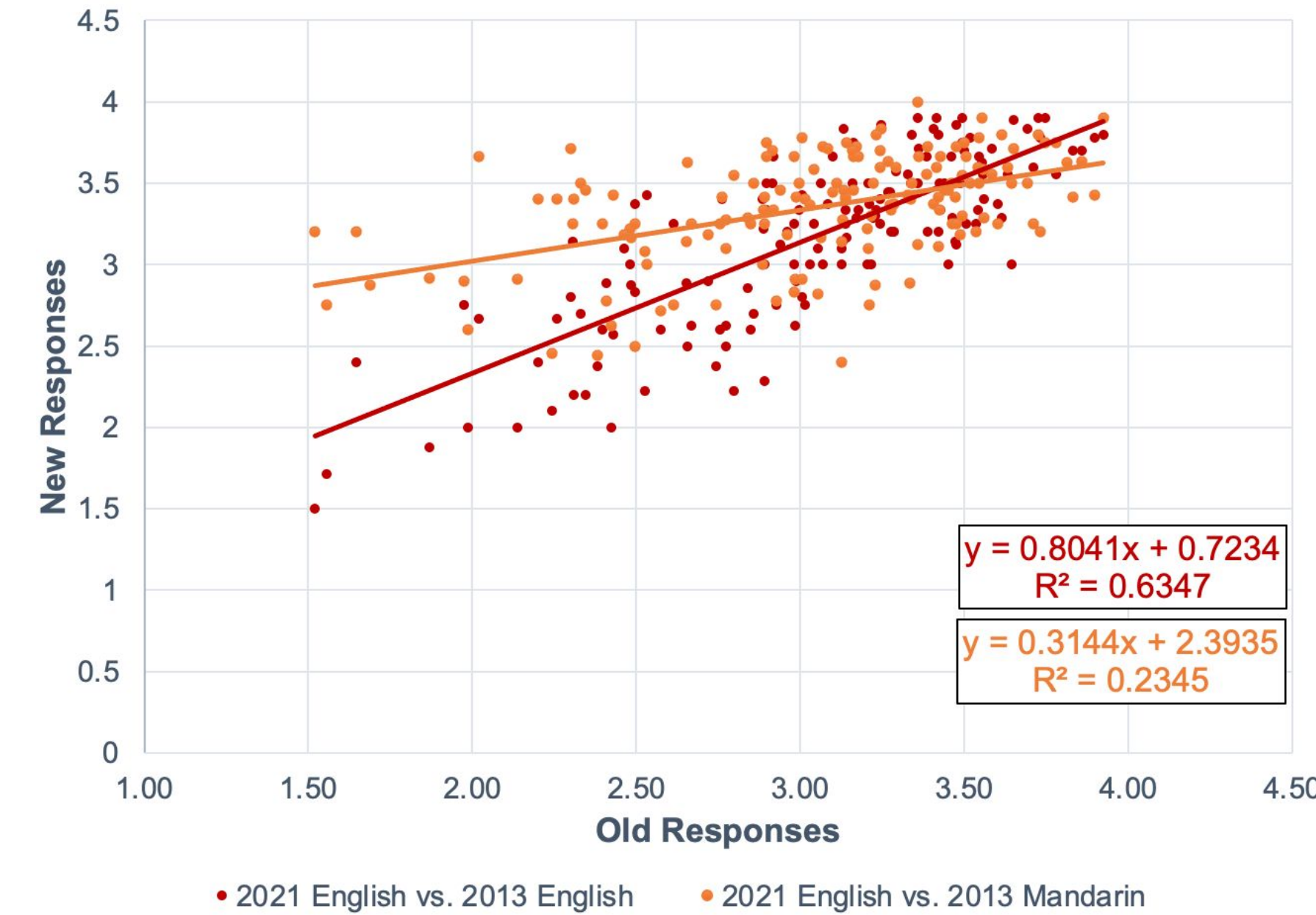
- 91% of images had the same dominant names in 2021 as 2013
- Wide range in naming agreement (40-100%) and typicality ratings (1.5-4) in new data
- **Average typicality:** typicality ratings across all participants in the sample
- **Conditional typicality:** typicality ratings across only participants who responded with dominant name for that object
- Low correlation between conditional typicality and average typicality for 2021 sample was ( $r=0.19$ ,  $p=0.02$ )

	2021 vs. 2013 English Monolinguals		2021 vs. 2013 Mandarin Monolinguals	
	Correlation	P-value	Correlation	P-value
Name Agreement	0.52	<0.001	-0.04	0.605
# Unique Names	0.43	<0.001	0.20	0.015
Conditional Typicality	0.80	<0.001	0.48	<0.001

**Naming Agreement for 2021 English vs. 2013 English Monolingual and Mandarin Monolingual Responses**



**Conditional Typicality for 2021 English vs. 2013 English Monolingual and Mandarin Monolingual**



## Discussion

### Current English Monolinguals vs. Previous Sample English Monolinguals

- Dominant names for the images are consistent over 8 years and different types of English-speaker samples
- New norms are reliable representations of English monolinguals' categories with *wide range* of ambiguity

### Current English Monolinguals vs. Previous Sample Mandarin Monolinguals

- Varying object and lexical representations in Mandarin and English monolinguals' object categories shown by low correlations between naming agreement and typicality
- Consistent with literature that naming varies more between languages than concepts do (Malt et al., 1999; Malt, 2019)

### Current English Monolinguals

- The differing typicalities (conditional and average) demonstrate how typicality of the object for given name is not the only property of object, but depends on name given by participant
- Image set is accurate representation of ambiguous real-life scenarios
- Reveals the presence of ambiguity influence on naming that was not studied in Hebart et al. (2019)

### Future directions

- Studying Mandarin English bilinguals and Mandarin monolinguals can explain how first language category knowledge influences naming objects in new language

### Conclusion

The measures of ambiguity and naming difficulty studied are reliable properties of a language that varied between languages and reflected real-life situations.

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### References

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