Proper Name Retrieval Across the Lifespan: The Impact of Semantic and Phonology Availability

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Introduction

- Normal aging increases word finding failures called Tip of the Tongue States (**TOTs**)
  - **Proper names** are particularly vulnerable
- Phonological Retrieval Deficit *(Burke et al., 1991)*:
  - locus of TOTs is **accessing phonology** not semantics
  - accessing phonology **weakens with age**, leading to more TOTs
- **Aim of current study**: relate TOTs across the lifespan to individual differences in phonological and semantic access during object naming

Predictions

If age weakens phonological access:

1. TOT rate related to **phonological** rather than semantic availability in object naming
2. TOT rate related to **performance** during object naming
3. Phonological availability more important for **older adults**' performance

Phonological and Semantic Availability

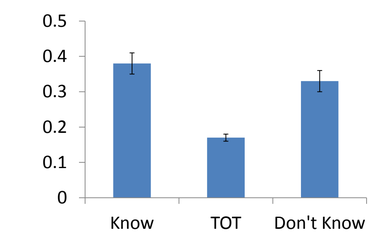
Phonological and semantic availability: **lexical environment** and **priming**

	Lexical environment		Priming	
	Phonological	**Semantic**	**Phonological**	**Semantic**
Variable	Phonological neighborhood	Number of features	Phonological relatedness	Semantic relatedness
Variable effect	Production easier for words in higher density neighborhoods	Production easier for objects with more semantic features	Naming faster with higher phonological overlap between prime-target	Naming slower with higher semantic overlap between prime-target
Variable measure	Correlation of neighborhood size with response time for each subject	Correlation of number of features with response time for each subject	Comparison of naming time for unprimed vs. primed in low vs. high overlap	Comparison of naming time for unprimed vs. primed in low vs. high overlap
Predicted effect on TOTs	Fewer TOTs with increased sensitivity	No effect	Fewer TOTs with increased facilitation	No effect

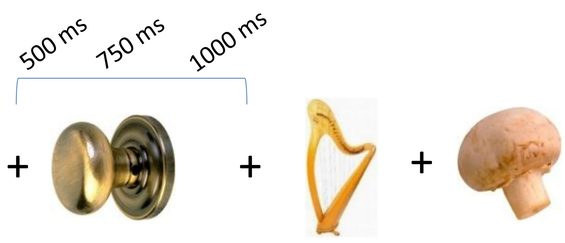
Method

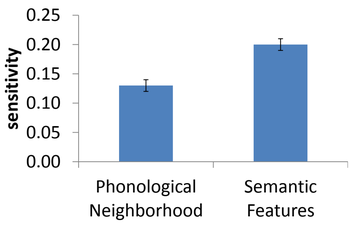
1. Participants: 51 adults aged 18-79 (M=45)

2. TOT task: naming 50 pictures of public figures



3. Unprimed naming: naming 200 objects

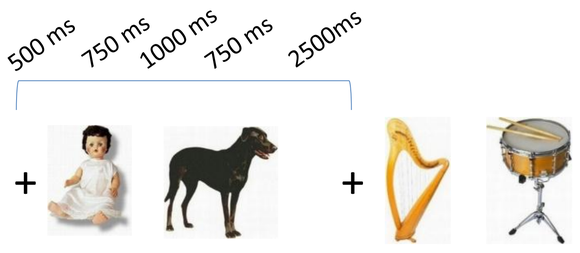


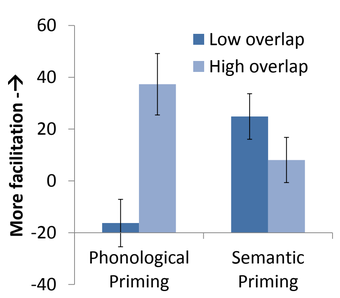


Unprimed naming times faster for pictures with high number of neighbors or high number of semantic features

	correct	semantic error	omission
Mean	.79	.08	.04
SE	*.02*	*.01*	*.01*

4. Primed naming: name targets for 100 prime-target pairs





More facilitation with higher phonological overlap

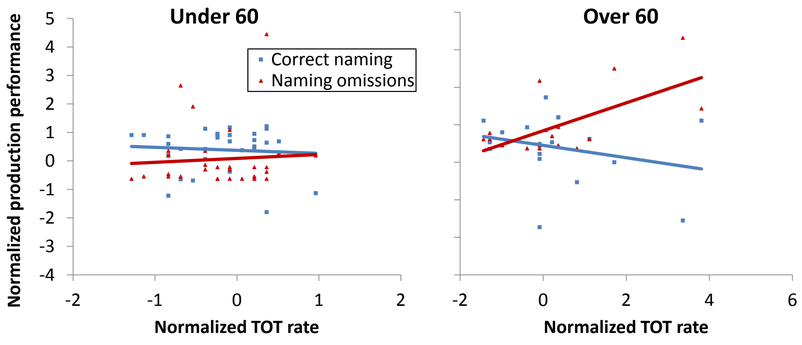
Less facilitation with higher semantic overlap

Results

1. Correlation of Age, TOT & object naming

	TOTs	Correct	Semantic errors	Omissions	Phon. Sensitivity	Sem. Sensitivity	Phon. Priming	Sem. Priming
Age	.34*	-.57**	.43**	-0.01	0.05	-0.11	-0.13	0.13
TOTs	.	-.28*	0.1	.29*	0.04	-0.12	0.01	0.11

TOTs and object naming



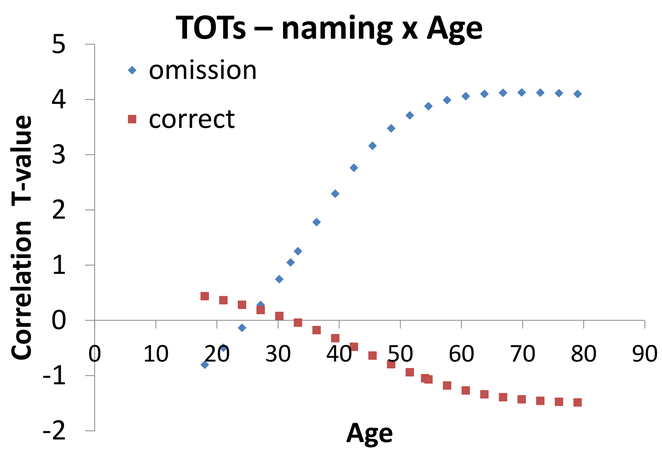
TOTs increase with age

TOTs related to accuracy on object naming task

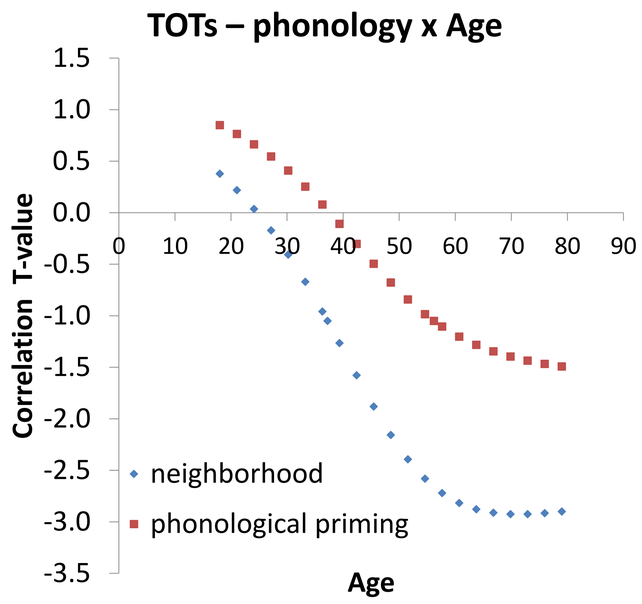
TOT-accuracy stronger over age 60

2. Age moderation: TOTs and object naming

TOTs more strongly related to object naming omissions with increasing age



3. Age moderator: TOTs and phonological availability



TOTs related more to phonological than semantic availability (semantic relationships ns)

Phonological availability impacts older more than younger adults

Conclusions

- Supports model of TOTs as probabilistic failure of phonological access
  - TOTs differentially related to phonological than semantic availability
  - TOTs related to object naming accuracy, particularly omission errors
- Support for model of aging: weakening phonological access
  - Age strengthens relationship of TOTs to phonological availability and omission errors

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