

The Effect of Different Types of Semantic Cues
on Word Retrieval Success in Tip-of-the-Tongue States

Elizaveta Sokolenko & Svetlana Malyutina

National Research University Higher School of Economics, Moscow, Russia

Tip-of-the-tongue (ToT) state

A person has a strong feeling that (s)he knows a word but at the moment it cannot be retrieved.



Why do ToT states occur?

Blocking theory

Jones (1989), Jones & Langford (1987)

- Words with similar sounds and meanings **compete for activation** with the target word
- Changing retrieval conditions can help to resolve the ToT state

Partial activation theory

Meyer & Bock (1992)

- The retrieved word has more activation than its competitors
- ToT state occurs due to **incomplete activation** of the target word
- Additional information about the target word can help to retrieve it

Our study

Gap in previous research:

Many studies investigated the efficacy of cues in **resolving** ToT states, but **none of them compared** different types of semantic cues.

Our research question:

What **specific type of semantic cues** is more effective for resolving the TOT state?

- Cohyponyms vs. associations



Hypotheses

- Semantic cues would **help** rather than interfere with retrieving the target word in ToT states (Partial activation theory)
- Cohyponym cues would strongly **compete** with the target word and interfere with its activation (Blocking theory)
=> **Association cues** should be more effective in resolving ToT states

Stimuli

102 target words

- Low-frequency Russian words
- 49 abstract and 53 concrete

For each word:

- Definition (vocabularies, websites)
- Cohyponym cue (section “Related words” in RuSkELL)
- Association cue (semantic distance = 0.3-0.6, measured with RusVectores)

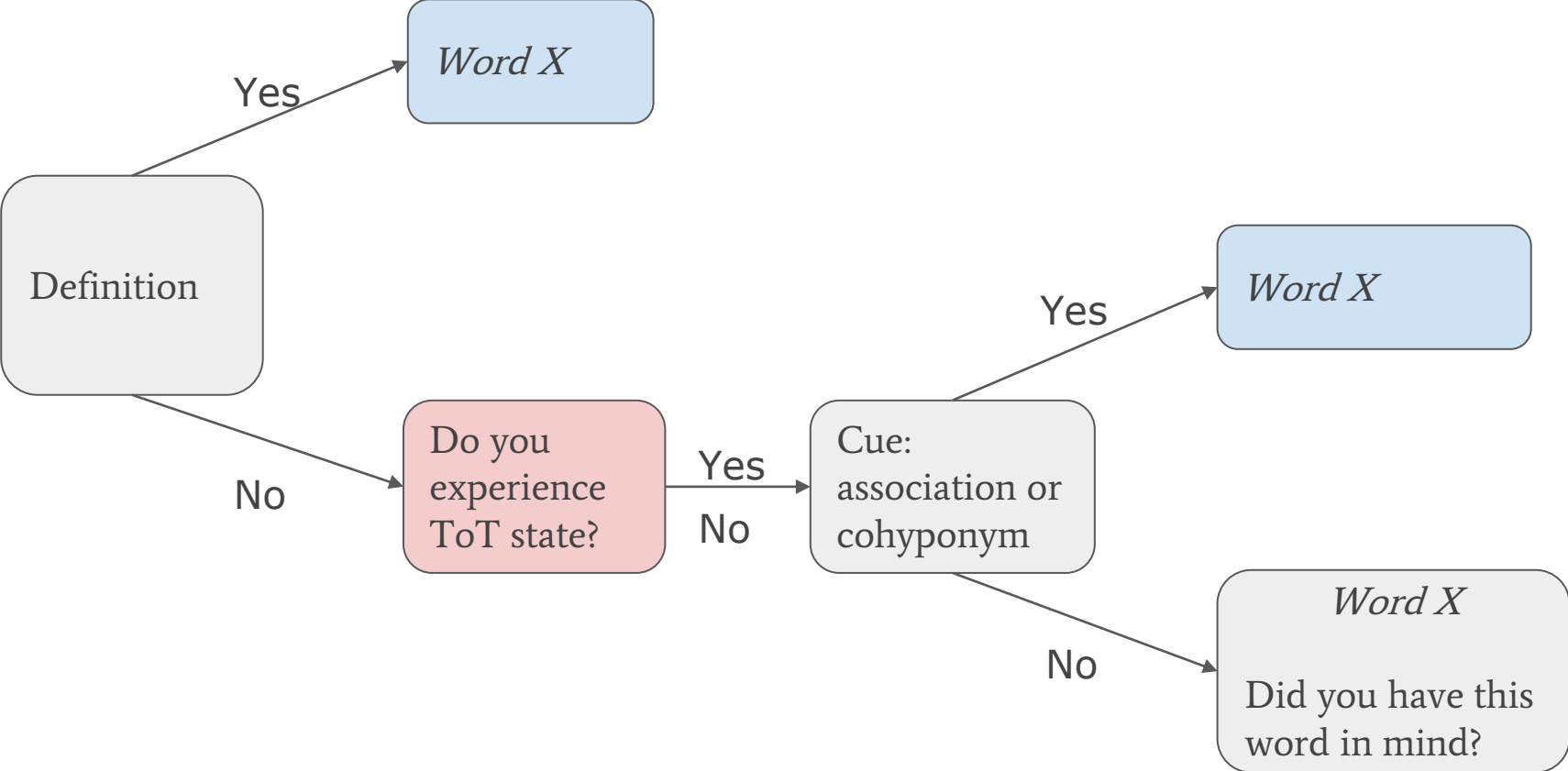
Stimuli - Examples

Target word	Definition	Co-hyponym cue	Association cue
Протее	Лицо, пользующееся чьим-нибудь покровительством или рекомендацией при устройстве своих дел, служебной карьеры.	Фаворит	Опека
Ультрамарин	Классический синий цвет, имеющий высокую насыщенность.	Охра	Море
Сомелье	Работник ресторана, ответственный за приобретение, хранение вин и представление их клиенту.	Бармен	Дегустация
Деликатес	Редкое, незаурядное, отличающееся от обычных распространенных продуктов вкусное, изысканное кушанье.	Десерт	Устрица

Participants & Procedure

- 19 young adults
 - Age: mean 26, range 18-40; 9 male, 10 female
- Experiment conducted online
 - Programmed in PsychoPy, presented online at Pavlovia.org

Design



Results

Before cue presentation:

- 26% correct responses (SD 11%, range 10-54%)
- 17% wrong responses (SD 8%, range 6-30%)
- 56% no response (SD 18%, range 18-81%)
 - Among them **14% ToT state** (SD 12%, range 1-39%)

Results

After cue presentation:

	Cohyponym cues	Association cues
% correct responses	17% (SD 26%, range 0-100%)	18% (SD 20%, range 0-75%)
% wrong responses	14% (SD 20%, range 0-75%)	13% (SD 25%, range 0-100%)
% no response	69% (SD 31%, range 0-100%)	69% (SD 31%, range 0-100%)

Results

Analysis of variance:

- Cue Type: $F(1,18) = 0,33, p = 0,57$
 - No difference in efficacy of cohyponym and association cues
- Presence of ToT State: $F(1,18) = 19.8, p < 0,001$
 - **Cues were more effective when the participant experienced a ToT state**
- Cue Type x Presence of ToT state: $F(1,18) = 0,09, p = 0,76$
 - Presence of ToT state did not modulate the relative effect of cue type

Discussion

- Cues were **more effective** if a person **experienced a ToT state** than if (s)he didn't
 - > Cues of these types insufficient to activate the word when a person has no feeling of knowing it
- In general, semantic cues helped to resolve the ToT state rather than interfered with word retrieval
 - > Consistent with the **theory of partial activation**
 - > Practical conclusion:
'When experiencing a ToT state, try to remember any words related in meaning'
- Associations were **not** more effective in resolving the ToT state than cohyponyms (potential competitors)
 - > **No** support for the blocking theory

Limitations & Future Directions

- The **frequency** of ToT state was **less** than expected
 - Less statistical power than expected
 - More trials and/or preliminarily normed stimuli recommended for future research
- Possible confounding **strategies** in the online experiment
 - E.g., some participants opened cues before making any response
- **Other semantic types of cues** may be added in future research
 - E.g., synonyms, hyponyms, collocations

Thank you for your attention!



References

- Даль, В.И. Толковый словарь русского языка / В. И. Даль. - М.: АСТ, 2018. - 736 с.
- Клайман В.О., Федорова А. И., Шмони́на О.Д, Четвериков А.А. Чувство на-кончике-языка и имплицитная детекция ошибок // Вестник ЯрГУ. Серия Гуманитарные науки (в печати). 2014.
- Ляшевская О. Н., Шаров С. А. Частотный словарь современного русского языка (на материалах Национального корпуса русского языка). М.: Азбуковник, 2009.
- Ожегов С. И., Шведова Н. Ю. Толковый словарь русского языка: 80 000 слов и фразеологических выражений. — 4-е изд., М.: Высшая школа, 1993. — 944 с.
- Apresjan, Valentina, Vít Baisa, Olga Buivolova and Olga Kultepina. RuSkELL: Online Language Learning Tool for Russian Language. In Tinatin Margalitadze, George Meladze. Proceedings of the XVII Euralex International congress. Tbilisi: Ivane Javakhishvili Tbilisi State University, 2016. s. 292–299, 8 s. ISBN 978-9941-13-542-2.
- Brown, R., " McNeill, D. (1966). The "tip of the tongue" phenomenon. Journal of Verbal Learning & Verbal Behavior, 5, 325-337.
- Dunlosky, J., & Metcalfe, J. (2009). Metacognition. Thousand Oaks, CA: Sage.
- Jones, G. V. (1989). Back to Woodworth: Role of interlopers in the tip-of-the-tongue phenomenon. Memory & Cognition, 17, 69-76.
- Jones, G. V., Langford, S. (1987). Phonological blocking in the tip of the tongue state. Cognition, 26, 115-122.
- Meyer, A. S. & Bock, K. (1992). The tip of the tongue phenomenon: Blocking or partial activation? Memory & Cognition, 20(6), 715-726.
- Peirce, J. W. (2007). PsychoPy - Psychophysics software in Python. Journal of Neuroscience Methods, 162 (1-2):8-13
doi: 10.1016/j.jneumeth.2006.11.017
<https://pavlovia.org>