

Recall predicted by reduction in intensity but not duration: Implications for theories of prominence

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RESEARCH QUESTION

What drives prosodic prominence & reduction?

- Single source theories: repetition¹, predictability², etc.
- Multiple Source Account³: More than one cognitive process

Evidence from scene description tasks⁴:

- **Predictability** mostly affects **intensity**
- **Repetition** mostly affects **duration**

PRESENT STUDY

Test influences on **reduction** through speaker's later **recall**

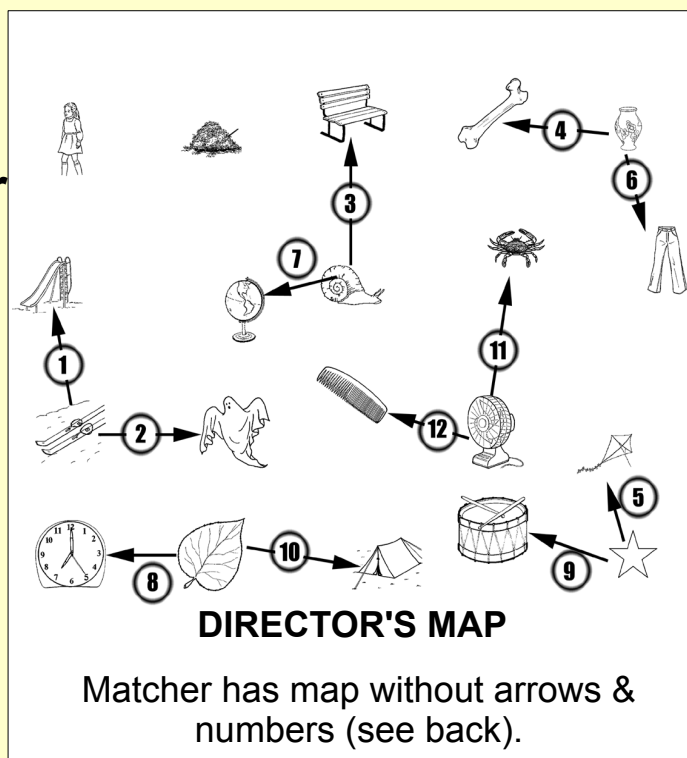
- If **intensity** mostly reflects **explicit discourse representation**, **should** be related to recall
- Distributed practice literature: Later recall better if first presentation not considered at time of second⁵
- If **duration** mostly reflects **implicit production priming**, **should not** predict written recall

TASKS

N = 21 pairs of naïve participants

1 Modified map task

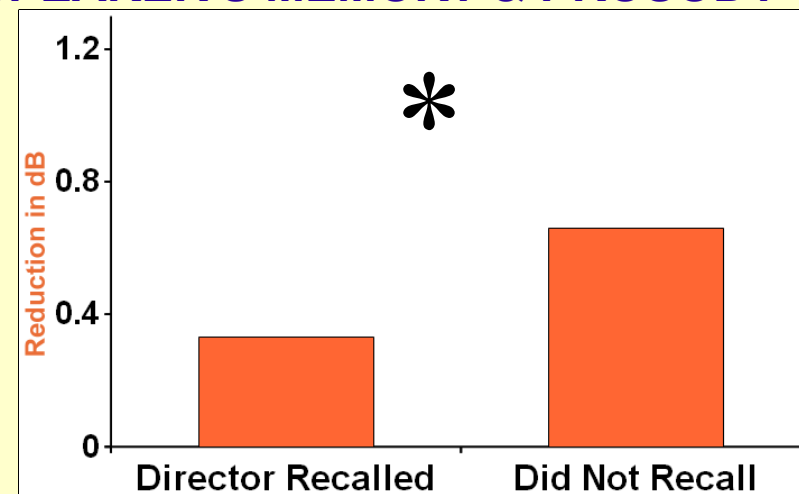
- **Director** (speaker) tells image sequence to **matcher**
- e.g. "Go from the skis to the slide"
- Measure **reduction in prominence** between director's **2 mentions of each target**
- Lag of 0, 1, or 3 instructions between mentions
- 7 maps x 6 targets^{6,7} each



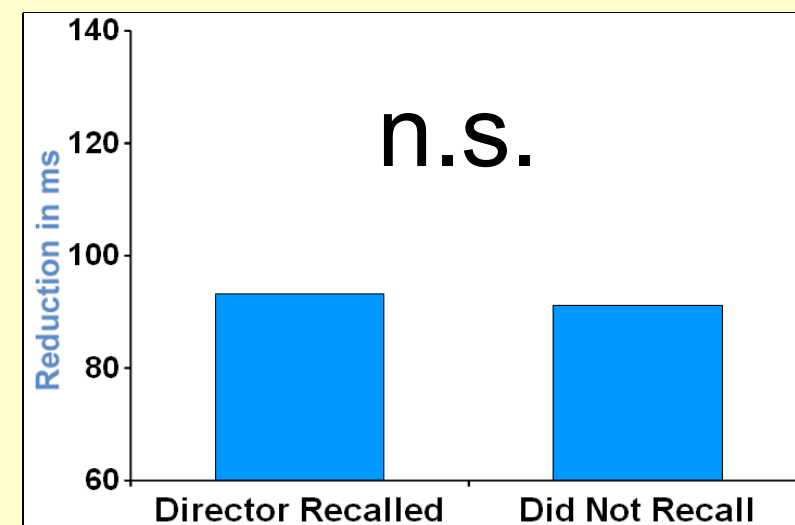
2 Free recall task

- **Director** tries to **recall** items in **writing**

SPEAKER'S MEMORY & PROSODY



Intensity reliably reduced in 2nd mention
Degree of reduction **predicts** recall
($z = -2.06, p < .05$)



Duration also reliably reduced,
but **unrelated** to recall ($z = 0.46, p = .64$)

CONCLUSION

- Reduction in **intensity predicts** recall
- May reflect **discourse representation**
- Reduction in **duration does not**
- May reflect **implicit production priming**

Consistent with multiple source account.

REFERENCES & ACKNOWLEDGMENTS

See back side.

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Additional Information

MULTI-LEVEL MODEL

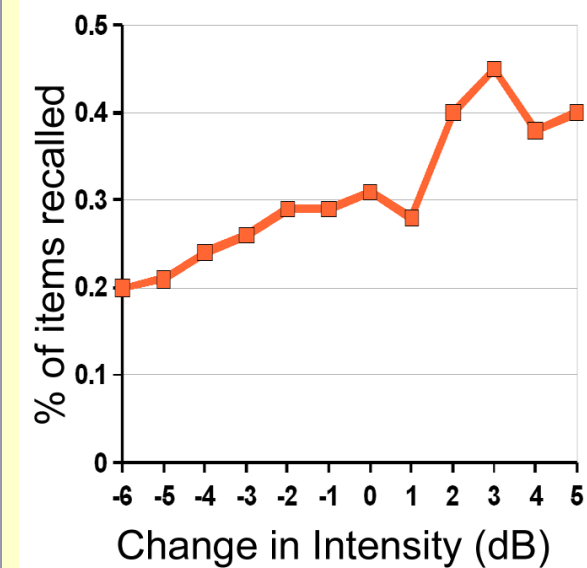
Model log odds probability of correct recall as a function of prosody, lag

Lag is coded as 2 orthogonal contrasts (massed vs. spaced, lag 1 spaced vs. lag 3 spaced)

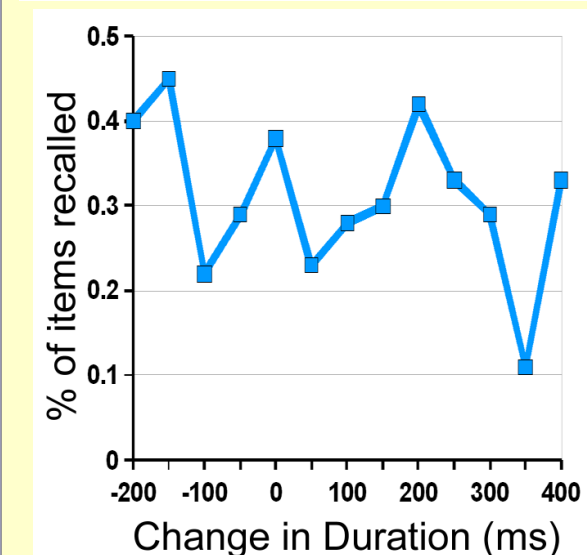
Centered all predictors

FIXED EFFECTS	β	SE	z	p
Intercept	-1.010	0.192	-5.245	< .01
Spaced Lag	0.475	0.260	1.800	.07
Lag 3 vs. Lag 1	0.040	0.210	0.210	.83
Reduction in Intensity	-0.096	0.047	-2.057	.04
Reduction in Duration	0.000	0.007	0.464	.64
Intensity x Spaced	0.159	0.134	1.185	.24
Intensity x Lag 3	0.014	0.111	0.130	.90
Duration x Spaced	-0.003	0.002	-1.550	.12
Duration x Lag 3	0.001	0.001	1.116	.26
RANDOM EFFECTS	σ^2			
Item	0.881			
Subject	0.156			

MEMORY AS A FUNCTION OF PROSODY



Greater **intensity** at 2nd mention reliably predicts speaker's memory.



No systematic relationship between **duration** and speaker's memory.

EXAMPLE OF MATCHER'S MAP

See front side for other task details.



REFERENCES & ACKNOWLEDGMENTS

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 - ⁶ Szekely, A., et al. (2004). *Journal of Memory and Language*, 51, 247-250
 - ⁷ Snodgrass, J. G., & Vanderwart, M. (1980). *Journal of Experimental Psychology*, 6, 174-215
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