

# The utility of vagueness in referring expressions

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# Outline of talk



1. Rationale
2. Experiment 1
3. Experiment 2
4. Interim summary
5. Experiment 3
6. Summary
7. Further work

# A definition of vagueness



Vagueness can be defined as the existence of borderline cases (Keefe & Smith)

- e.g., *tall*

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1. Game theory makes odd predictions for vagueness
2. NLG systems need help in the form of human data

# Vagueness in reference



Our experiments are limited to vagueness in referring expressions

- highly context-dependent
- potential for vagueness is not necessarily realised

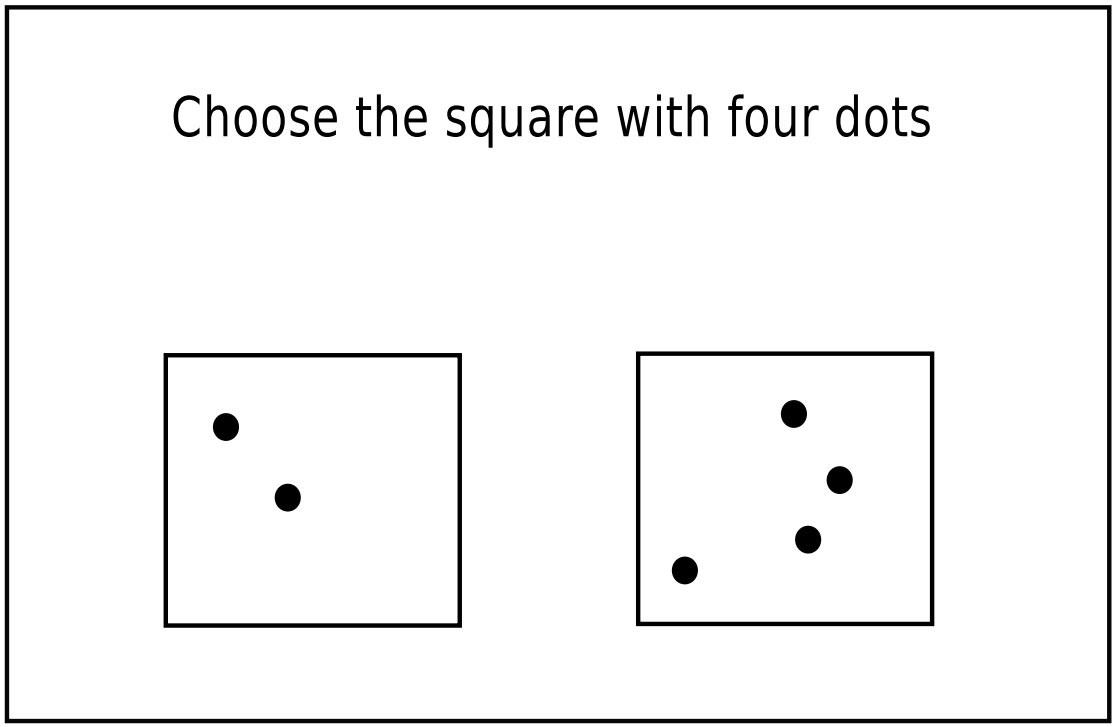
# The cost reduction hypothesis



"For the listener, information which is too specific may require more effort to analyze" (Lipman, 2009)

# Experiment 1





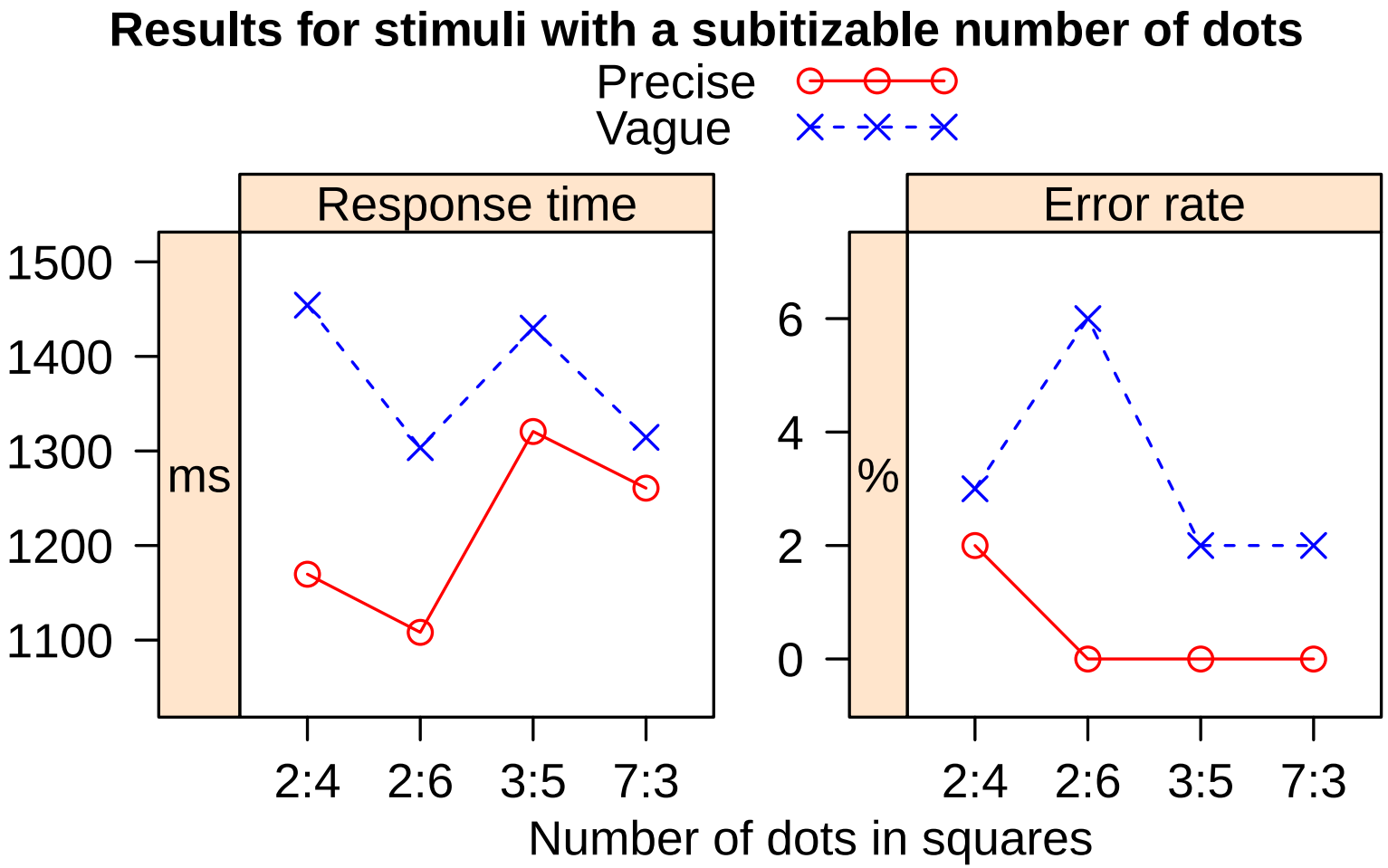
# Experiment one



- Pilot experiment
- $H_0$: *No difference between vague and precise*
- $H_1$: *Some difference between vague and precise*
  *. . . V better than P?*
- Method: forced choice
- DVs: RT, errors
- IVs: Vagueness (Vague, Precise)
- Number combinations: $\{2, 4\}$, $\{2, 6\}$, $\{3, 5\}$, $\{5, 9\}$, $\{6, 8\}$, $\{7, 3\}$, $\{7, 9\}$, $\{8, 4\}$

# Results, experiment one





# Experiment 2

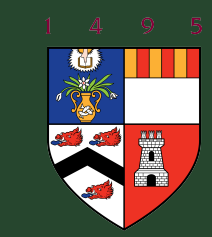


- Avoid subitizable numbers
- $H_0$: *No difference between vague and precise*
- $H_1$: *Vagueness helps when the numbers are bigger, and when the difference between the numbers is greater*
- Number combinations: $\{5, 25\}$ $\{10, 25\}$ $\{15, 25\}$ $\{20, 25\}$ $\{30, 25\}$ $\{35, 25\}$ $\{40, 25\}$

# Instruction first

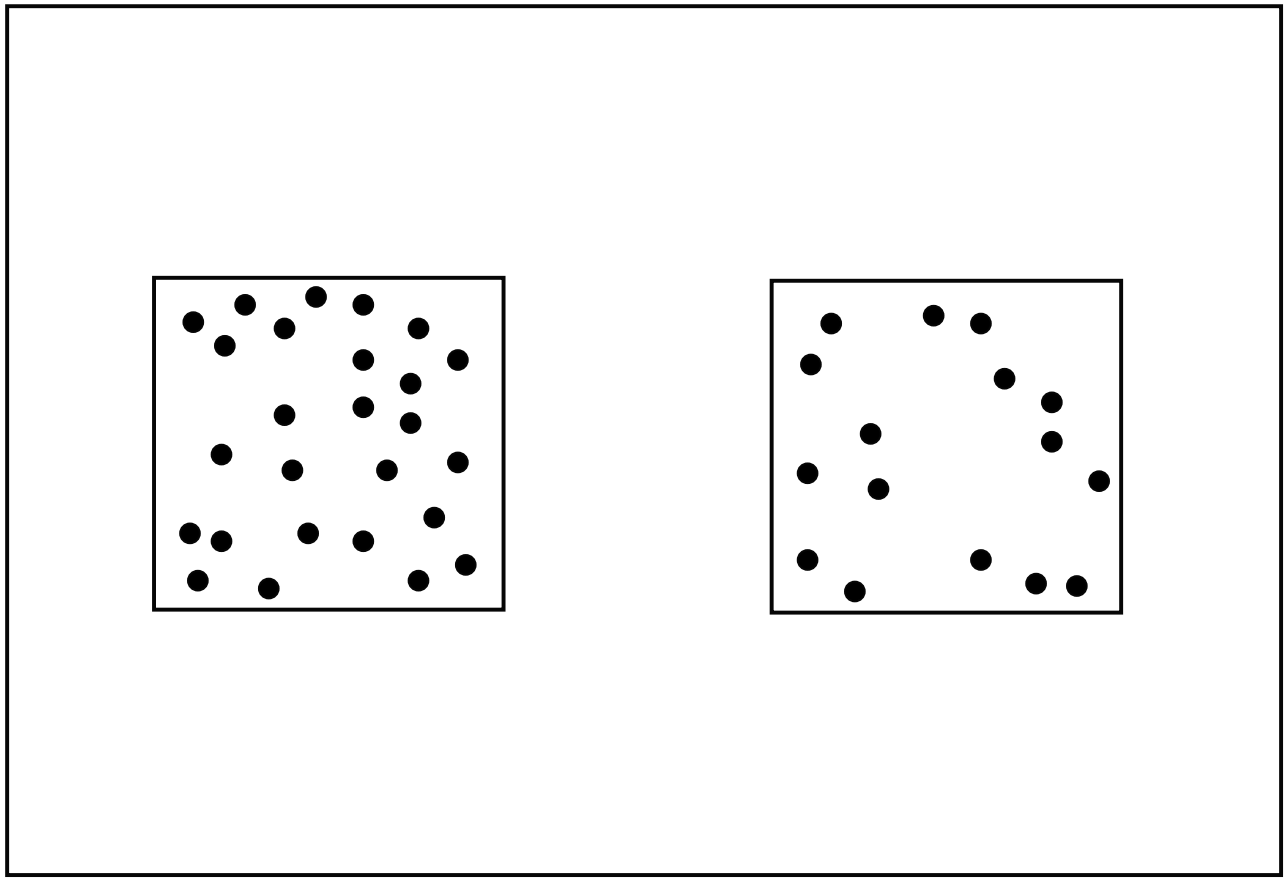


Choose the square with many dots



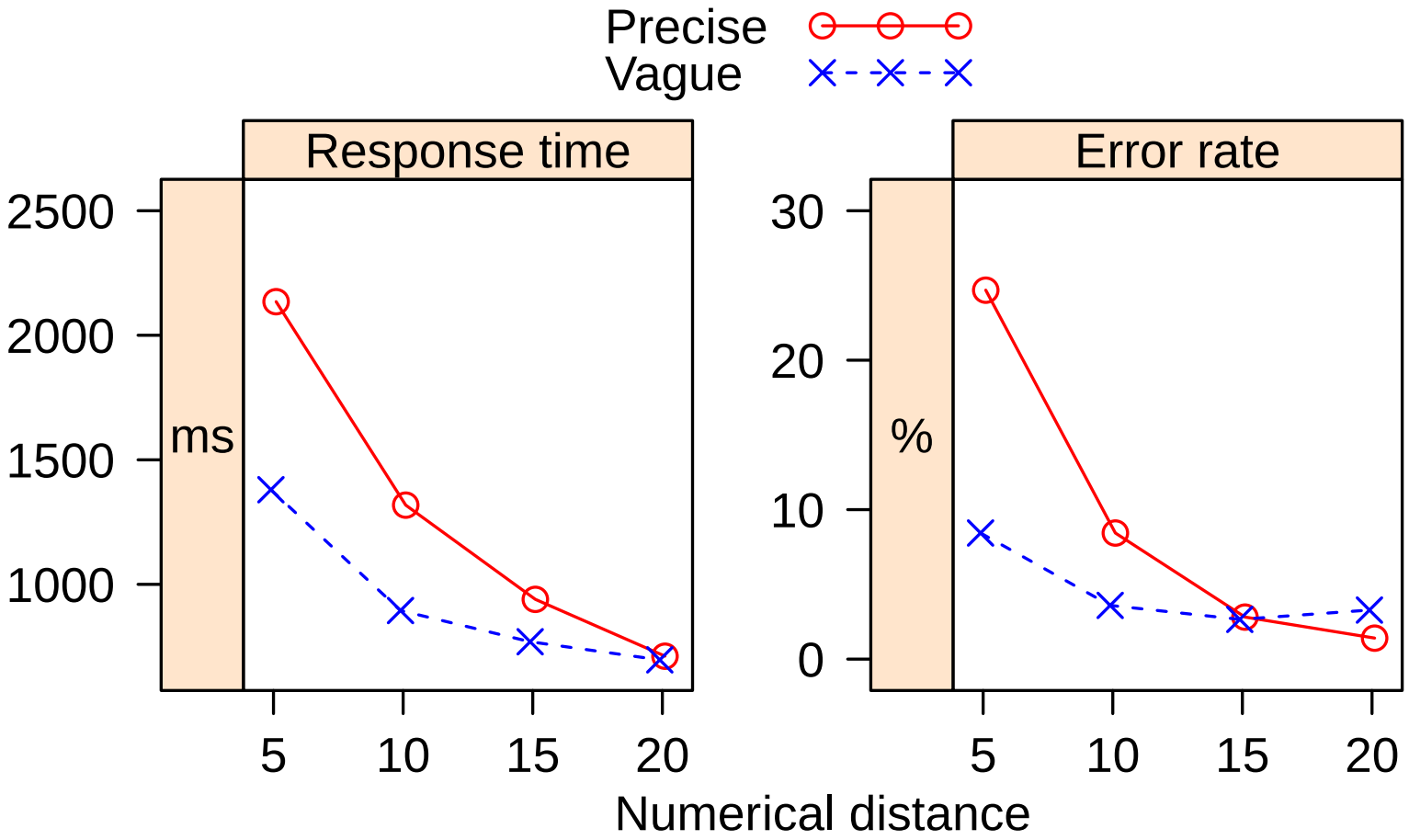
# Stimulus next





# Results, experiment two





# Summary of expt 1 & expt 2



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- Vagueness is worse for very small numbers (expt 1)
- Vagueness is better for larger numbers (expt 2)
- Diminishing returns for vagueness as gap size grows very large (expt 2)

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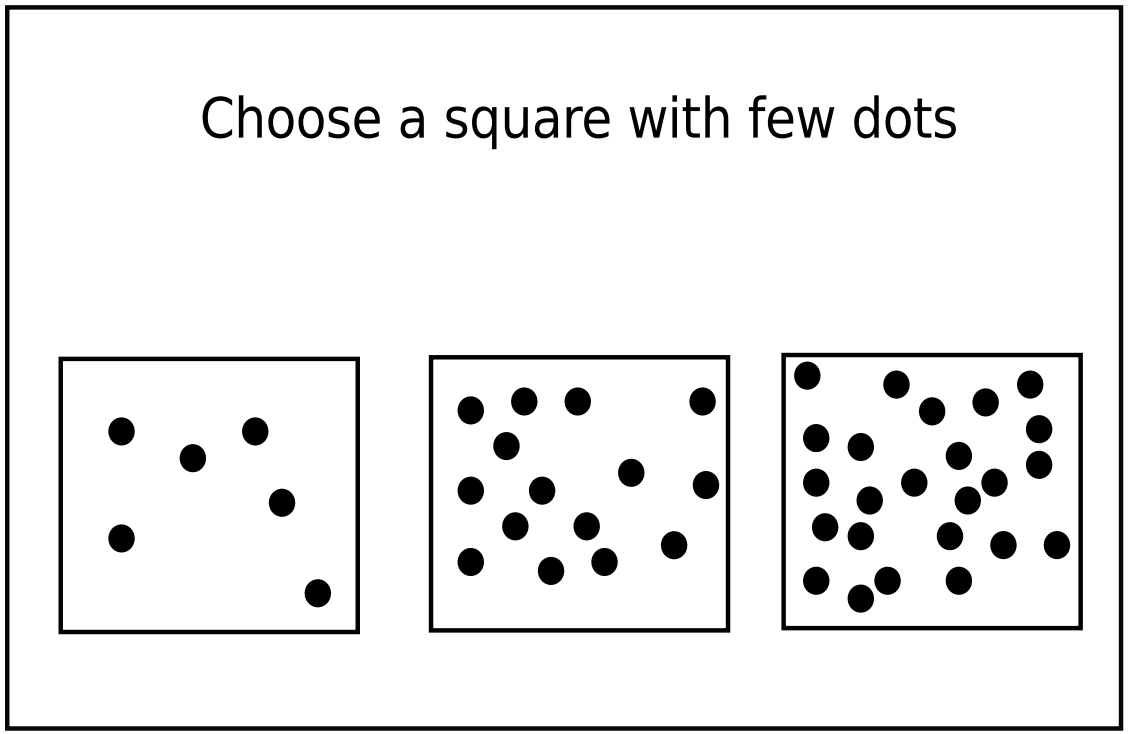
| | Vague | Precise |
|---|---|---|
| Number | {about 20, about 30} | {16, 34} |
| Word | {few, many} | {fewest, most} |

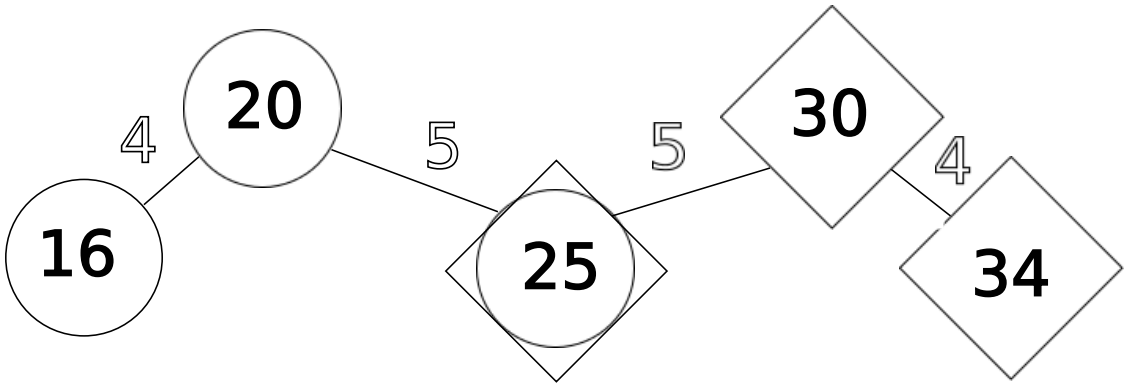
# Stimulus, experiment three





# Operationalising borderline cases



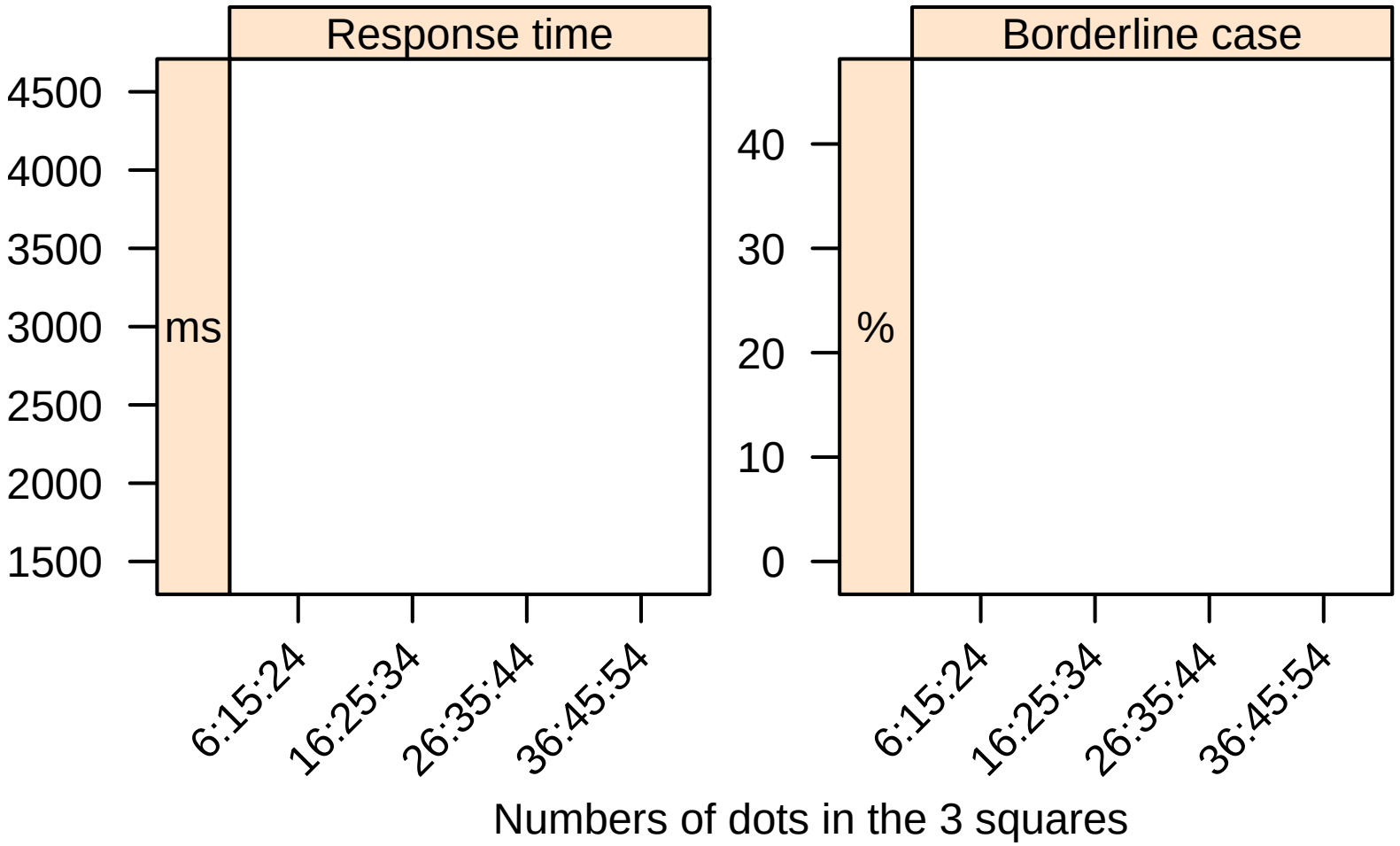



Number combinations: $\{6, 15, 24\}$, $\{16, 25, 34\}$, $\{26, 35, 44\}$, $\{36, 45, 54\}$

- Number - precise: Choose the square with 16 dots
- Number - vague: Choose a square with about 20 dots
- Word - precise: Choose the square with fewest dots
- Word - vague: Choose a square with few dots

# Experiment three (more squares & use indefinites)





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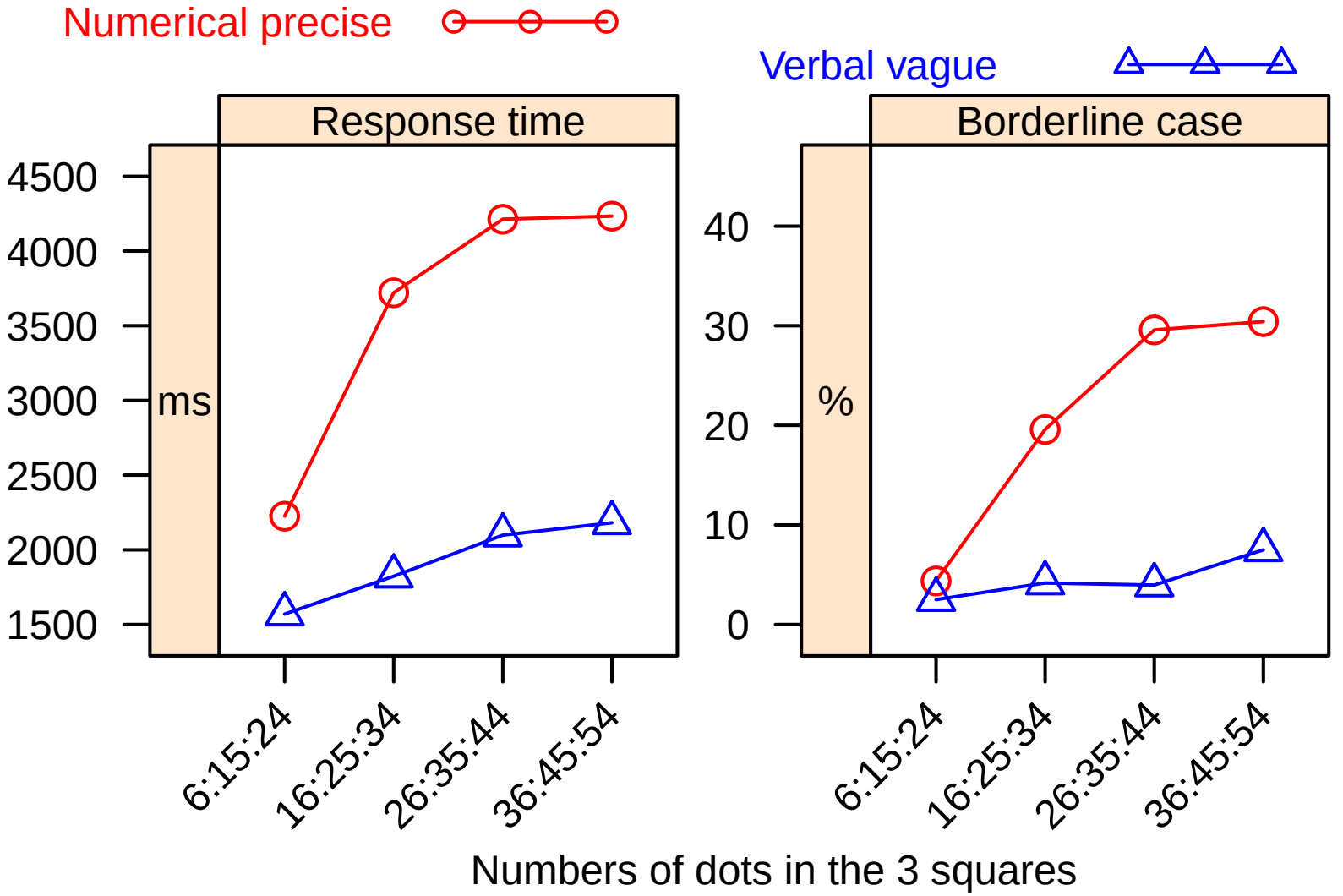

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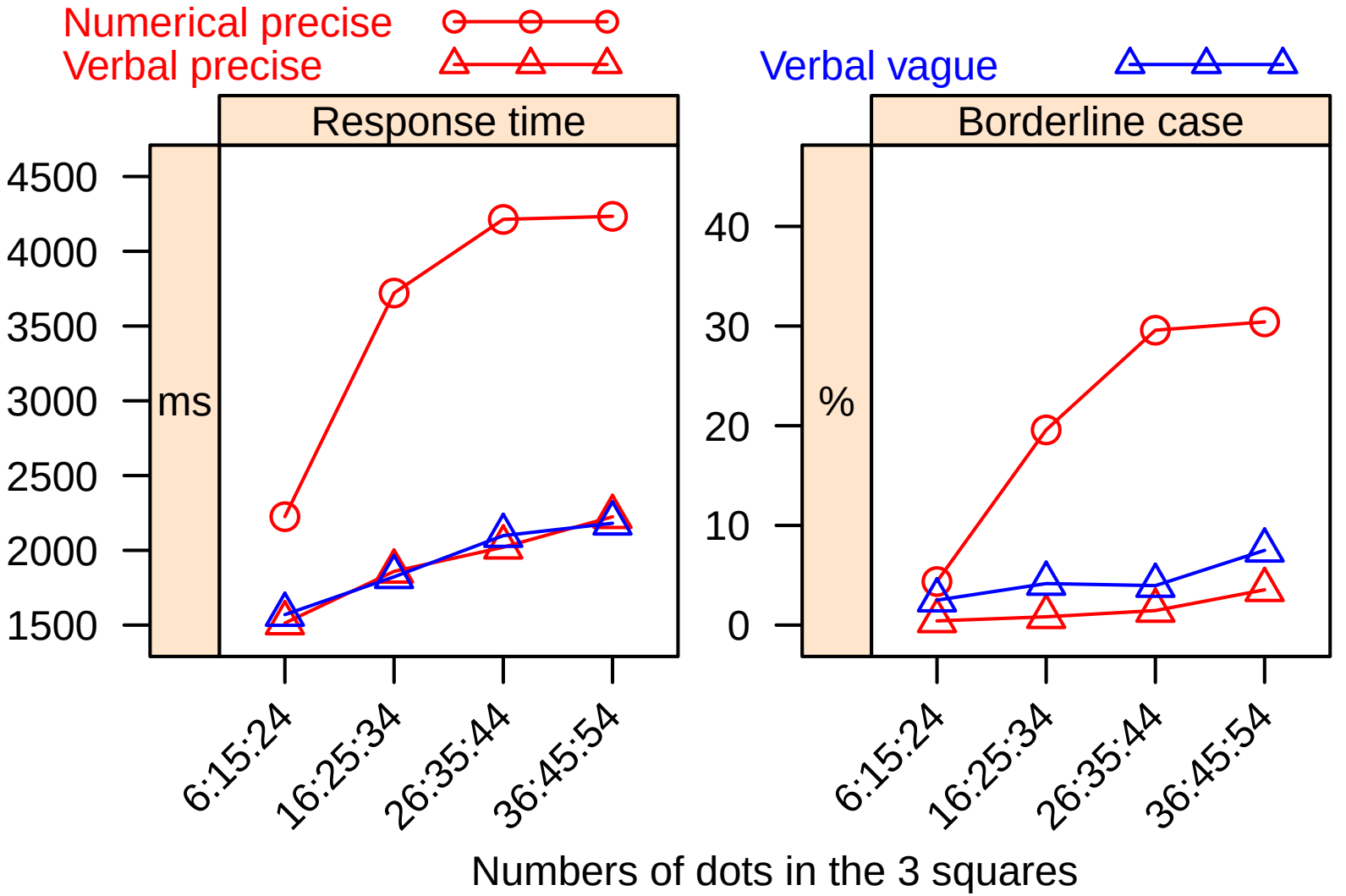

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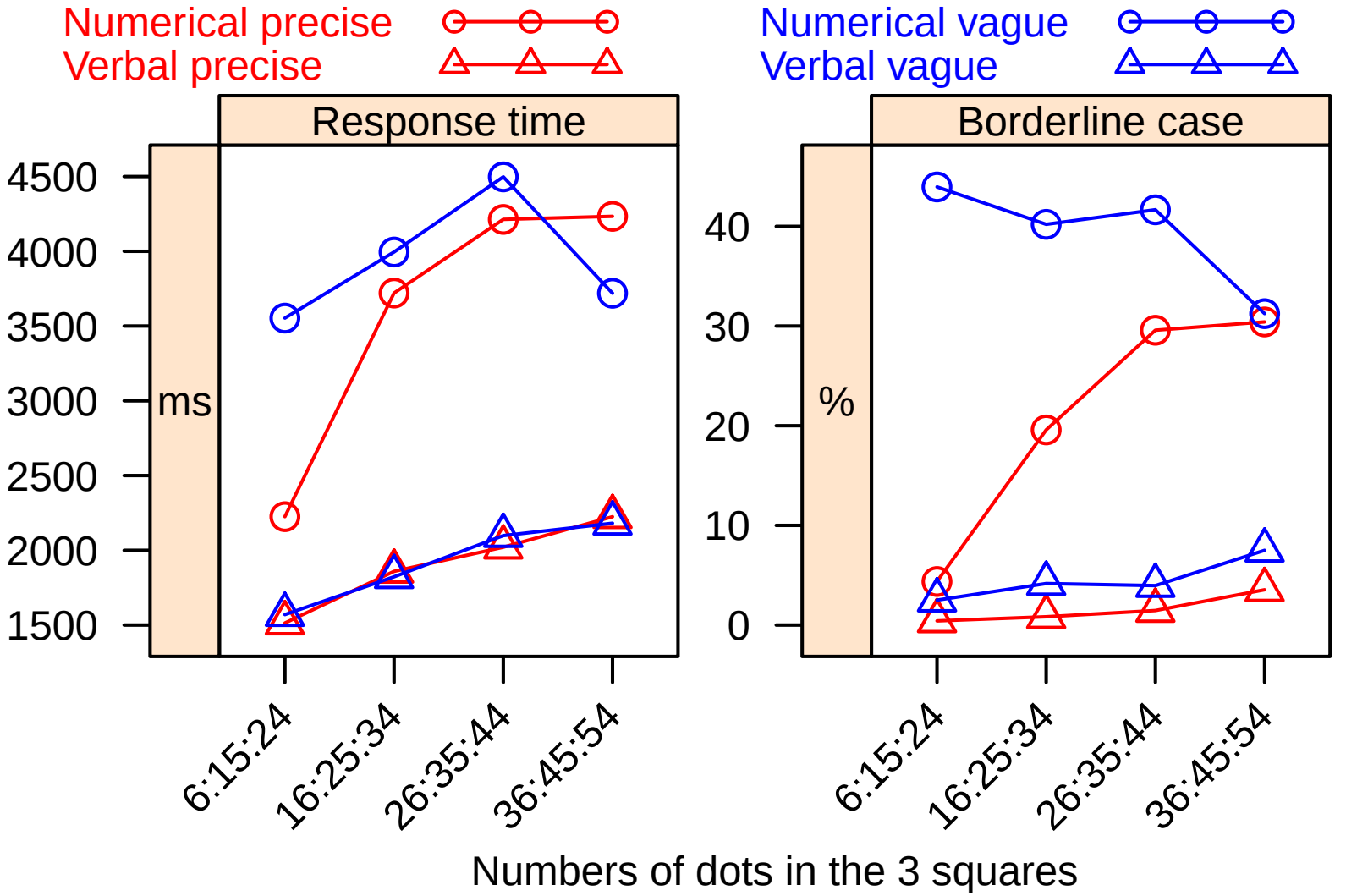

# Summary



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- ...but it is verbal format, not vagueness, that is largely responsible for the benefits

# Further work



Distinguish differences of gap size from differences of discriminability

- Manipulate ratio between numbers rather than distance between numbers

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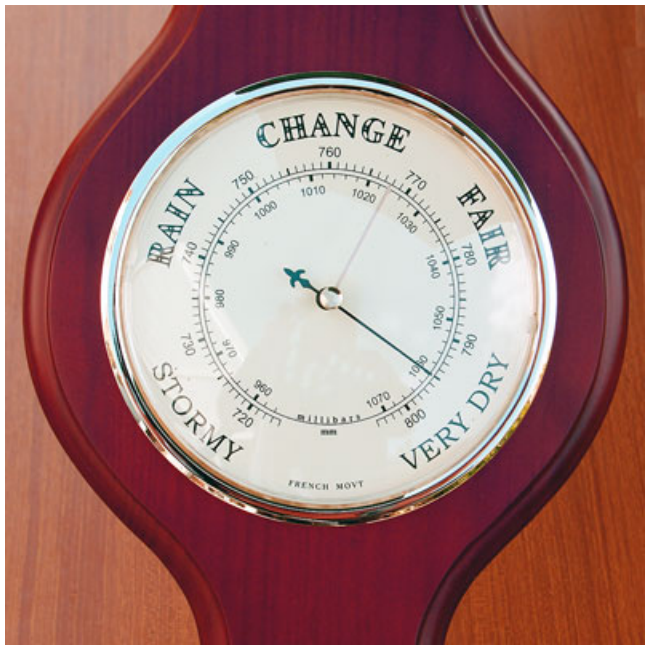
Benefts of vagueness in other paradigms

- Indirect effects of vagueness on a primary task. $H_1$: vague terms interfere less than overly-precise terms do, with processing in a primary task

# Take home message



Vagueness does make things easier in some situations, but really it is non-numerical format that does the heavy lifting.





Thank you for listening

# References



Lipman, B. L. (2009). *Why is Language Vague?* (retrieved 12 April 2011 from `http://people.bu.edu/blipman/Papers/vague5.pdf`)