# Adapting to a Response Deadline in Categorization

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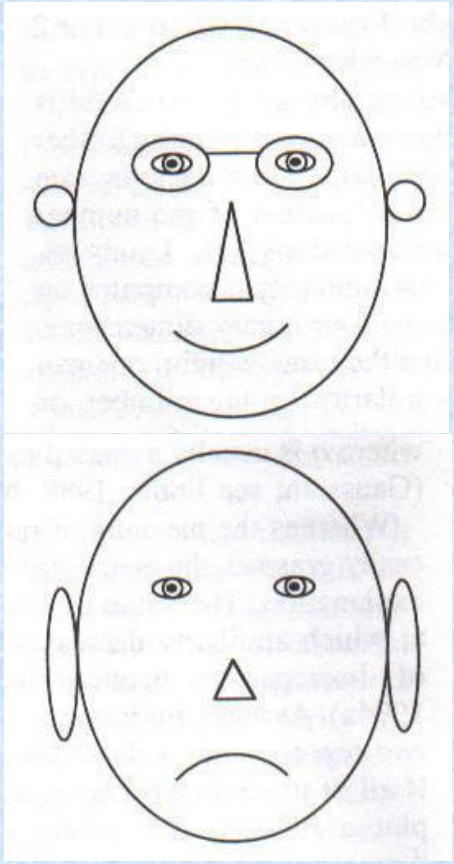
Cog. Sci. 2002

# Lamberts (1995), Exp. 2



- Response deadlines:
  - 600 ms
  - 1,100 ms
  - 1,600 ms
  - No deadline
- Shorter deadline =
  - Lower accuracy
  - Faster R.T.s
  - Effects stimulus-specific

# Three reasons

- Non-selective adaptation
  - $RT_{deadline} = RT_{no\ deadline} - c$
  - Mean ✓ Std. dev. ✗ Skew ✗
- Selective, linear adaptation
  - $RT_{deadline} = m \times RT_{no\ deadline} - c$
  - Mean ✓ Std. dev. ✓ Skew ✗
- Selective, non-linear adaptation
  - $RT_{deadline} = f(RT_{no\ deadline})$
  - Mean ✓ Std. dev. ✓ Skew ✓

# Demonstrating adaptation

- Missing data artefact e.g.
  - Lamberts (1995)
  - Lamberts & Brockdorff (1997)
- Insufficient information
  - Accuracy ✓
  - RT (mean) ✓
  - RT (std. dev.) ✗
  - RT (skew.) ✗

# Training

- 30 examples of “A”, 30 examples of “B”
- No time pressure.

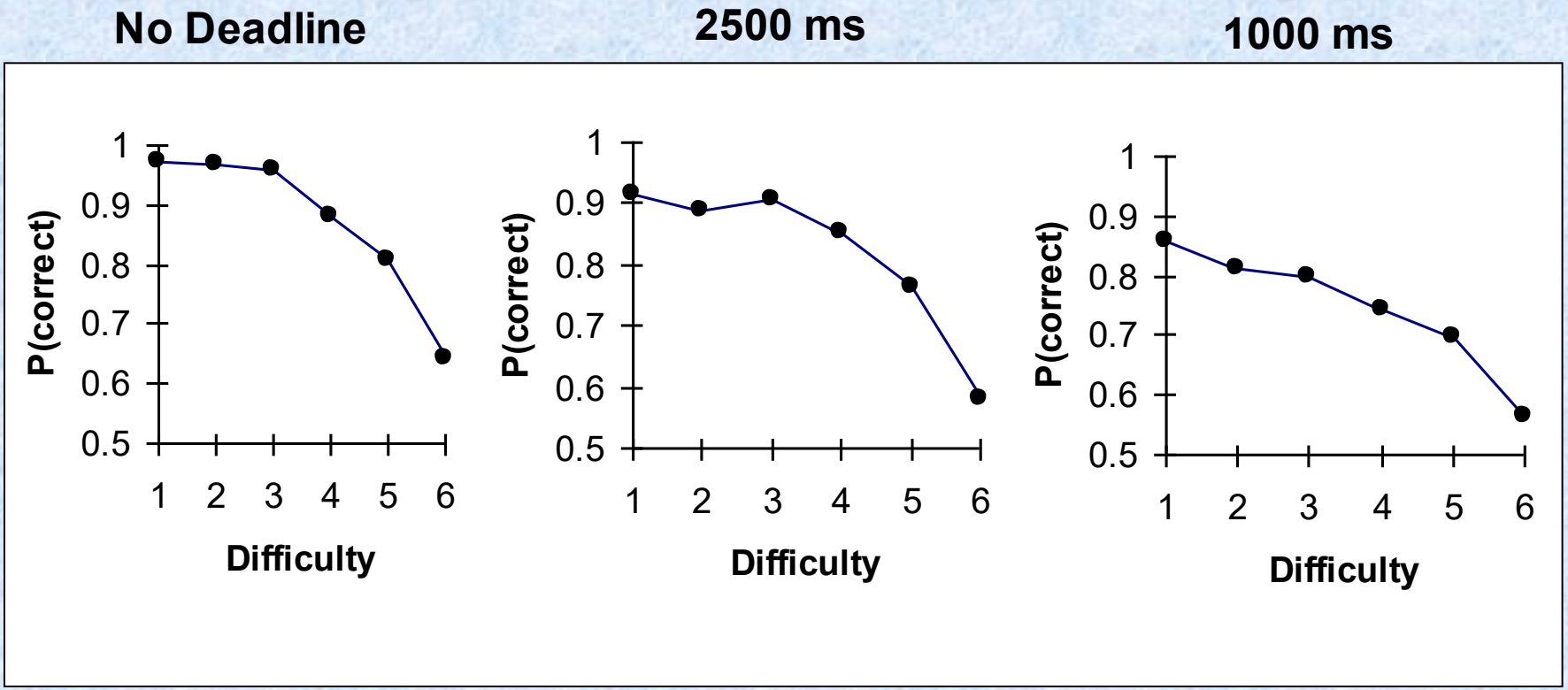
# Testing

- 20 examples of each of the following:

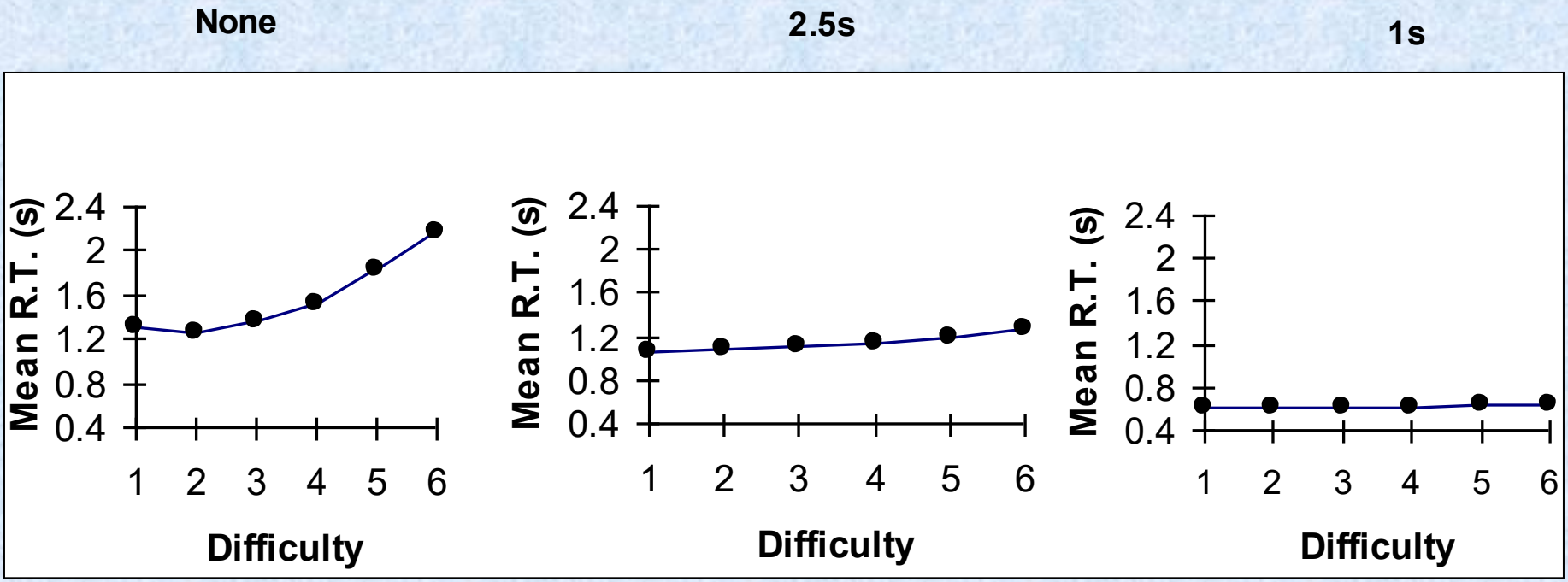
| Difficulty | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Category A/B | 12 | 11 | 10 | 9 | 8 | 7 |
| Category B/A | 0 | 1 | 2 | 3 | 4 | 5 |

- 3 deadlines:
  - 1000ms
  - 2500ms
  - No deadline

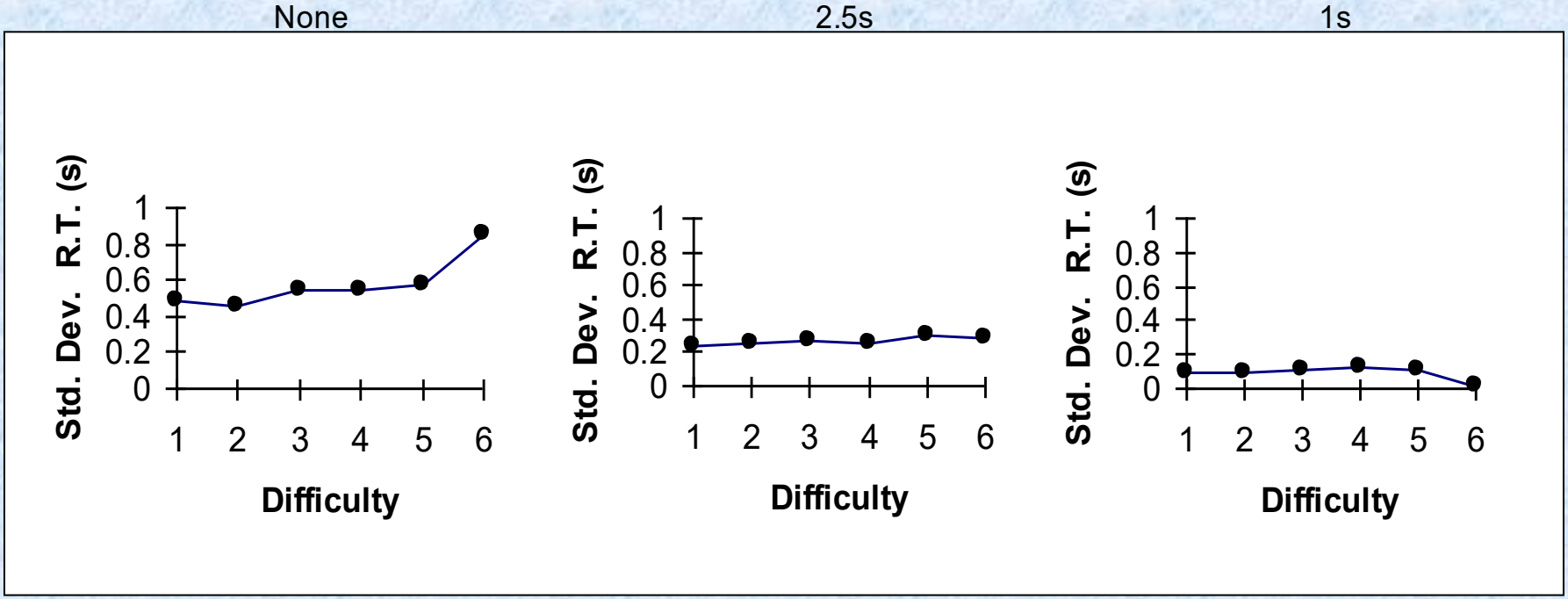
# Accuracy


No Deadline
2500 ms
1000 ms
P(correct)
1
0.9
0.8
0.7
0.6
0.5
1 2 3 4 5 6
Difficulty

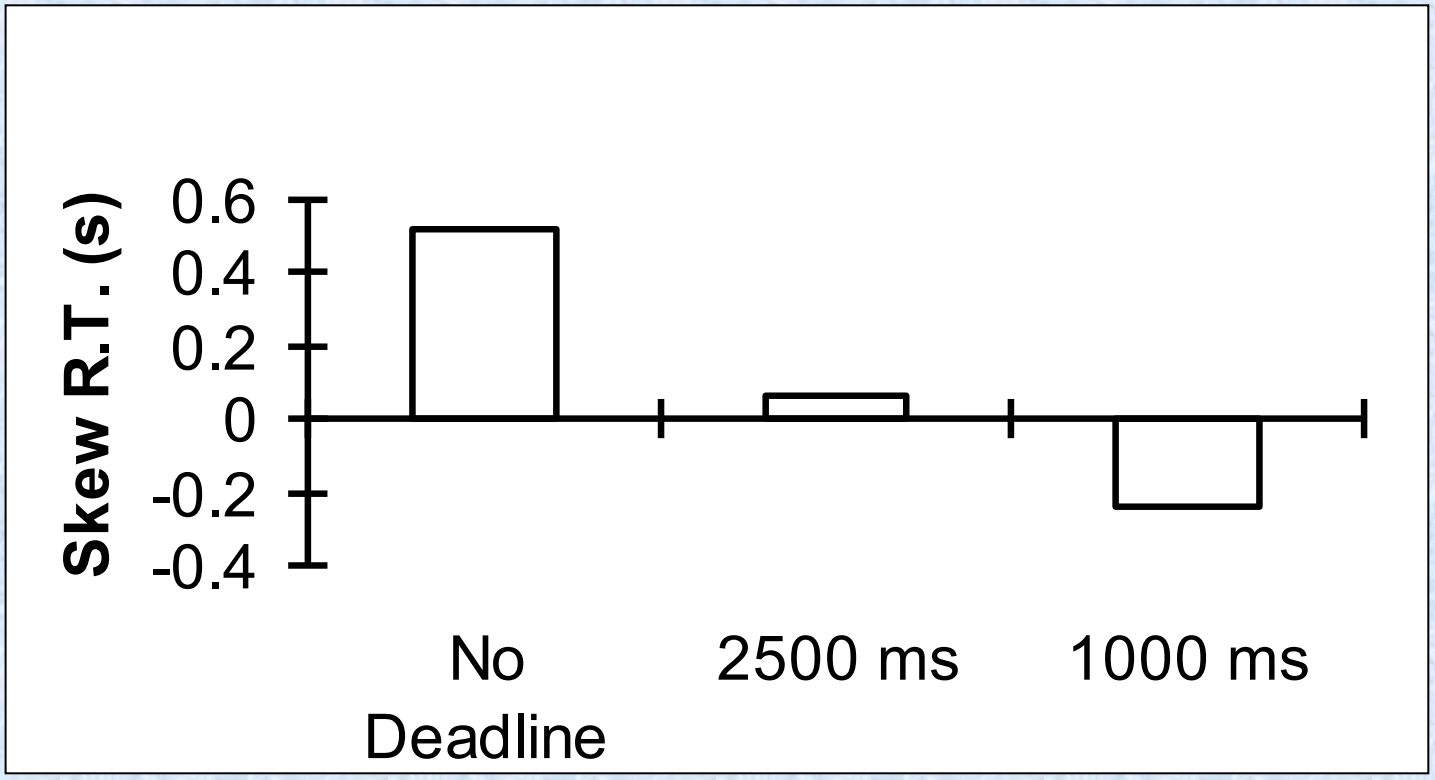
# R.T. (Mean)



# R.T. (Standard deviation)

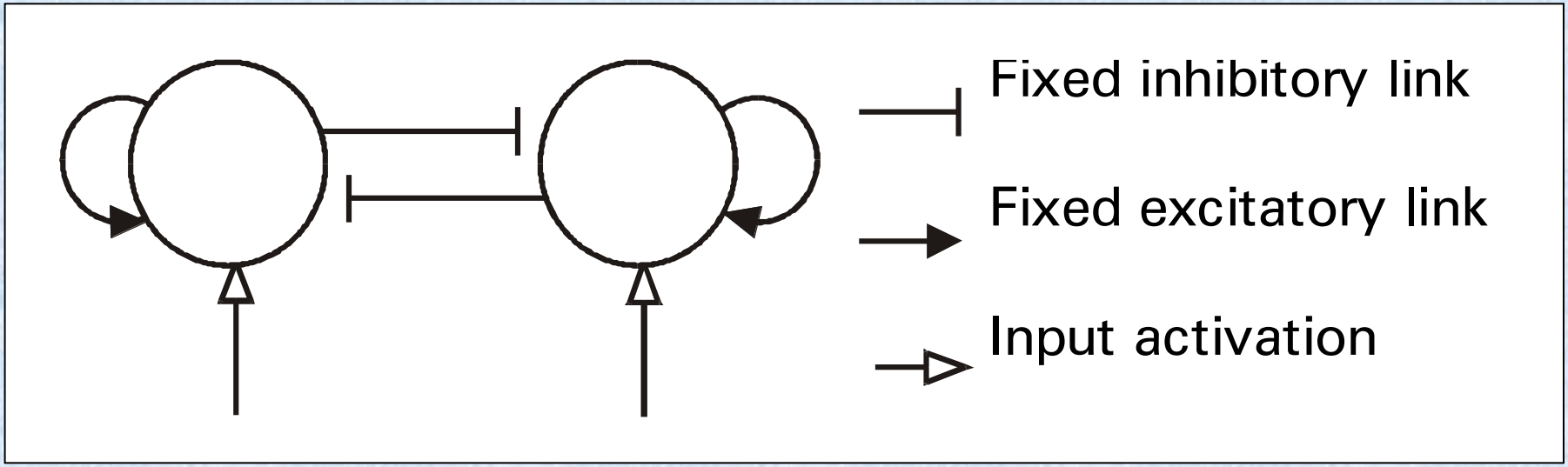


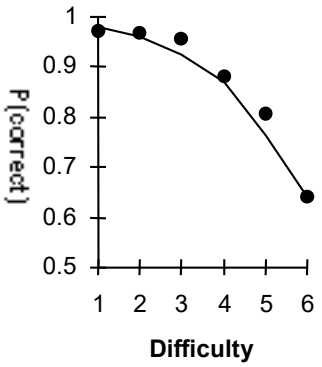
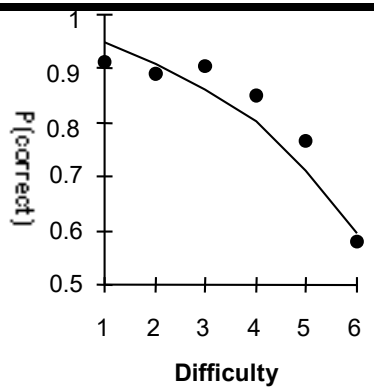
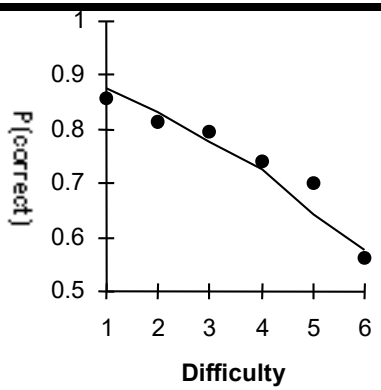
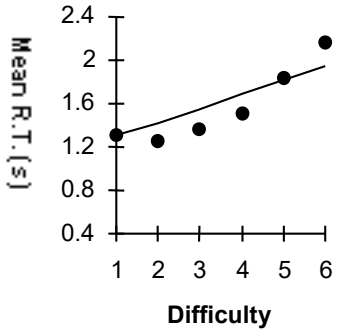
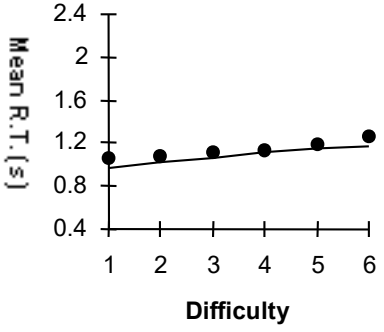
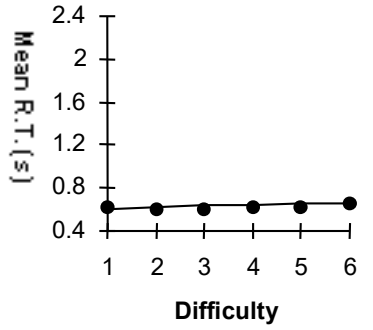
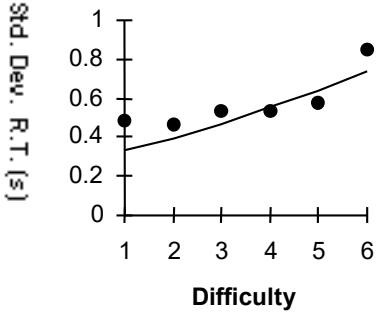
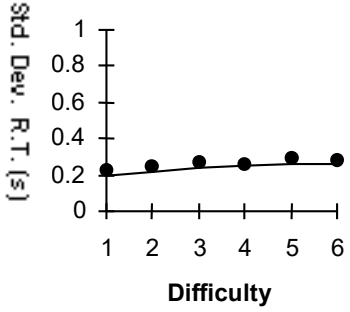
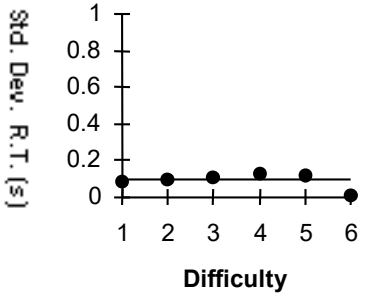
# R.T. (Skew)

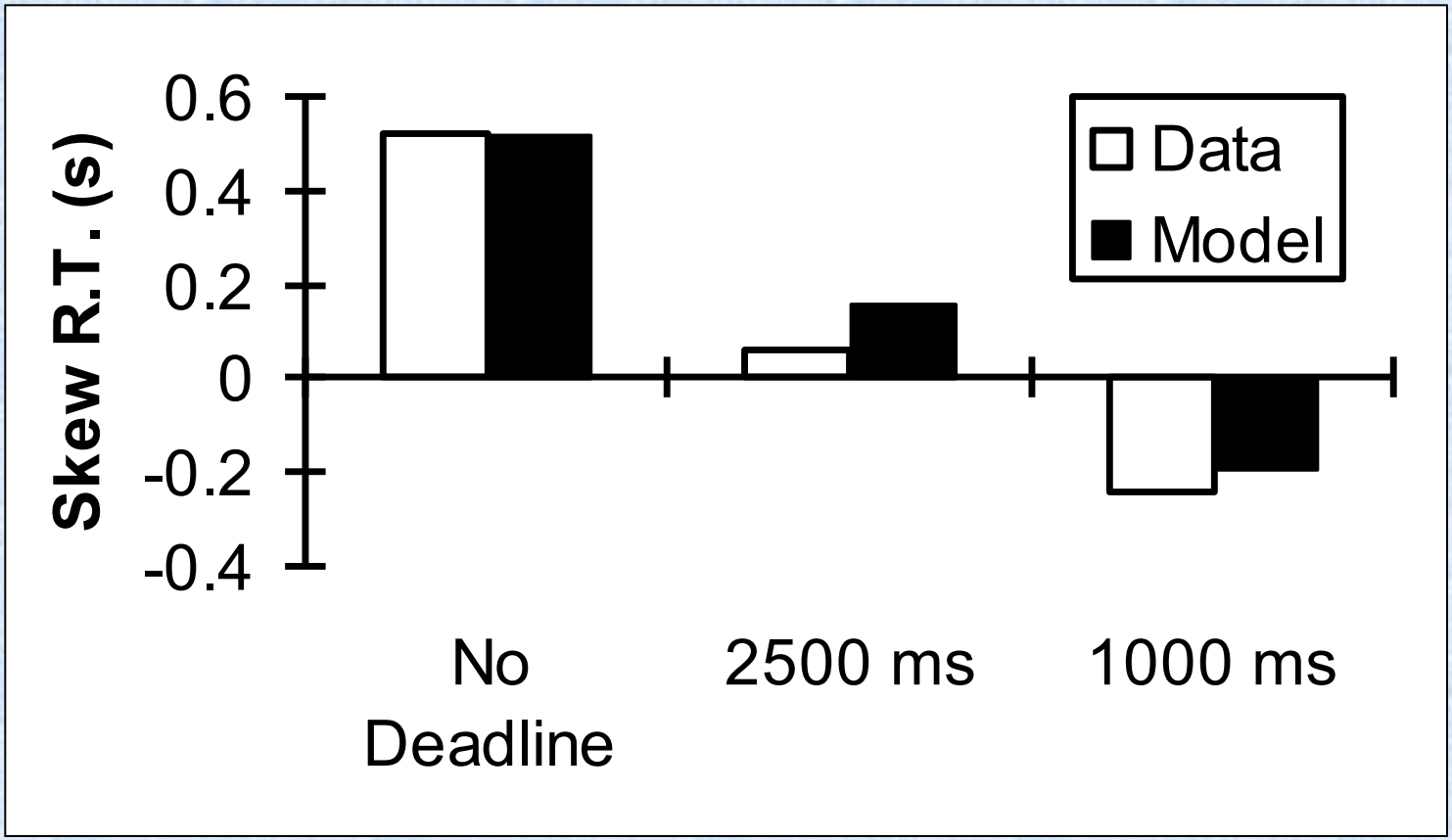



- Selective, non-linear adaptation

# Winner-take-all model



| No Deadline | 2500 ms | 1000 ms |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |


Skew R.T. (s)
0.6
0.4
0.2
0
-0.2
-0.4
Data
Model
No Deadline
2500 ms
1000 ms