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Citation: McGann, Deborah, Defeyter, Margaret Anne (Greta), Ellis, Jason and Reid, C. (2005) Prospective memory in children: The effects of age and target salience. In: 2nd International Conference on Prospective Memory, July 2005, Zurich.

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# Prospective memory in children: The effects of age and target salience

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**II. International Conference on Prospective  
Memory, Zurich, July 2005**



# Background

Relatively few developmental studies of PM

To understand the developmental trajectory of PM, researchers need to systematically examine the performance of different age groups under different PM conditions

The first stage of this process is to build on studies that have already been carried out

# Kvavilashvili *et al.* (2001)

**Age:** 4 x 5 x 7 years

**Task Interruption:** Interruption x No Interruption

Card picture naming: 4 stacks of 20 pics

PM task: (“Morris the mole can’t see very well & is scared of other animals..”). Hide animal pictures in box behind you.

Found: Significant age and interruption effects. No interaction. (Effect size for age small & insufficient power)



**Rosie**

# Target Salience

Adult literature shows that PM improves when target items are made distinctive relative to the prevailing context (e.g., low-meaningful words, upper case font, picture size)

## **Multiprocess framework:**

When PM targets are not very salient: “there should be larger effects of ...age relative to conditions in which salient target events are used” (McDaniel & Einstein, 2000, p.142)

# Questions

- Are there developmental changes in event-based PM between 4 and 7 years of age?
- Will PM in children (as well as adults) benefit from salient target events?
- Will the data show an age X salience interaction?

# 2 Experiments

**Age:** 4- x 5- x 7-year olds

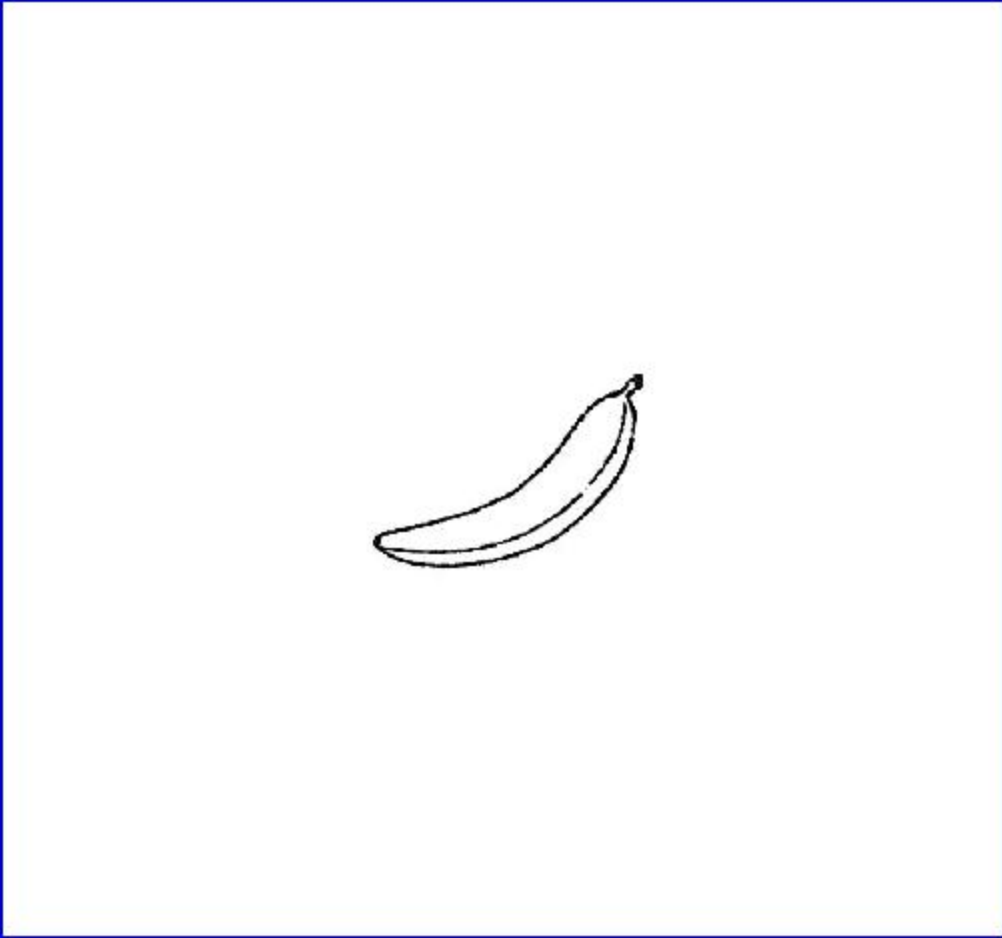
**Target salience:** Target pictures larger than or same size as majority of non-targets (Between Ss manipulation)

PM task = Respond to food items (“Rosie the rag-doll can’t see very well and needs help collecting items for her picnic in the park...”).  
Targets = *apple, cake, banana, sandwich*

Expt 1: Computer-based picture naming. PM response = key press

Expt 2: Card picture naming + category sorting. PM response = children have to place picture in lunchbox behind them





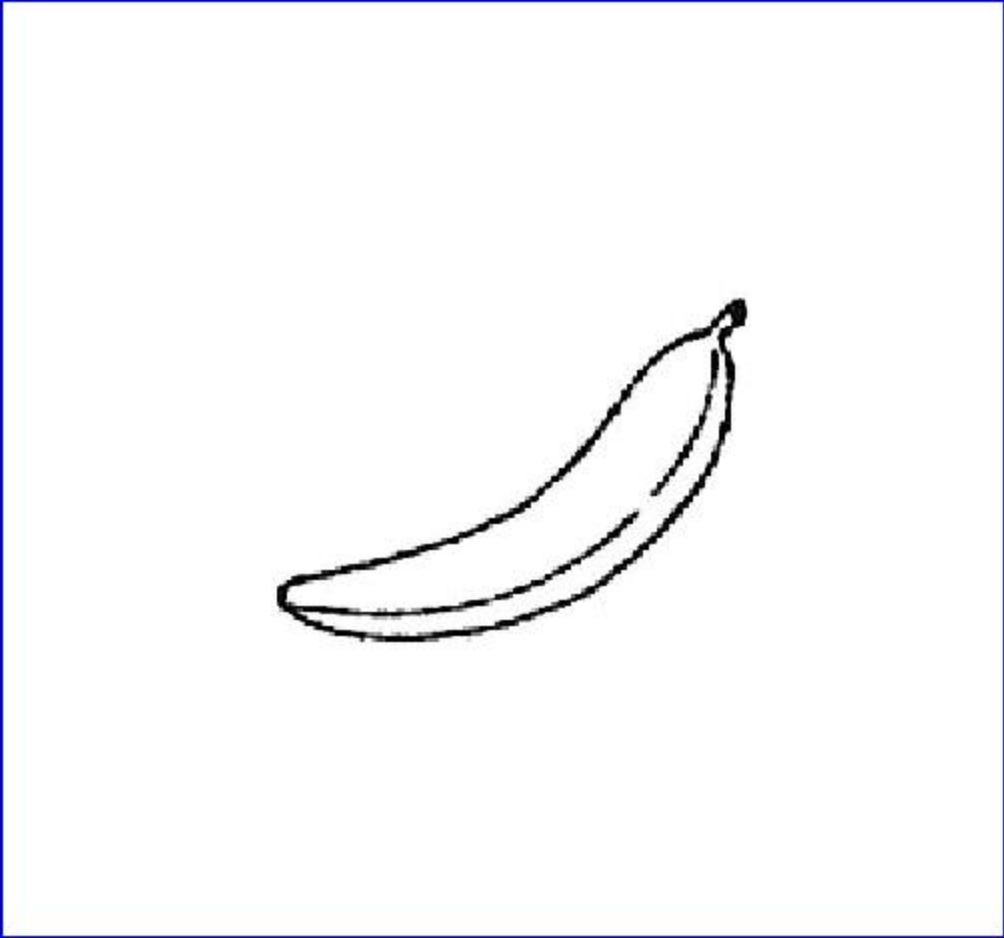
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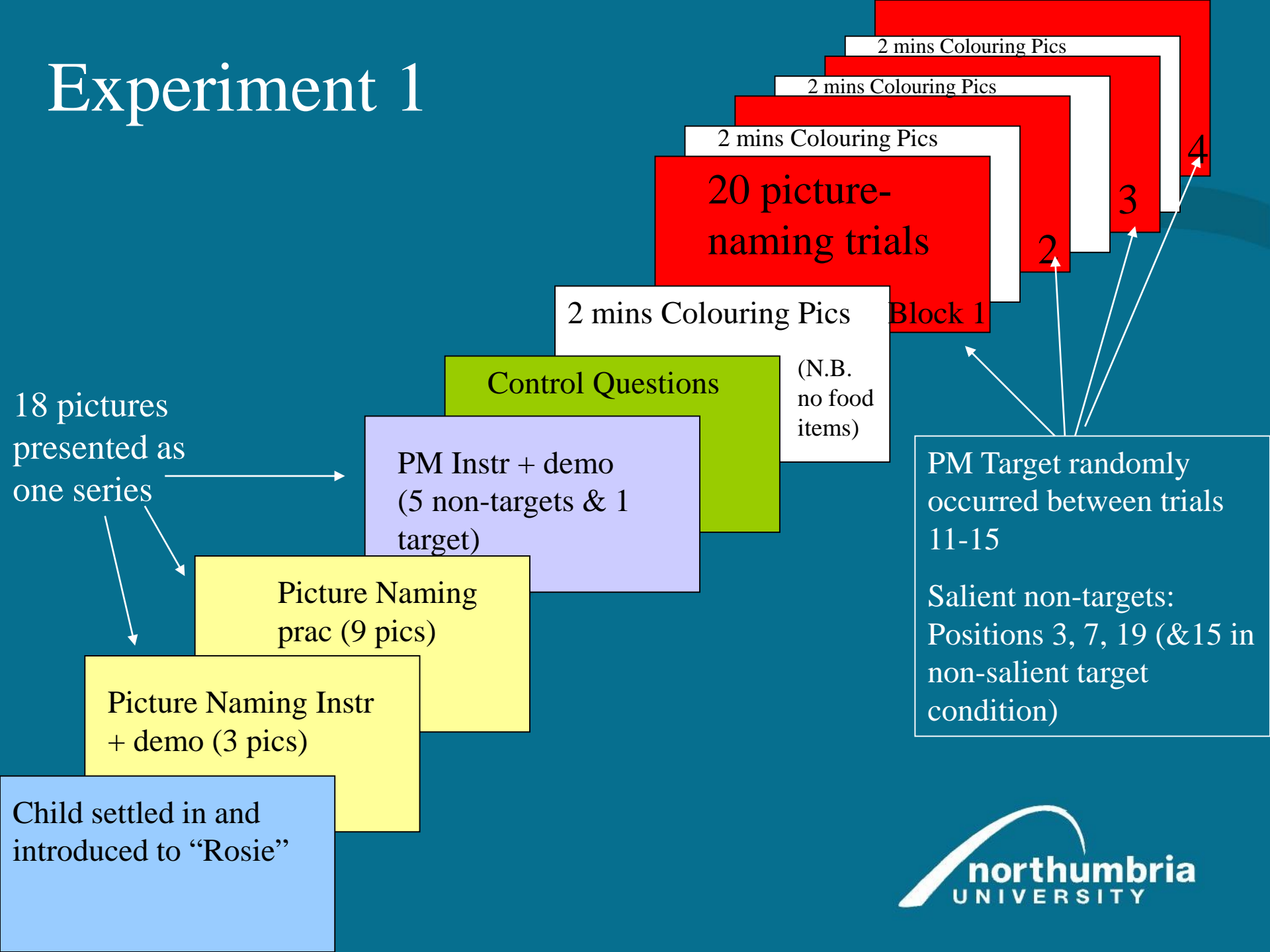
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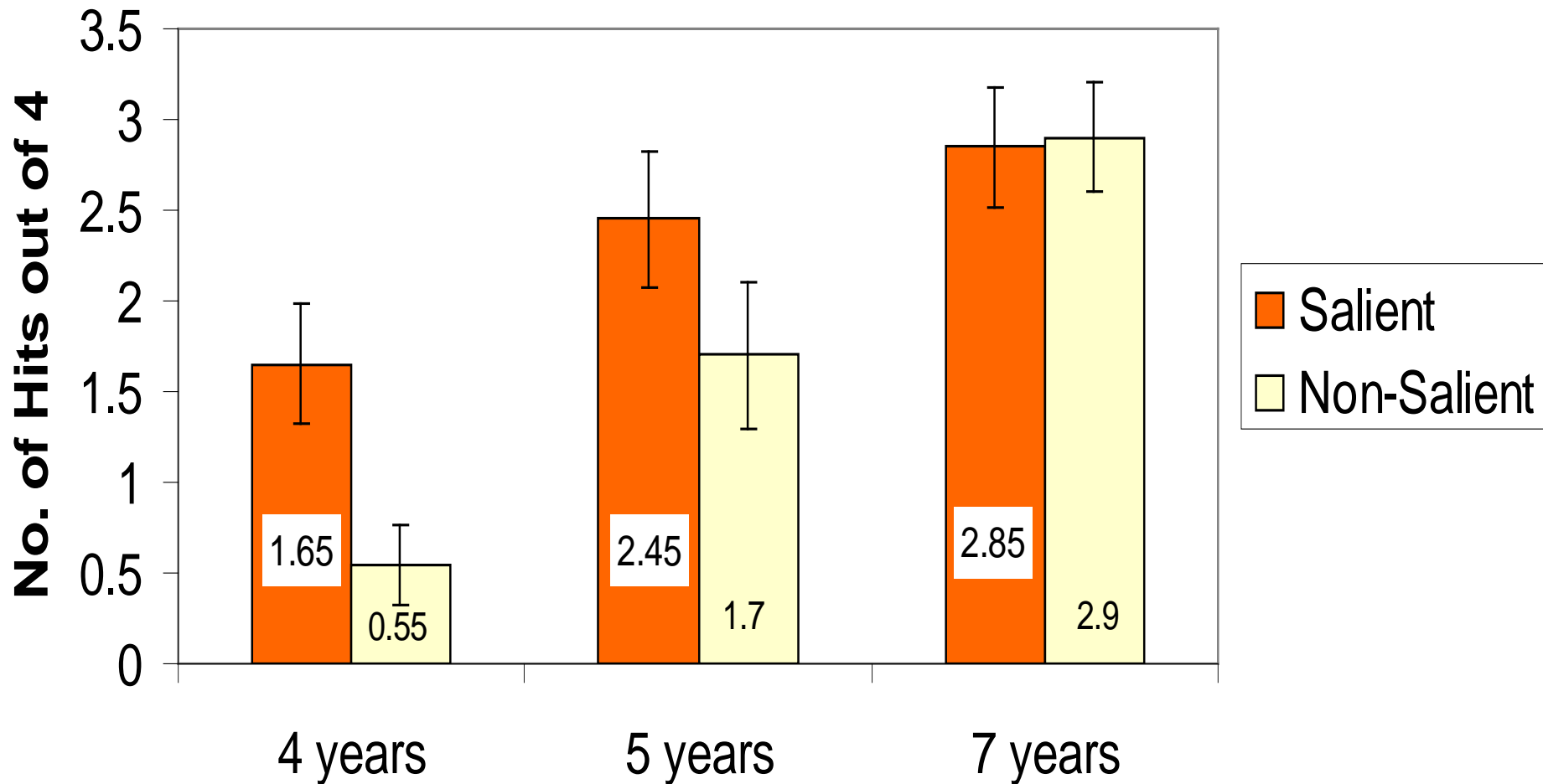
# Experiment 1



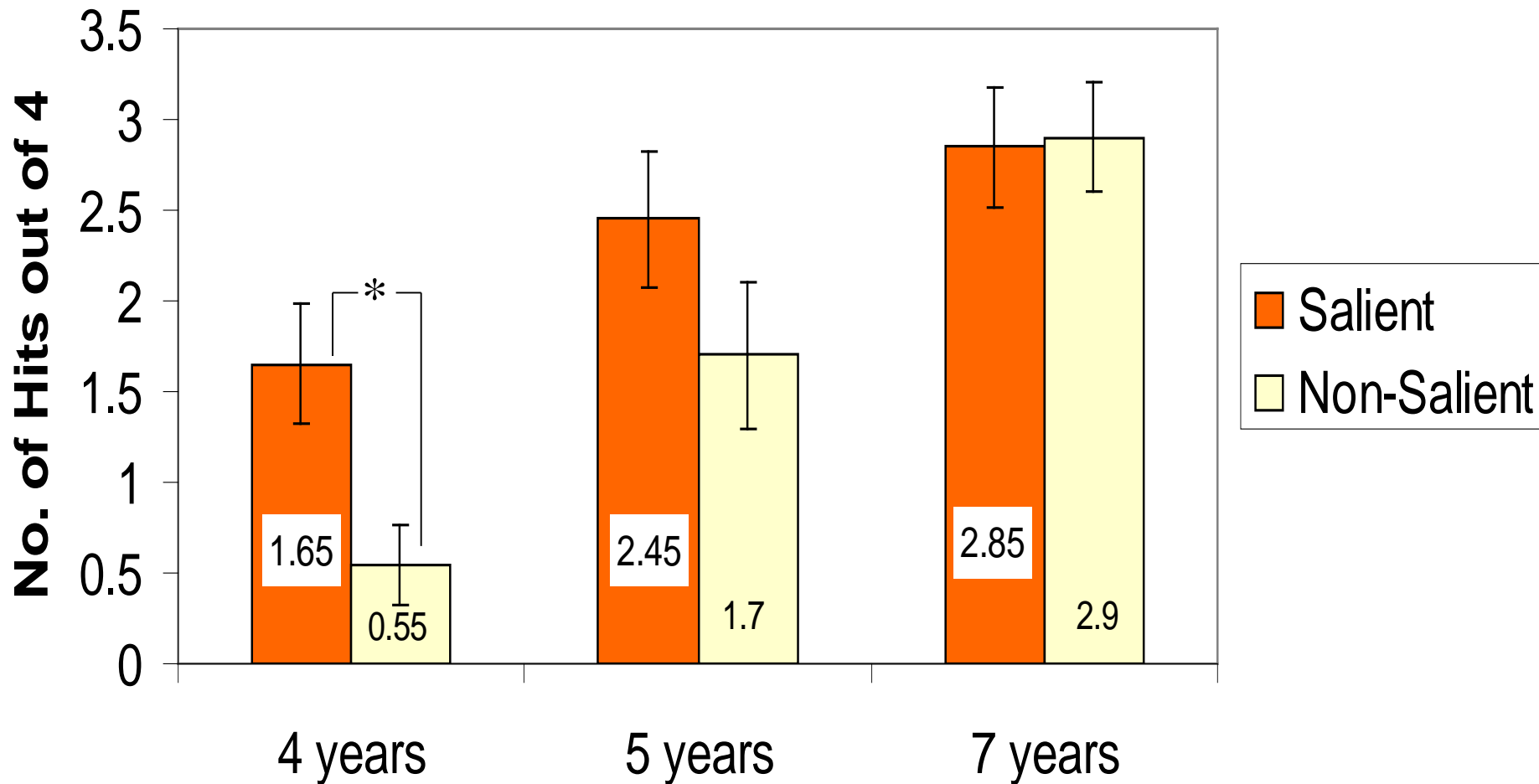
# Expt 1: No. Children who Remembered to Perform PM Task on All Four Occasions, on None of the Occasions, or on Some of the Occasions as a Function of Age and Target Salience

|           | <b>Salient</b>     |                   |                    |           |  | <b>Non-Salient</b> |                    |                   |           |
|-----------|--------------------|-------------------|--------------------|-----------|--|--------------------|--------------------|-------------------|-----------|
| Age (yrs) | All                | None              | Some               | Total     |  | All                | None               | Some              | Total     |
| <b>4</b>  | <b>2</b><br>(10%)  | <b>7</b><br>(35%) | <b>11</b><br>(55%) | <b>20</b> |  | <b>1</b><br>(5%)   | <b>13</b><br>(65%) | <b>6</b><br>(30%) | <b>20</b> |
| <b>5</b>  | <b>8</b><br>(40%)  | <b>5</b><br>(25%) | <b>7</b><br>(35%)  | <b>20</b> |  | <b>5</b><br>(25%)  | <b>10</b><br>(50%) | <b>5</b><br>(25%) | <b>20</b> |
| <b>7</b>  | <b>10</b><br>(50%) | <b>3</b><br>(15%) | <b>7</b><br>(35%)  | <b>20</b> |  | <b>9</b><br>(45%)  | <b>2</b><br>(10%)  | <b>9</b><br>(45%) | <b>20</b> |

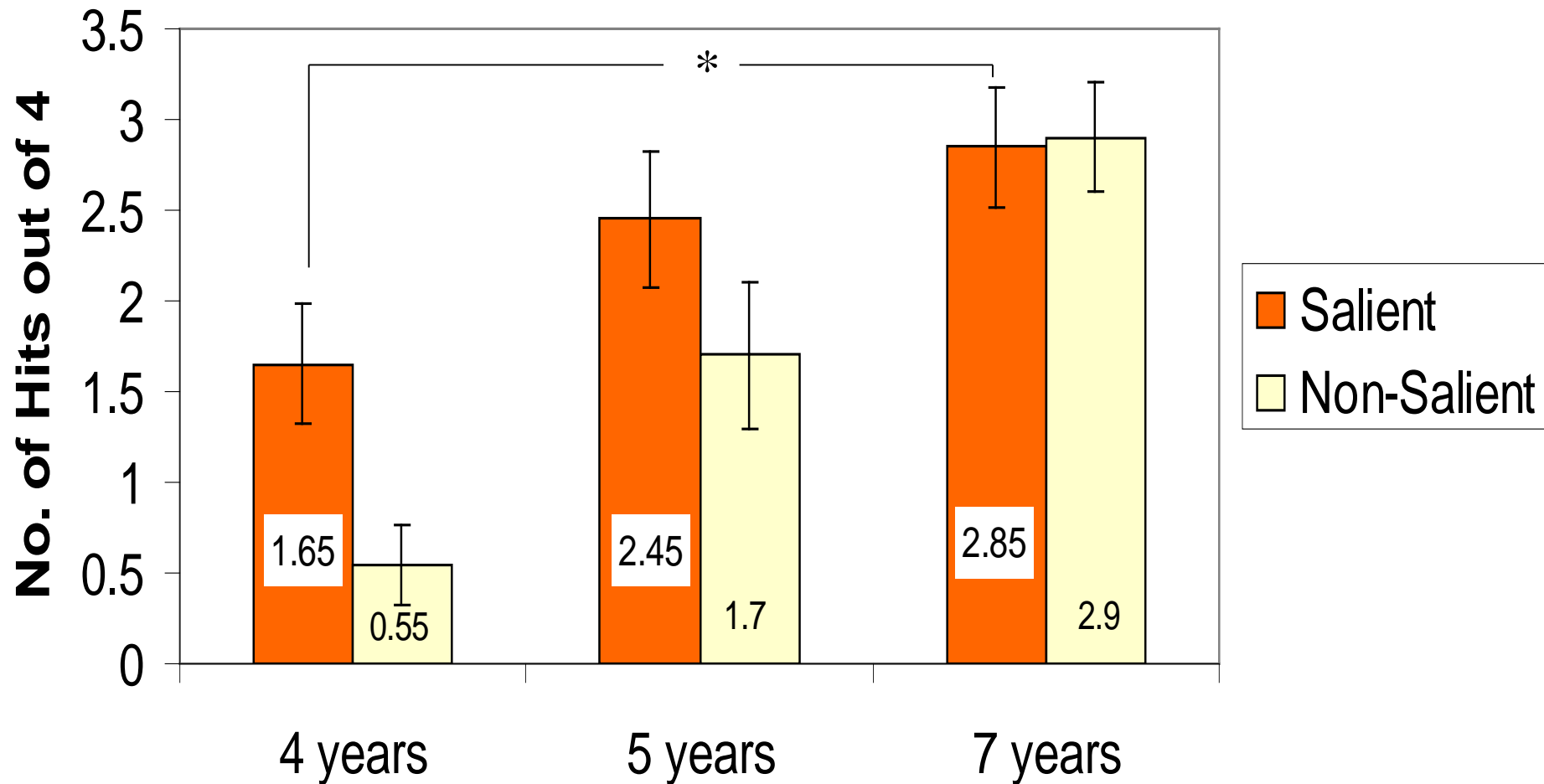
# Expt 1: Mean No. Successful PM Responses (Age x Target Salience)



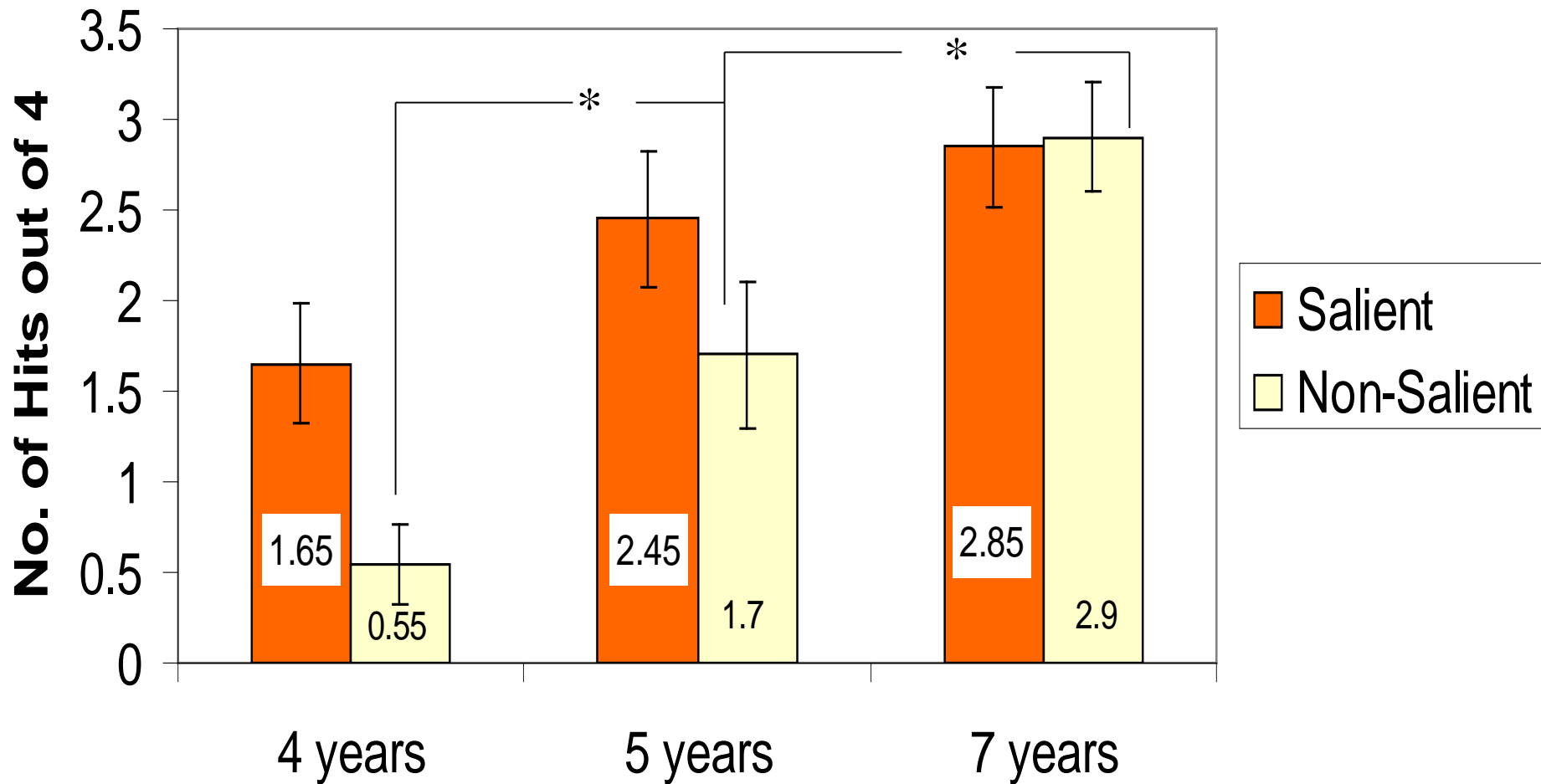
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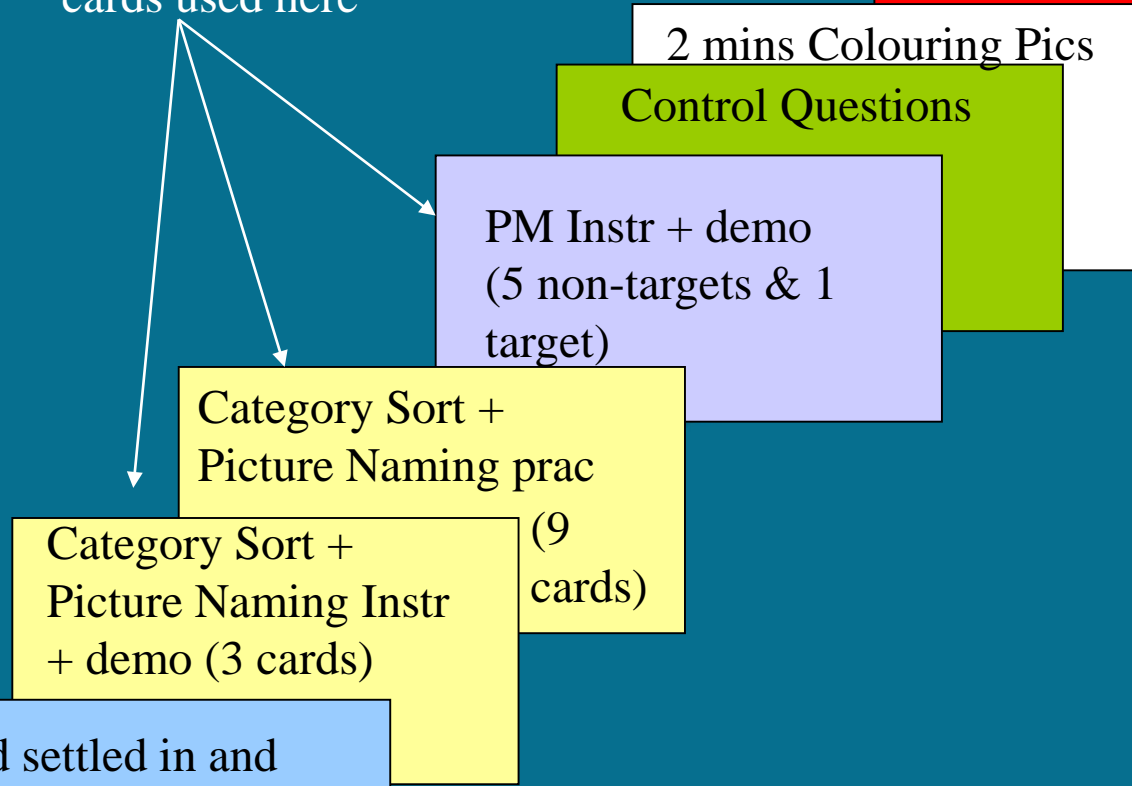
# Expt 1: Mean No. Successful PM Responses (Age x Target Salience)





# Experiment 2

One pile of 18 cards used here



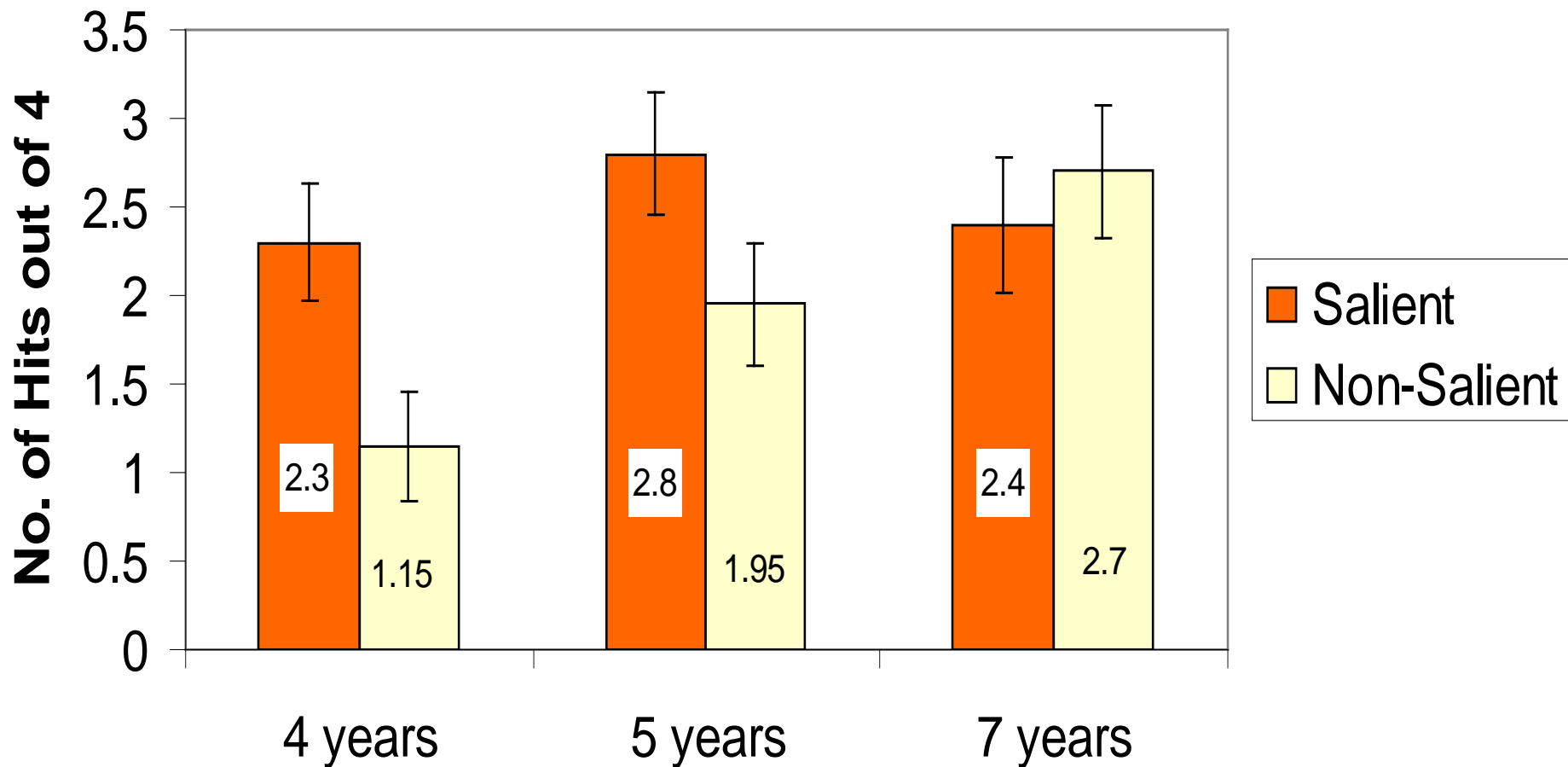
Category sort + picture-naming trials. 20 cards in pile but all children stopped after 1 min  
Block 1

4 yrs: PM target: 6-9;  
Salient Non-Target: 3 (& 8)  
5 yrs: PM target: 7-11;  
Sal N.T.: 2, 5 (& 10)  
7 yrs: PM target 10-15;  
Sal N.T.: 3, 7, 19 (& 13)

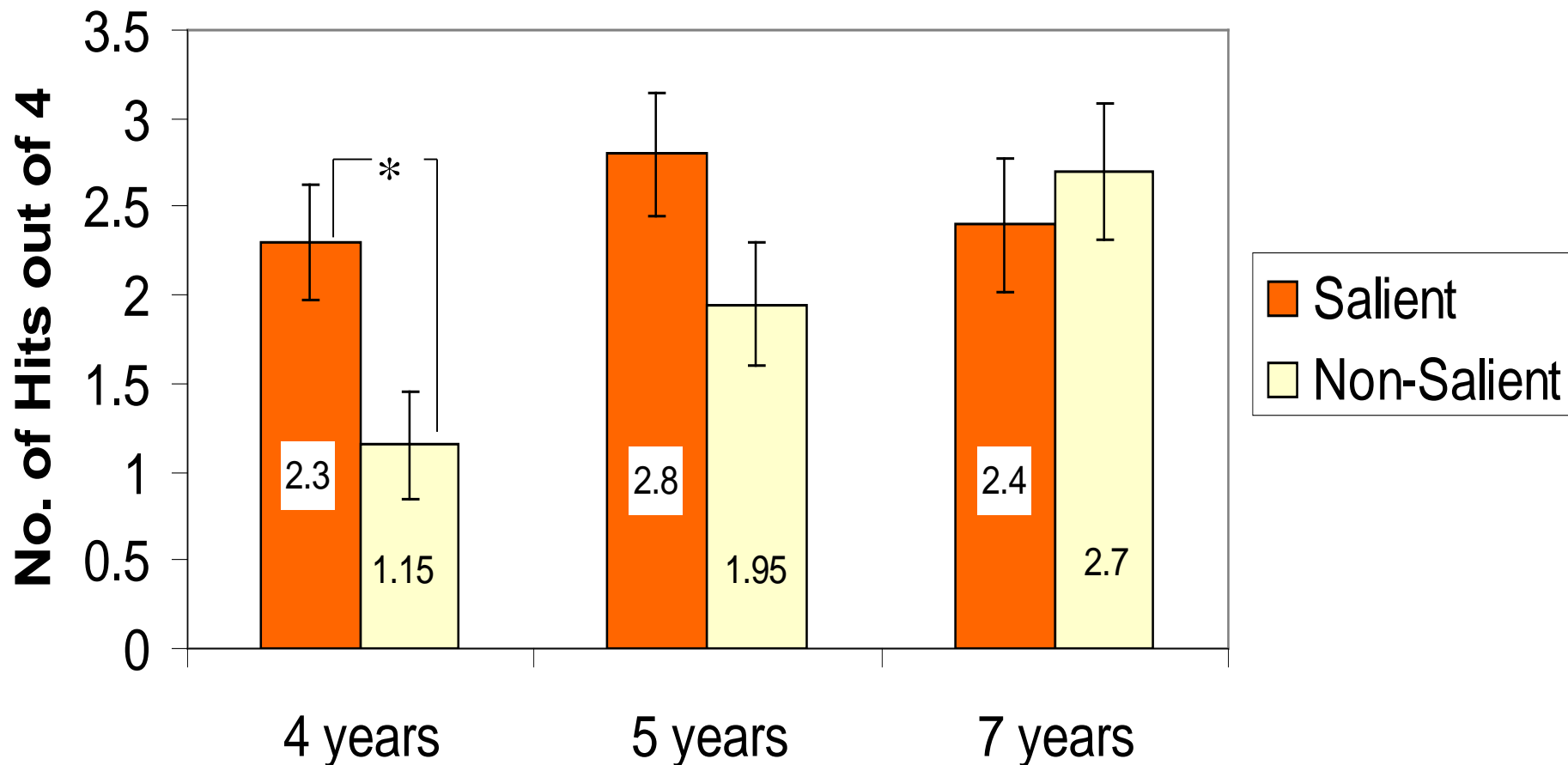
# Expt 2: No. Children who Remembered to Perform PM Task on All Four Occasions, on None of the Occasions, or on Some of the Occasions as a Function of Age and Target Salience

|           | <b>Salient</b>     |                   |                    |           |  | <b>Non-Salient</b> |                    |                    |           |
|-----------|--------------------|-------------------|--------------------|-----------|--|--------------------|--------------------|--------------------|-----------|
| Age (yrs) | All                | None              | Some               | Total     |  | All                | None               | Some               | Total     |
| <b>4</b>  | <b>5</b><br>(25%)  | <b>4</b><br>(20%) | <b>11</b><br>(55%) | <b>20</b> |  | <b>1</b><br>(5%)   | <b>10</b><br>(50%) | <b>9</b><br>(45%)  | <b>20</b> |
| <b>5</b>  | <b>11</b><br>(55%) | <b>3</b><br>(15%) | <b>6</b><br>(30%)  | <b>20</b> |  | <b>5</b><br>(25%)  | <b>5</b><br>(25%)  | <b>10</b><br>(50%) | <b>20</b> |
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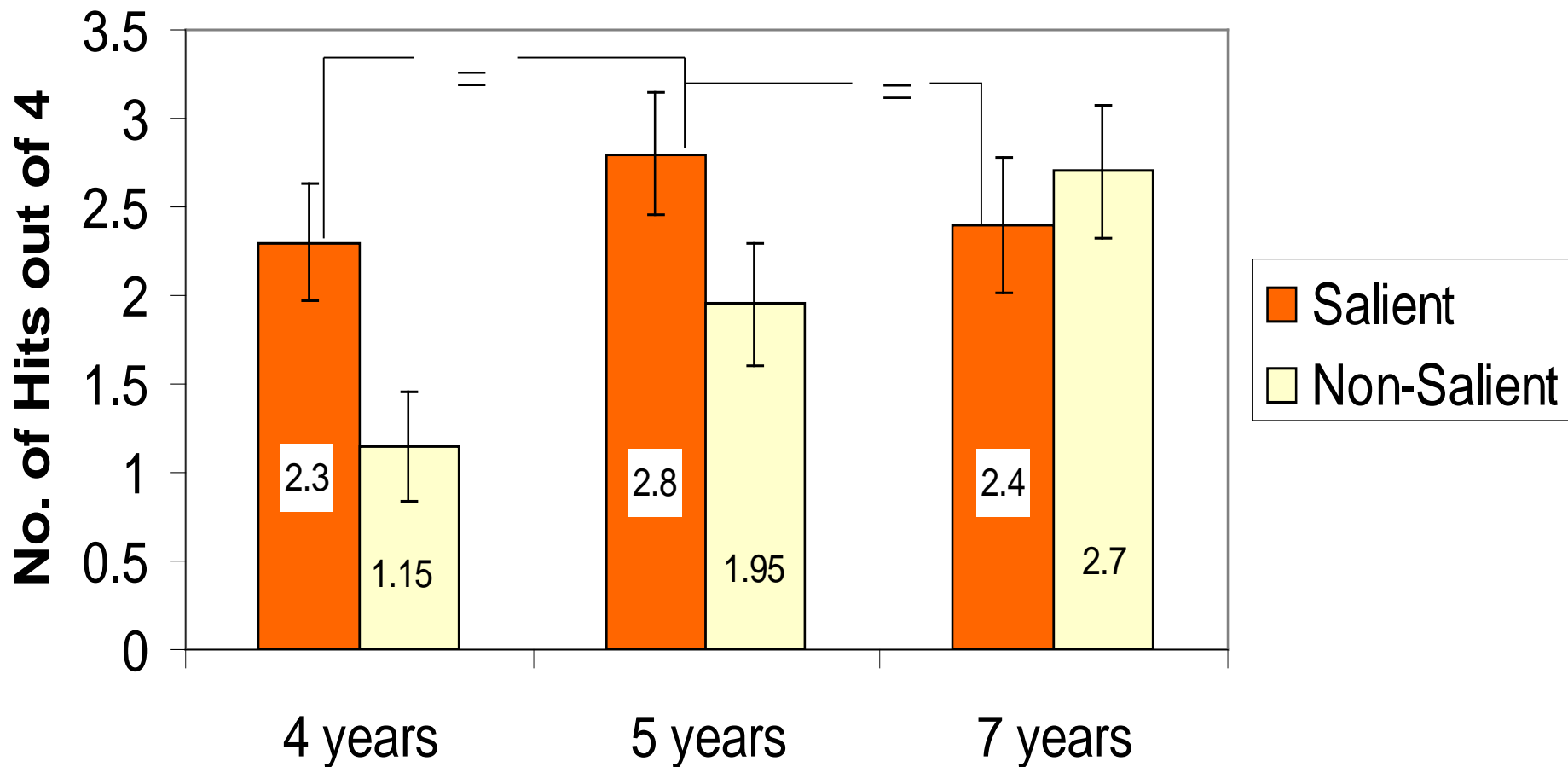
# Expt 2: Mean No. Successful PM Responses (Age x Salience)



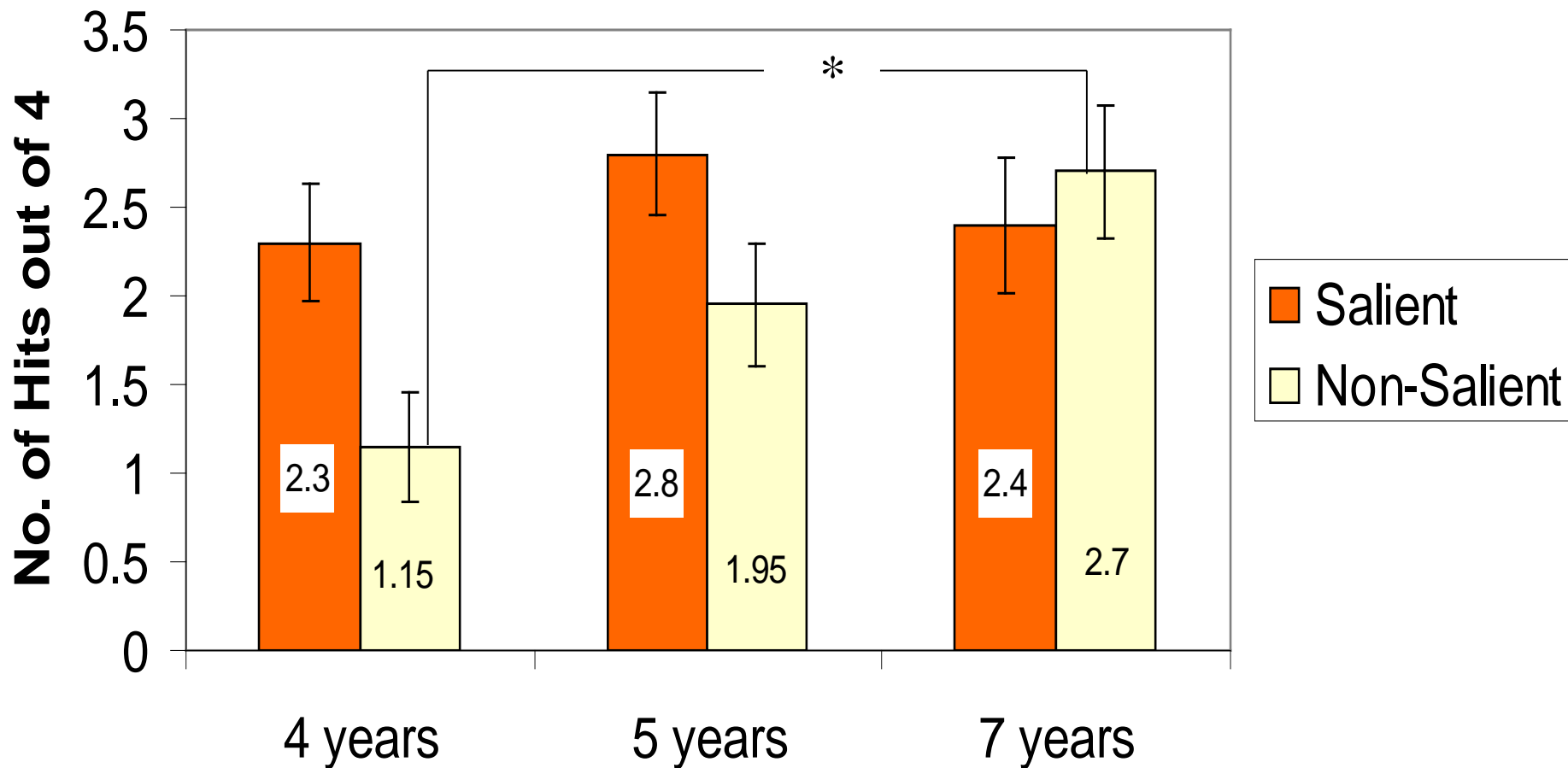
# Expt 2: Mean No. Successful PM Responses (Age x Salience)



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# Expt 2: Mean No. Successful PM Responses (Age x Salience)



# Conclusions

- PM performance improves between 4 and 7 years
- The PM performance of younger children benefits when PM targets are made salient
- Age effects are larger when PM targets are not very salient (compared to when salient target events are used)

Thank you  
for listening!





# Proportion of Inappropriate Prospective Memory Key Press Responses to Salient Non-Target Items as a Function of Age and Target Salience in Experiment 1

|     | Salient |      |  | Non-Salient |      |
|-----|---------|------|--|-------------|------|
| Age | M       | SD   |  | M           | SD   |
| 4   | 0       | 0    |  | 0.03        | 0.01 |
| 5   | 0       | 0    |  | 0.03        | 0.06 |
| 7   | 0.02    | 0.05 |  | 0.02        | 0.03 |

# Proportion of Inappropriate Prospective Memory Key Press Responses to Salient Non-Target Items as a Function of Age and Target Salience in Experiment 2

|     | Salient |    |  | Non-Salient |      |
|-----|---------|----|--|-------------|------|
| Age | M       | SD |  | M           | SD   |
| 4   | 0       | 0  |  | 0           | 0    |
| 5   | 0       | 0  |  | 0           | 0    |
| 7   | 0       | 0  |  | 0.09        | 0.02 |

# Kvavilashvili et al (2001) Expt 2

