Detecting the Snake in the Grass
Attention to Fear-Relevant Stimuli by Adults and Young Children

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Intro: Lauren
Method: Dominick
Results: Becca
Discussion: Emily

Question

Adults have been found to detect snakes more quickly than other visual stimuli. Is this pattern extended to children?

Introduction

1. The claim is that there is a bias towards recognizing threatening stimuli over non-threatening stimuli

2. Because the fear of snakes is so prevalent, theorists said that it could be an example of “prepared learning”

3. Determining if Ohman’s statement that the fear of threatening stimuli was a evolved learned ability is true

4. Compares the reaction to threatening stimuli such as snakes to multiple other stimuli, specifically other animals

Previous Research

1. Fredrikson, Annas, Rischer, & Wik, 1996; King, 1997: showed fear of snakes is one of the most common phobias

2. Ohman & Mineka, 2001: proposed how to measure fear-related responses

3. Tipples, 2002: found increase in detection among other animals

4. Blanchette, 2006; Brosch & Sharma, 2005: found increase in fear-related response to modern threats

Key Terms

- Evolved Fear Module
- Latency to Touch
- Threat-relevant Stimuli
- Non-threatening Stimuli

Methods: Participants

- **240** Total Participants across the 3 experiments (E1, E2 & E3)
- Predominantly Caucasian, Middle Class **Parent and Child**
  - 120 Children (3-5 years old)
    - Equal Boy/Girl ratio
  - 120 Parents
    - Only 5 males
- E1 had **144** Participants, E2 and E3 both had **48**
  - Participants were *not* present in more than one experiment
  - ~2-3 children would be excluded in each of the results for failure to follow directions

Methods: Measurements

- Parents asked about **prior exposure** to Snakes
  - For themselves and their child
- Materials
  - Touch screen with 3x3 matrix of images
- Measurement
  - **Latency to touch**: the time it takes for a participant to touch the target image (Snake)
  - 24 trials for each participant

https://www.researchgate.net/figure/221852384_Left-2-panels-show-the-color-scale-matrix-and-right-2-panels-show-the-gray-scale-matrix

Methods: The Experiments

- Each experiment was conducted **sequentially** (E1 before E2...)
- Children were **randomly assigned**
  - Parent presented same condition
  - Independently of child
- After First Experiment, only the 3 year olds and their parent were used
  - **Measuring evolutionary response** over learned

Methods: The Experiments

- E1
  - Differentiate snake from flower
  - **Full range** of participants
- E2
  - Differentiate snake from frog
  - **Only 3 year olds** and their parent participated
- E3
  - Differentiate snake from Caterpillar
  - **Only 3 year olds** and their parent participated

Results: Experiment 1

- The ANOVA on latency to touch* the target yielded significant main effects of
  - Target stimuli: SNAKES
    - F= 9.66
    - p< .01
    - p_{rep}= 1.0
  - Age
    - F= 109.04
    - p< .01
    - p_{rep}=1.0
- There was no effect on child's experience with snakes
    - F= 1.18
    - p= .28
    - p_{rep}= .66

Results: Experiment 1

- Results prove that young children detect threat-relevant stimuli more quickly than non-threat-relevant
  - Adults were much faster at detecting the target (snake) within the 8 distractors (flowers) than the alternative
  - Children were much faster at detecting the target (snake) within the 8 distractors (flowers)

Results: Experiment 2

- The ANOVA on latency to touch the target yielded significant main effects of
  - Target stimuli
    - F= 7.27
    - p< .01
    - p_{rep}= .95
  - Age
    - F= 102.58
    - p< .01
    - p_{rep}=1.0
- There was no effect of snake experience
    - F= .17
    - p= .68
    - p_{rep}= .37

Results: Experiment 2

- Both children and parents were quicker at detecting the snakes than the frogs
- Experiment 2 shows **detection bias** for snakes by using frogs as non-threatening stimuli

Results: Experiment 3

- The ANOVA on latency to touch the target yielded significant main effects of
  - Target stimulus
    - F= 13.42
    - p< .01
    - p_{rep}= .96
  - Age
    - F= 29.05
    - p< .01
    - p_{rep}=1.0
  - Age-by-target interaction
    - F= 5.12
    - p< .05
    - p_{rep}= .91
- There was no effect of snake experience
    - F= .16
    - p= .69
    - p_{rep}= .36

Results: Experiment 3

- Further suggests young children detect threat-relevant stimuli more than non-threat relevant stimuli
- Suggests detection of snakes is based on their unique features

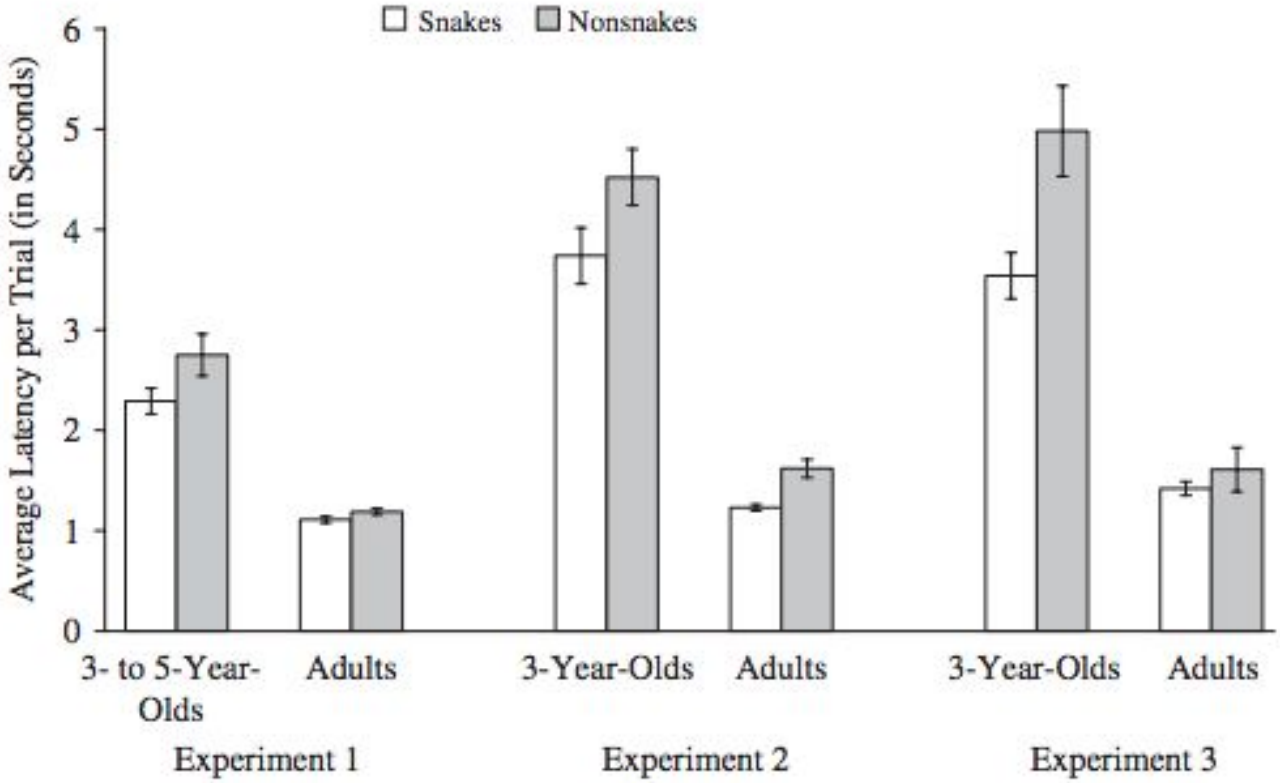

Fig. 2. Average latency to detect target stimuli (snakes vs. nonsnakes) among adult and child participants in Experiments 1 through 3.

Discussion: What are the Implications?

- Child's reported exposure to snakes was unrelated to snake detection time
- Study supports the theory of innate fears and quick response to threatening stimuli

Discussion: Comparing to Previous Literature

- Previous research had participants detect snakes among irrelevant stimuli
- Previous research only used adult participants making it hard to determine the evolutionary nature of the response

Discussion: Future Research

- Previous research has found quick detection for non-threat animals such as kittens and dogs
- Quick detection has been found for present day threatening stimuli (guns, knives, etc.)