Infant Cognition 1: Research Methods

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Challenge of Studying Infants

- Cannot talk
- Cannot follow instructions
- Short attention span
- Limited behavioral repertoire
- Develop rapidly, so different tasks need to be used at different ages

Experimental Methods

- Behavioral Tasks
- Dependent variables: Sucking, head turning, reaching, surprise, looking time

- Physiological Tasks
- Dependent variables: Heart Rate, Event Related Potentials (ERPs), Hemodynamic response (e.g. fMRI, Optical Imaging)

Experimental Methods

- Behavioral Tasks
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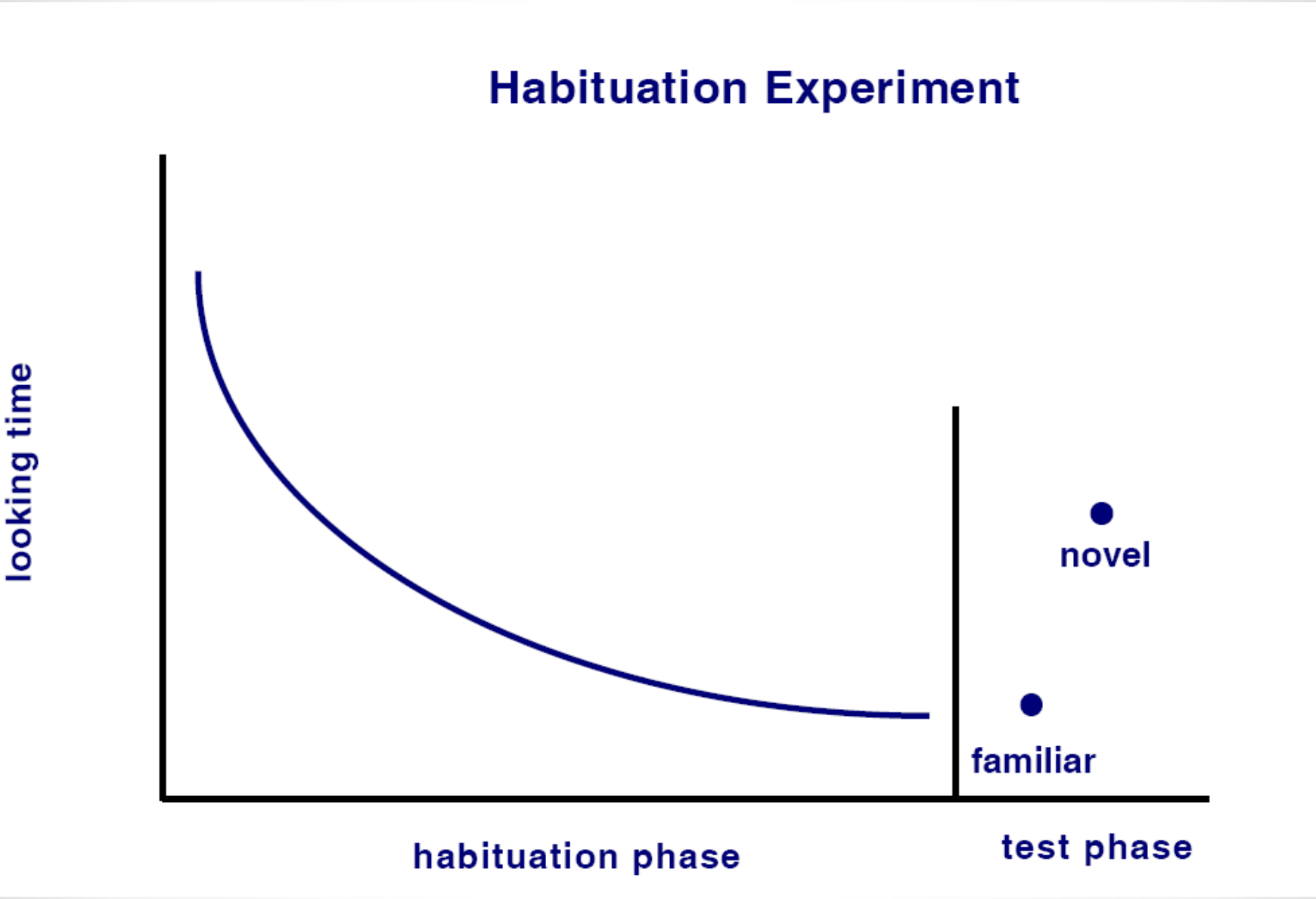
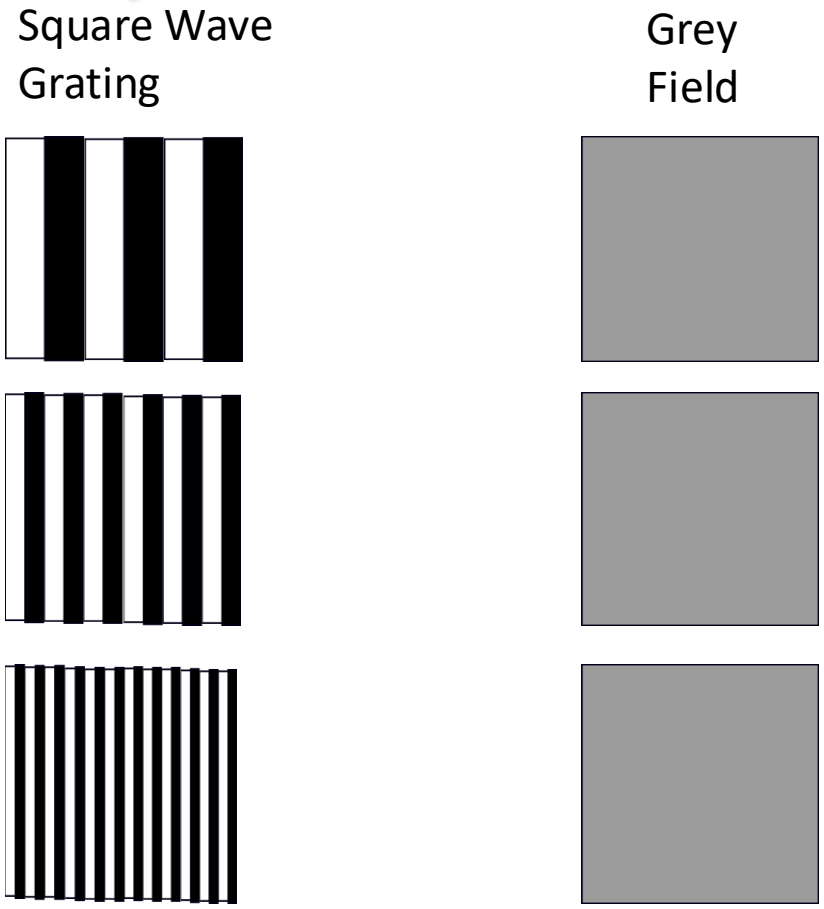
Habituation: Looking


Habituation Experiment
looking time
novel
familiar
habituation phase
test phase

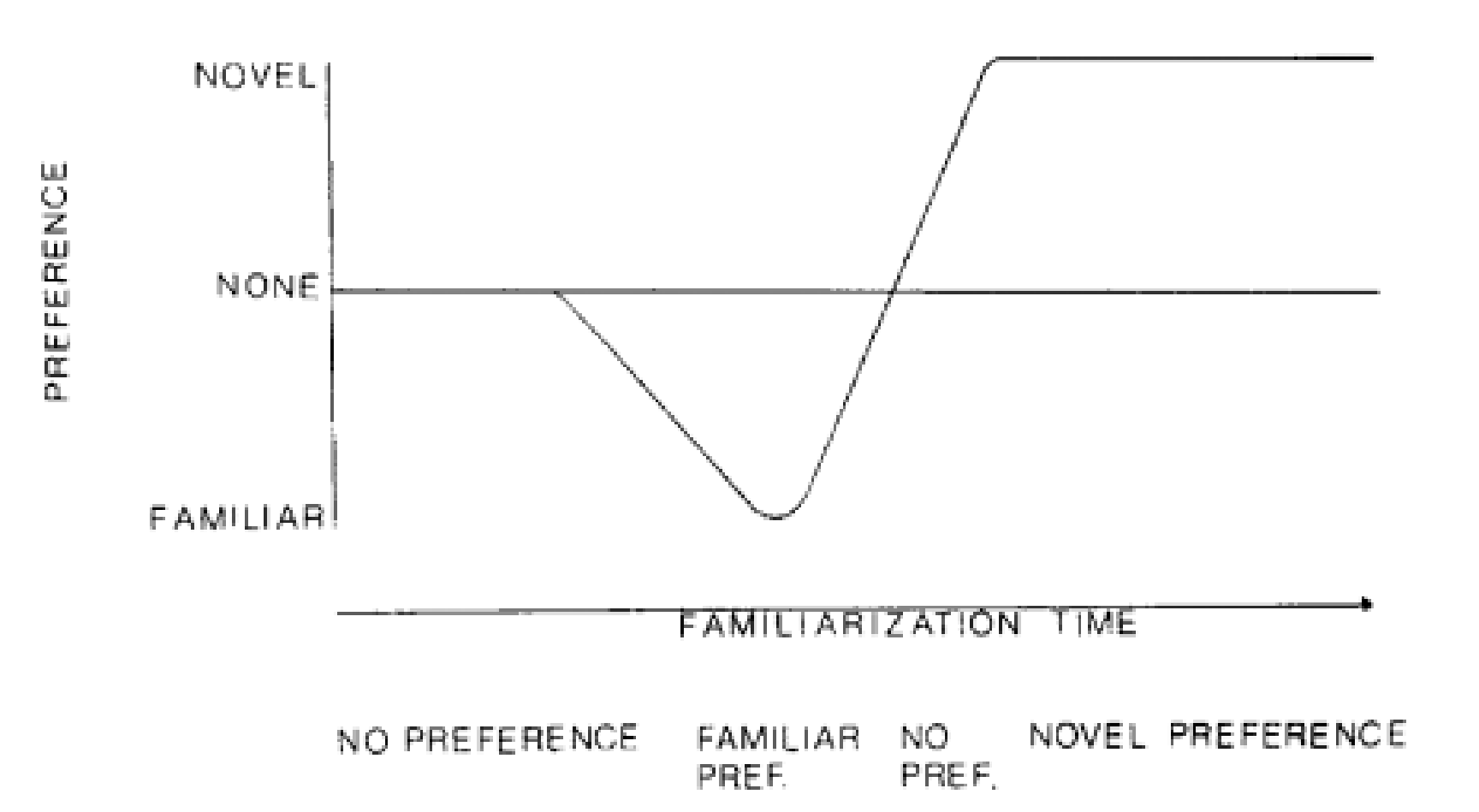
First uses of habituation: Tests of Perceptual Discrimination



- Very young infants wouldn't necessarily dishabituate to grey field following thinnest lines: visual acuity to low to
- discriminate the two

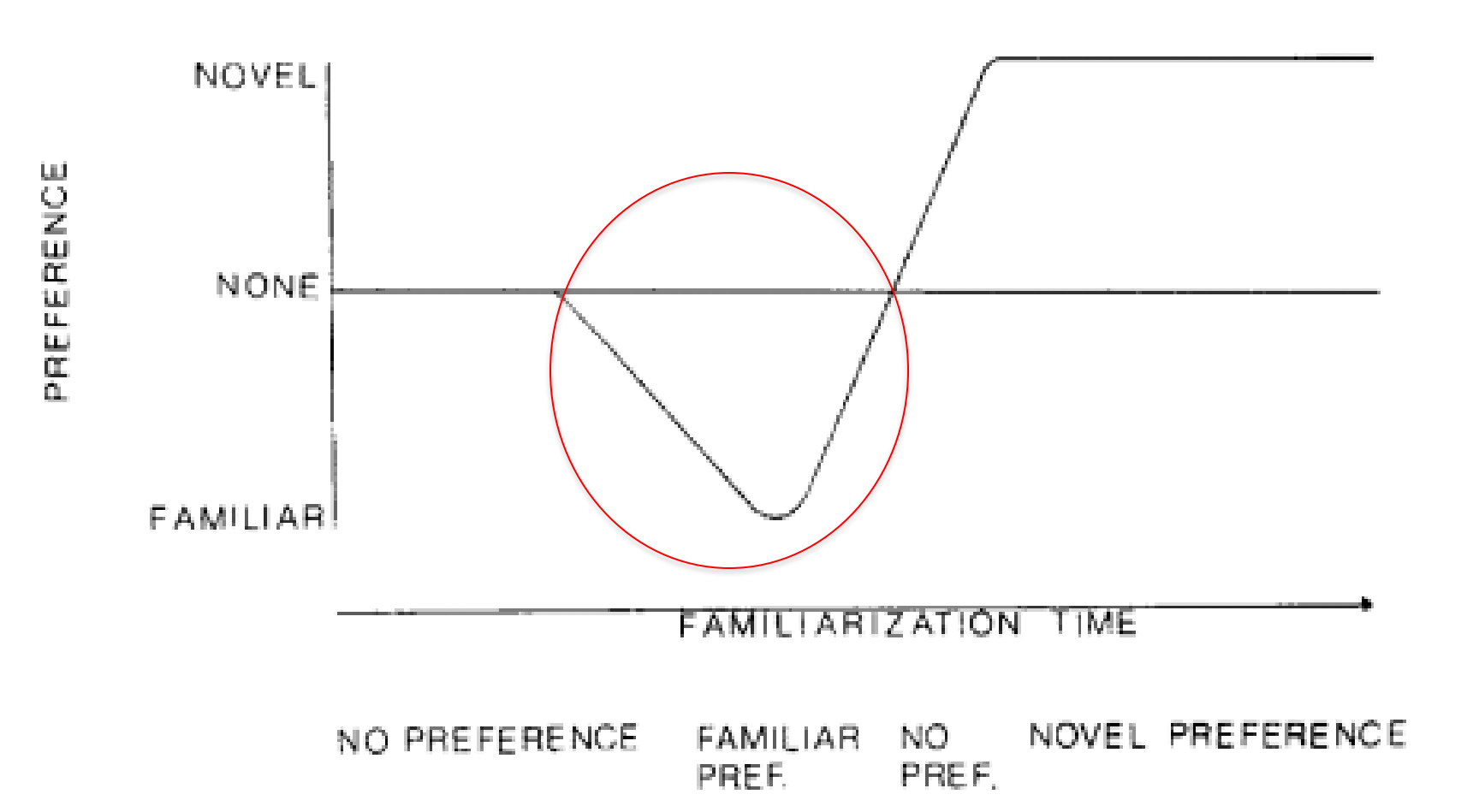
More complex model of looking time

Hunter & Ames (1988, Figure 2)



More complex model of looking time

Hunter & Ames (1988, Figure 2)



More complex model of looking time

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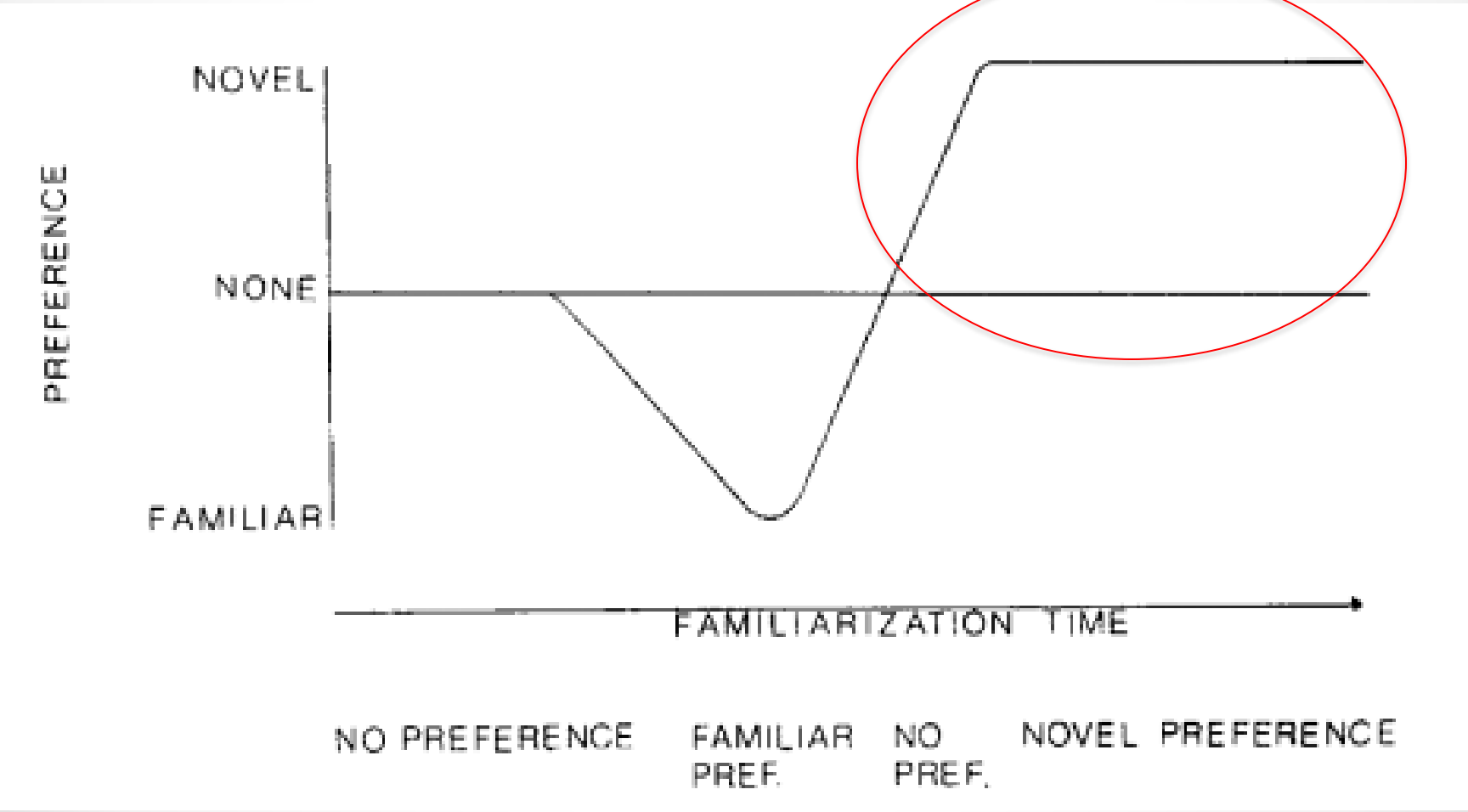


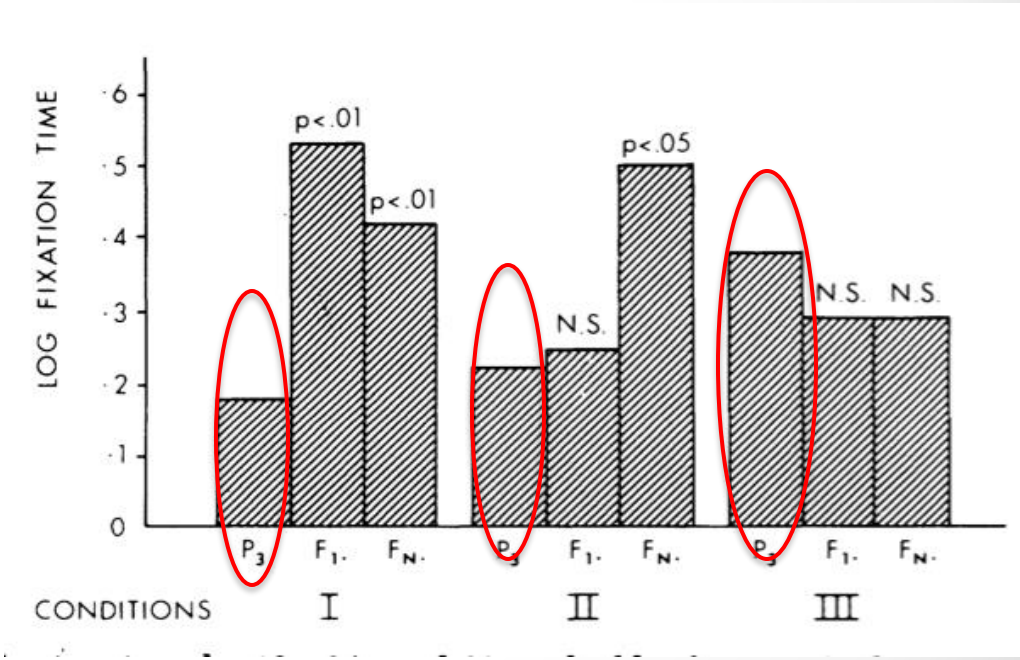
Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- 3 Habituation conditions

1. Habituate to a single face at a single orientation
2. Habituate to a single face at multiple orientations.
3. Habituate to multiple faces at multiple orientations

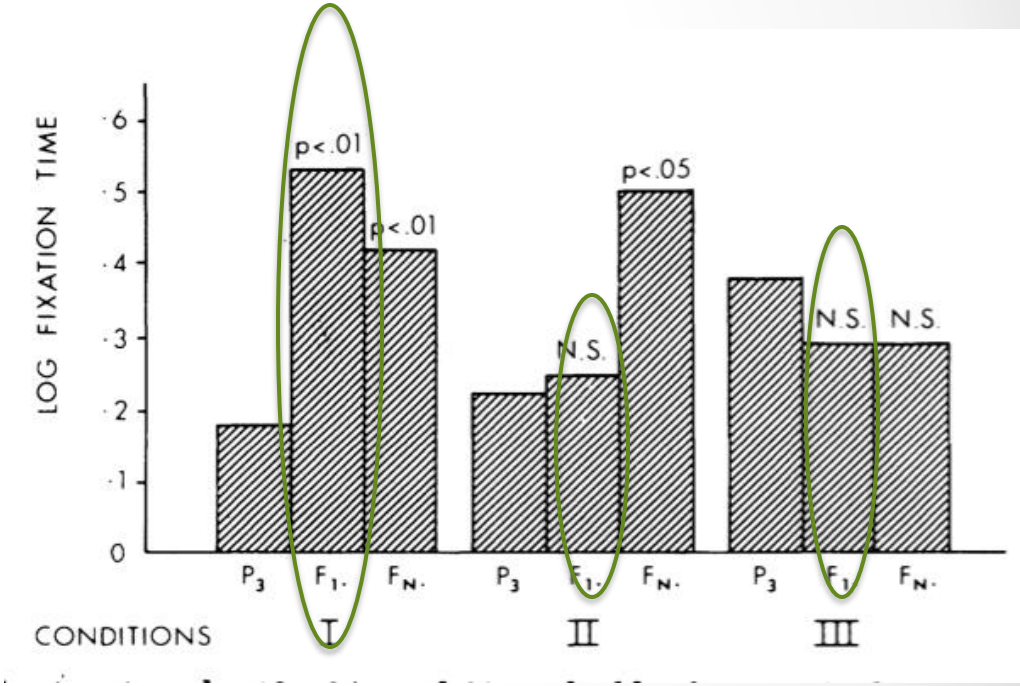
Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- 3 Test trials
- 1. P_3 = Familiar face at familiar orientation stimulus



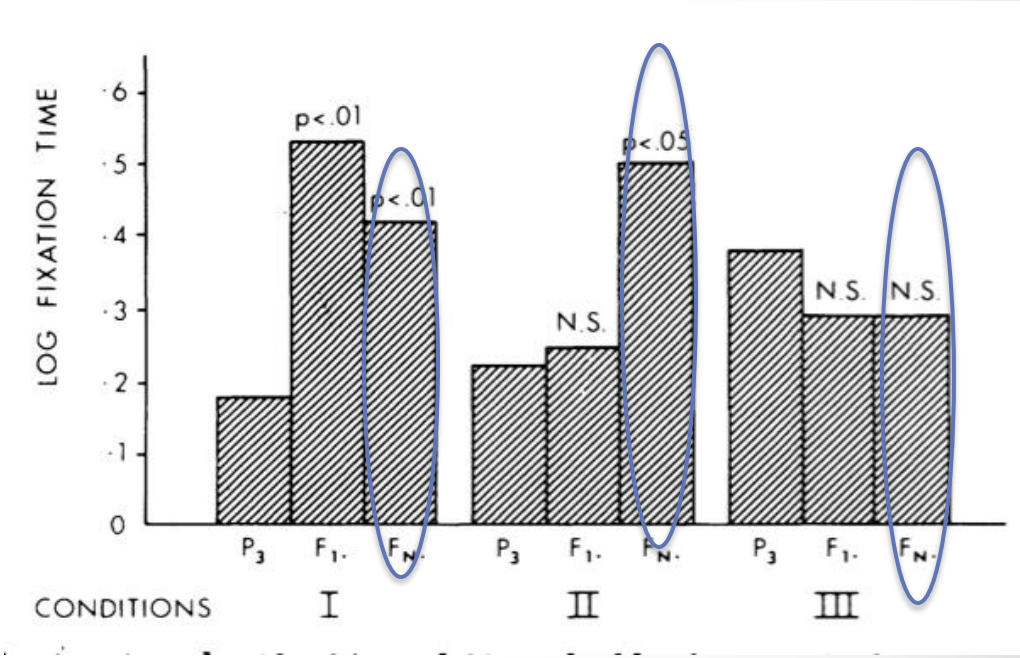
Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- 3 Test trials
- 2. F_1 = Familiar face at a novel orientation



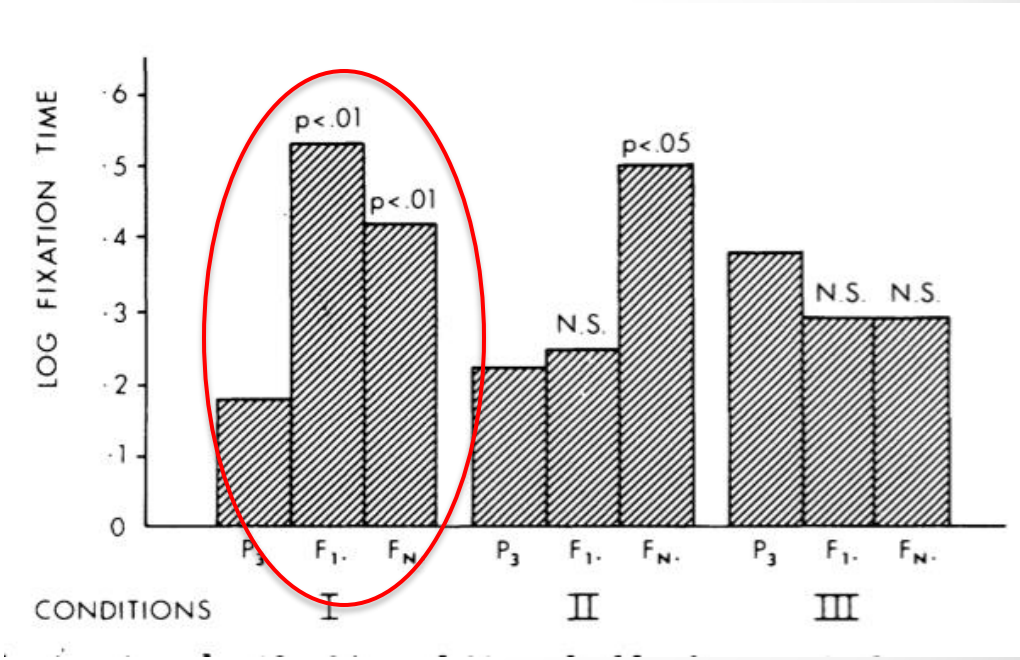
Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- 3 Test trials
- 3. F_N = Novel face at a novel orientation



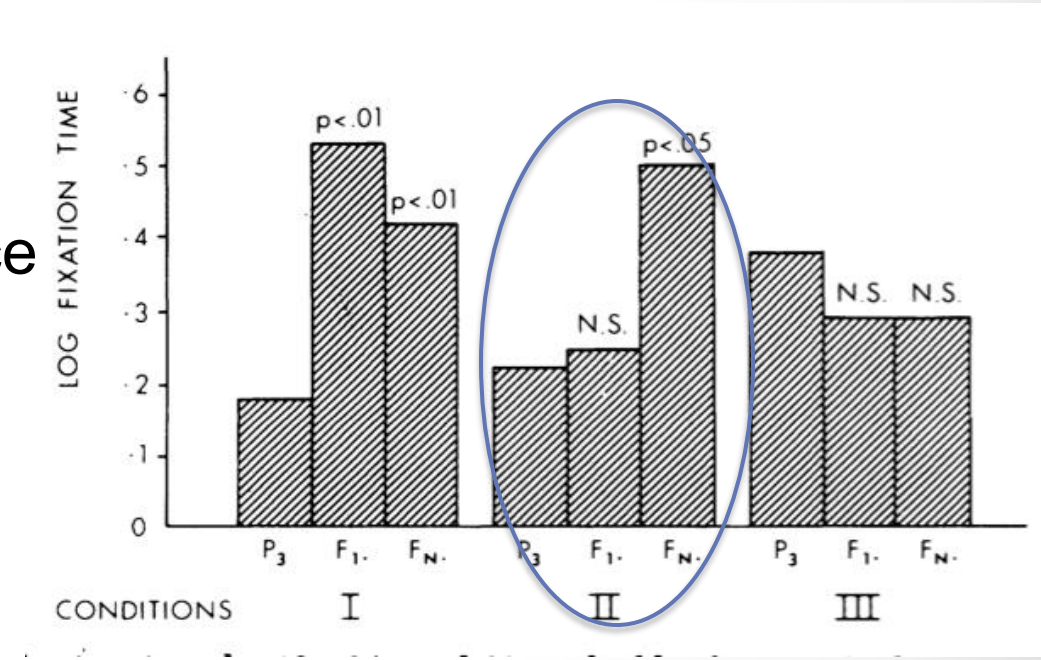
Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- 3 Habituation conditions
- 1. Habituate to 1 face 1 orientation
- They discriminate novel from familiar



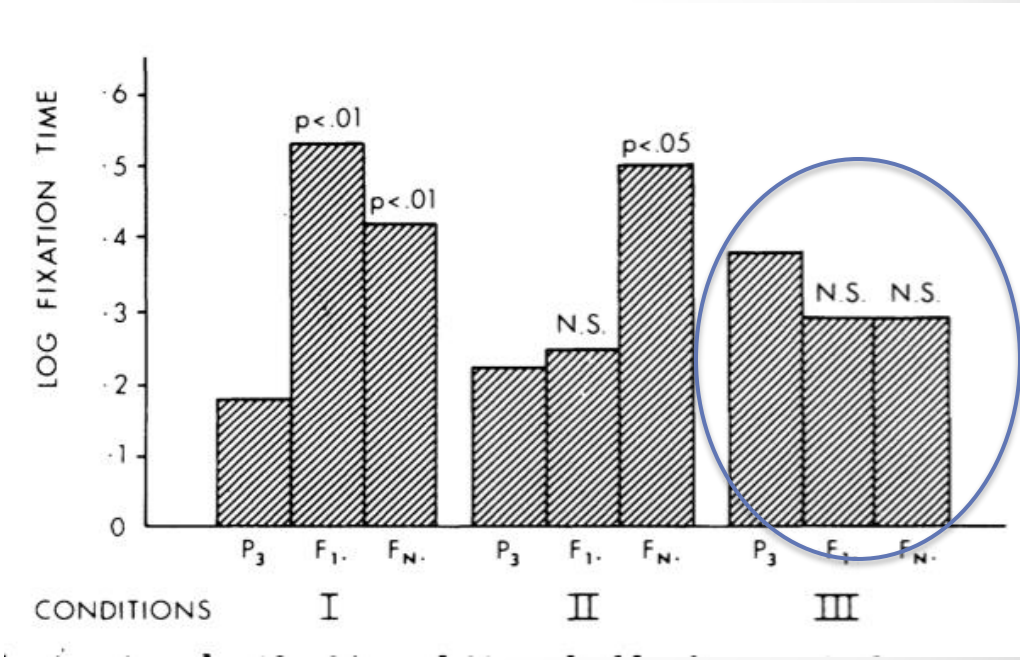
Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- 3 Habituation conditions
- 2. Habituate to same face at multiple orientations
- Do not dishabituate to familiar face at novel orientation, but does to novel face.



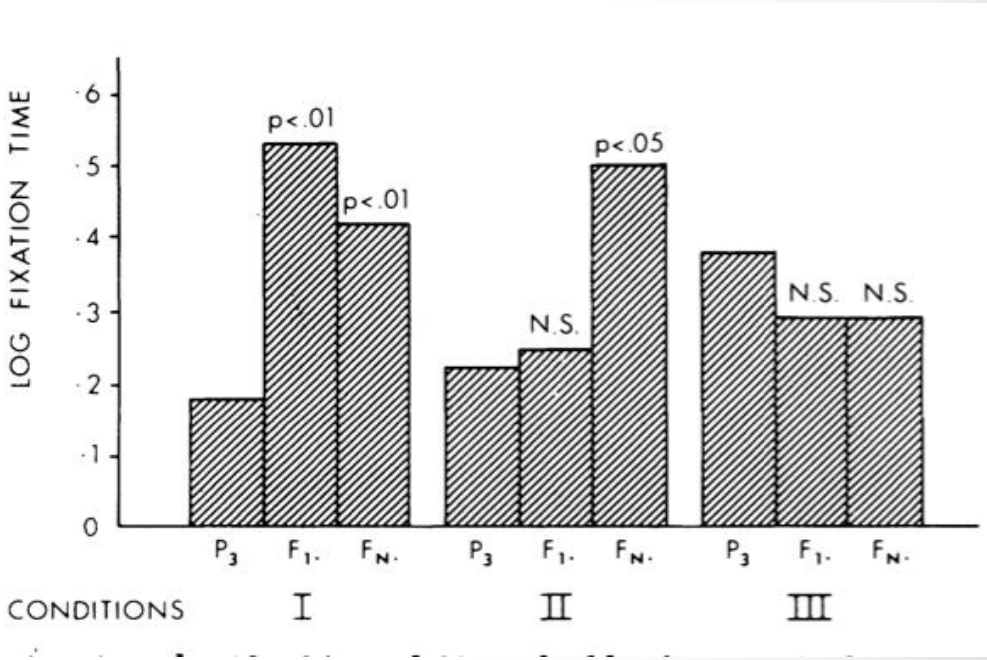
Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- 3 Habituation conditions
- 3. Habituate to multiple faces at multiple orientations
- do not dishabituate to either novel stimulus



Beyond discrimination: Generalization of habituation

- Cohen & Straus 1979
- 30 week old infants habituate to faces
- Track the pattern in the stimuli, not just individual stimuli
- Generalize their habituation based on the pattern
- Younger infants did not learn the pattern



Learning Outcome: Principles of habituation

- When first learning about a stimulus, infants may show a familiarity preference. The more complex the stimulus, the longer the familiarity preference may persist.
- After infants have fully processed the stimulus and habituate, they will develop a novelty preference.
- Infants do not just habituate to the specifics of individual stimuli, but they habituate to the pattern in the stimuli and generalize their habituation to new stimuli that fit the pattern.
  - Allows test of whether infants are capable of learning particular patterns, not just whether they can discriminate between individual stimuli.