

# Lecture Outline

## Schemas Part 1

- Bottom up vs. Top Down Processing
- Schemas
  - Definition
  - Functions
  - Activation
  - Structure

# Bottom-Up Processing

Definition: Processing of information that is driven by individual features of stimuli.

Example: putting a puzzle together, not knowing what the picture will be.

# Top-Down Processing

Definition: Processing of information that is driven by past knowledge and experience.

Example: putting a puzzle together, knowing what the picture will be.

# Schemas

Definition: Mental representations of knowledge.

- Preconceptions
- Theories
- Expectations

# Schemas

- Schemas contain two kinds of knowledge

## 1. Attributes

- ◆ Birds: wings, eat worms, fly
- ◆ Women: nurturing, emotional, take care of children

## 2. Relations among attributes

- ◆ Birds can fly because they have wings
- ◆ Taking care of children makes women nurturing

# Schemas

- Schemas do not have to be veridical (accurate).
- Example: Stereotypes are a kind of schema and stereotypes are sometimes inaccurate.

# Functions of Schemas

General Function: Help people understand incoming stimuli

Specific Functions:

- categorize new instances
- infer additional attributes
- guide interpretation and attention

# Function 1: Categorize New Instances

- People classify new instances into categories
- Schemas provide information about the features shared by category members

# Function 2: Infer Additional Attributes

- After categorization, people infer features from schema attributes

Categorization:

Inference:

# Function 2: Infer Additional Attributes

Warm-Cold Study: Asch (1946)

## Purposes:

- Demonstrate that some traits have stronger affect on inferences than others
- Demonstrate how people make inferences from person schemas

# Warm-Cold Study: Asch (1946)

## Procedure:

- Participants heard description of person
- Participants made inferences about person by selecting one trait from trait pairs
  - » generous - ungenerous
  - » shrewd - wise
  - » dishonest - honest
  - » frivolous - serious

# Warm-Cold Study: Asch (1946)

## Description Content:

- intelligent
- skillful
- industrious
- \_\_\_\_\_ (cold vs. warm) ← Manipulation
- determined
- practical
- cautious

# Warm-Cold Study: Asch (1946)

Hypothesis: Manipulation of Warm-Cold have large effect on inferences

Results:

Trait List

	<u>Warm</u>	<u>Cold</u>
generous	91%	8%
good-natured	94%	17%
sociable	91%	38%

# Warm-Cold Study: Asch (1946)

Hypothesis: Manipulation of Polite-Blunt  
will have weaker effect on inferences  
than Warm-Cold

<u>Results:</u>	Study 1		Study 2	
	Warm	Cold	Polite	Blunt
generous	91%	8%	87%	33%
good-natured	94%	17%	91%	55%
sociable	91%	38%	91%	55%

# Warm-Cold Study: Asch (1946)

## Conclusions:

- Some traits are central in one's schema (w-c), others are peripheral (p-b)
- People use schemas to make inferences

# Function 3: Guide Interpretation and Attention

Schemas enable people to  
interpret ambiguous events

- ◆ Crying = Mourning at a funeral
- ◆ Crying = Joy at a wedding

# Function 3: Guide Interpretation and Attention

## Stereotypes

One kind of schema  
that people use to interpret  
ambiguous events

# Racial Bias Study: Sagar & Schofield (1980)

Purpose: Demonstrate that  
stereotypes bias  
interpretation of ambiguous  
events

Participants: 40 African  
American; 40 White

# Racial Bias Study: Sagar & Schofield (1980)

## Procedures

Participants presented with  
four ambiguous drawings:

- bumping
- requesting food
- poking
- taking a pencil

# Racial Bias Study: Sagar & Schofield (1980)

## Procedures

Participants rated actor's  
behavior as.....

- ♦ mean
- ♦ threatening
- ♦ playful
- ♦ friendly

# Racial Bias Study: Sagar & Schofield (1980)

		Actor Race	
		African American	White
Participant Race	African American		
	White		

# Racial Bias Study: Sagar & Schofield (1980)

Subject	Actor	Mean & Threatening
White	W	8.28
	AA	8.99
African American	W	7.38
	AA	8.40

Conclusion: White and African American participants rated identical behavior as more mean and threatening when actor was African American. Schemas influence the interpretation of events.

# Washing Clothes Study: von Hippel et al. (1993)

Background: Schemas facilitate  
memory

- Direct attention to relevant information
- Direct attention away from irrelevant information

Purpose of Study:

Challenge existing thought--Can  
schemas inhibit memory?

# Washing Clothes Study: von Hippel et al. (1993)

Hypothesis: Schemas inhibit memory overall, but enhance retrieval of schema-relevant info

- Without schema: People encode more info but have worse retrieval
- With schema: People encode less info but have better retrieval -- schema acts as cue.

# Washing Clothes Study: von Hippel et al. (1993)

Step 1: Participants (n = 24) read scenario.

Manipulation: Schema activation

- 1/2 participants given title: Washing Clothes
- 1/2 participants not given title

Step 2: Completed Word Fragments:

- Words from scenario, but multiple answers
- e.g., c o m \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ complicated  
communicate

# Washing Clothes Study: von Hippel et al. (1993)

## Dependent Variable:

- Number of word fragments solved with words from scenario
- Better memory = more word fragments solved with words from scenario

# Washing Clothes Study: von Hippel et al. (1993)

## Results:

# word fragments  
solved with words  
from scenario

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Given title 19

Not given title 22

Conclusion: Schemas can inhibit memory

# Schema Functions 4 & 5:

Function 4: Schemas aid communication

- schemas fill in details

Function 5: Schemas aid reasoning

- can combine existing schemas to help understand conflicting information

- e.g., Harvard Educated Carpenter

# Schema Activation

## 1. Salience:

- salient schemas activated before less salient schemas

# Schema Activation

## 2. Priming:

- Recently or frequently primed schemas activated before less recently or less frequently activated schemas

Primes: Environmental cues

e.g., a bed primes thoughts of sleeping

# Priming Study:

Gilbert & Hixon (1991)

## Purpose:

- a) show that primes can activate schemas (stereotype)
  
- b) show that activation requires cognitive resources

# Priming Study:

Gilbert & Hixon (1991)

Participants: Female  
participants (n = 71)

Procedure:

- Watched video
- Experimenter showed cards with word fragments on them
- Participants completed word fragments

# Priming Study:

Gilbert & Hixon (1991)

## Manipulations:

### 1. Activation of Asian Stereotype

- Yes: Experimenter Asian
- No: Experimenter Caucasian

### 2. Cognitive business

- Busy: Rehearsed 8 digit number during video
- Not Busy: Did not rehearse number during video

# Priming Study:

Gilbert & Hixon (1991)

## Word Fragment Task:

- Word fragments had multiple correct answers, one that was associated with Asians

S \_ Y

S \_ O R T

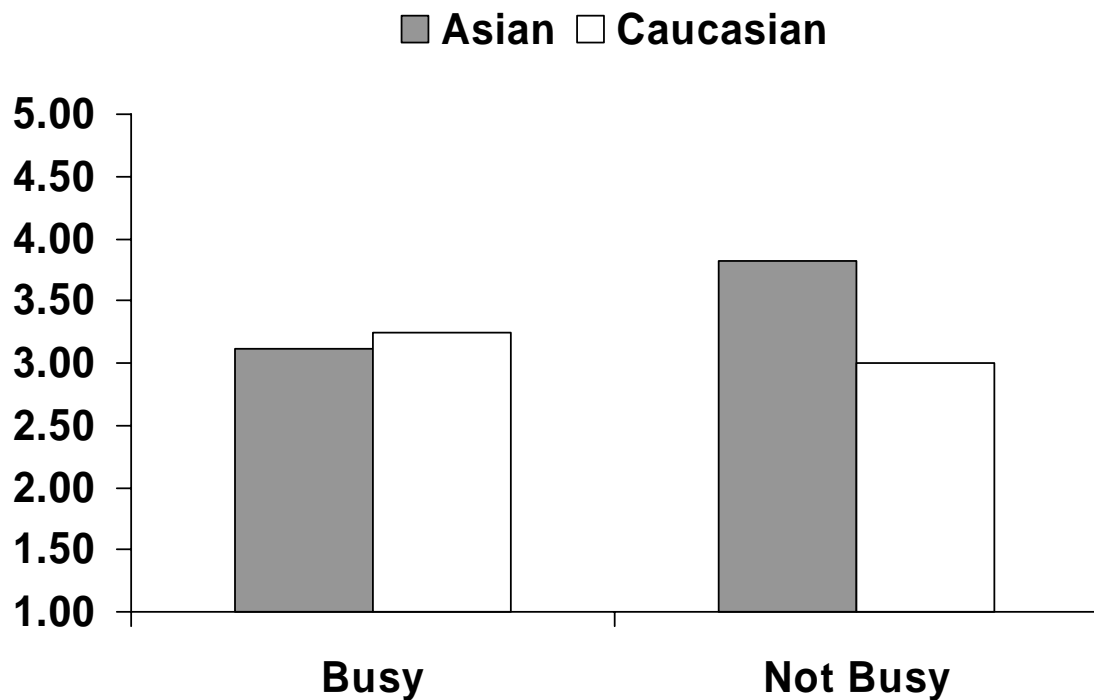
R \_ C E

P O L I \_ E

N \_ P

- Dependent variable: # Asian word completions

# Priming Study: Gilbert & Hixon (1991)



## Conclusion:

Primes can activate schema, if people have sufficient cognitive resources

# Schema Activation

## 3. Chronic Accessibility:

- Chronically accessible schemas used more than others
- Individual differences
  - ◆ self-defining
  - ◆ important to one's self-concept

# Schema Activation

## 4. Goals:

- People's goals influence which schemas are activated

# Feedback Study: Fein & Spencer (1997)

Purpose: To show that goal to bolster self-esteem activates negative stereotypes

Step 1: Intelligence test

Step 2: Feedback

Step 3: State Self-Esteem scale

Step 4: Evaluate job applicant

Step 5: State Self-Esteem scale

# Feedback Study: Fein & Spencer (1997)

## Manipulations:

### Feedback:

- positive (93rd %)
- negative (46th %)

### Schema Activation

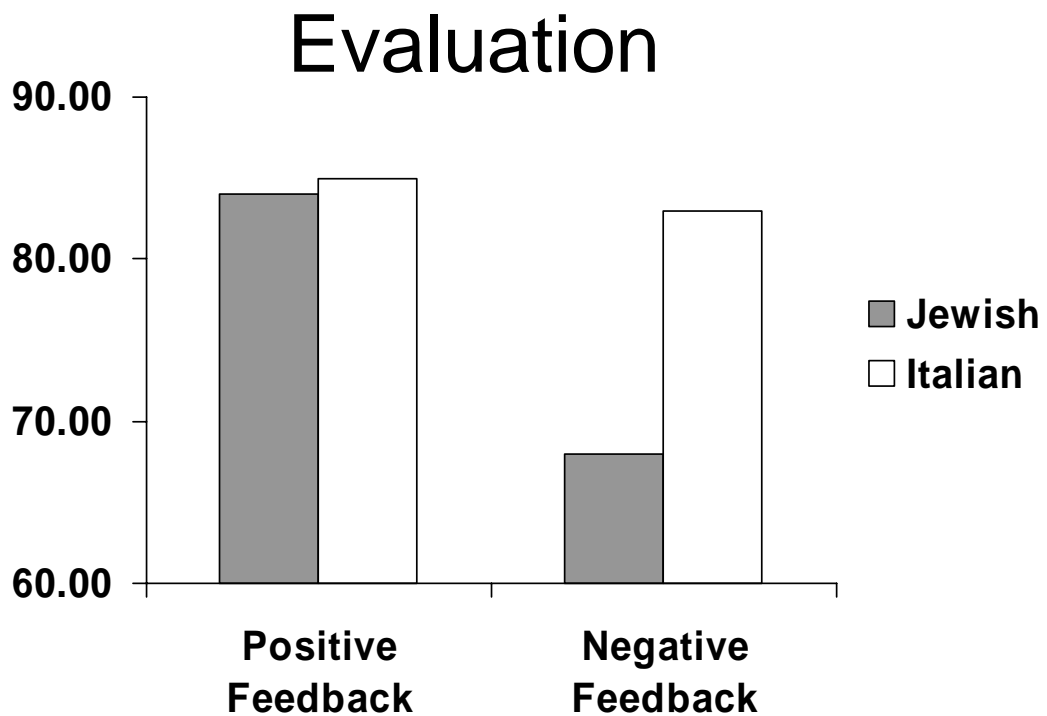
- Job applicant = Jewish
- Job applicant = Italian

# Feedback Study: Fein & Spencer (1997)

## Hypotheses:

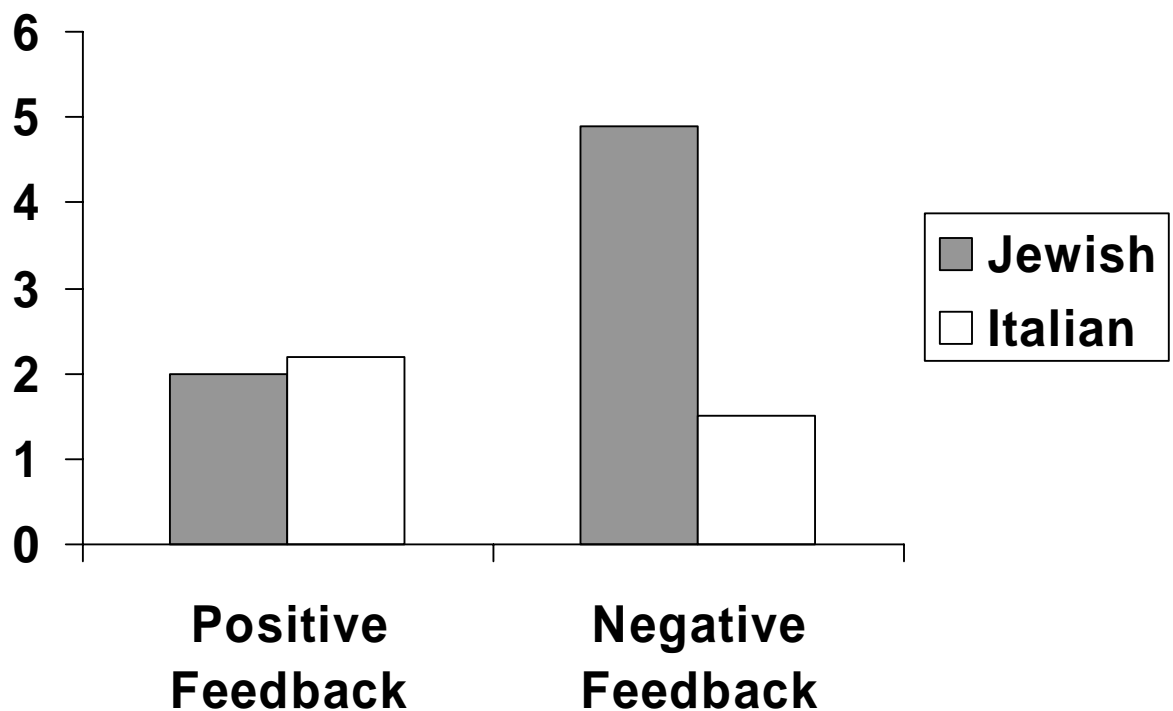
- In positive feedback condition:
  - Jewish and Italian applicant judged similarly
  
- In negative feedback condition:
  - Jewish applicant judged less favorably
  
- Denigrating Jewish applicant raises self-esteem

# Feedback Study: Fein & Spencer (1997)



# Feedback Study: Fein & Spencer (1997)

## Change in Self-Esteem



# Structure of Schemas

Classical View:

There is a set of necessary and sufficient attributes needed for an instance to belong to a schema

# Classical View: Assumptions and Limitations

Assumption 1: Schemas have  
clear-cut boundaries

Limitation 1: Difficulty  
specifying defining features  
of instances

# Classical View: Assumptions and Limitations

Assumption 2: All instances  
equally typical

Limitation 2: Not all members  
perceived as equally typical

# Classical View: Assumptions and Limitations

Test of Assumption 2: All instances equally typical

## Eleanor Rosch

- Typicality ratings
- Reaction times
- Production of examples

# Classical View: Assumptions and Limitations

Assumption 3: Categorization  
of new instances simple

Limitation 3: Not all new  
instances are easily  
categorized

# Probabilistic View of Schemas

## Probabilistic View

- Prototype Model
- Exemplar Model

## Schema

- list of typical features
- no feature necessary or sufficient
- family resemblance

# Probabilistic View of Schemas

## Process of Categorization

- Compare features of instance to fuzzy set of features
- Similarity = number of features an instance shares with group members
- Hi similarity = categorization as group member

# Probabilistic View of Schemas

## Addresses Limitations of Classical View

- Schemas do not have clear-cut boundaries
- Group members vary in typicality
- Categorization of new instances can be difficult

# Prototype Model

Schemas represented as list of typical features (a prototype).

Prototype = list of features that are typical of group members

Example: Bird

- has feathers
- lives in nest
- eats worms, etc.

# Prototype Model

## Process of categorization:

- Match features of a new instance to prototype.
- High similarity = categorization as group member

# Exemplar Model

Schemas represented as groups of specific instances (exemplars).

Exemplar = specific group members

Bird:

- robin
- crow
- hummingbird

# Exemplar Model

## Process of categorization:

- Match features of a new instance to exemplar.
- High similarity = categorization as group member

# Impact of Probabilistic View

## DSM II:

Depression: "an excessive reaction of depression due to an internal conflict or to an identifiable event such as the loss of a love object or cherished possession"

# Impact of Probabilistic View

## DSM IV-R:

Depression: depressed mood for 2 years plus 2 additional symptoms

- insomnia
- appetite loss
- fatigue inability to concentrate
- low self-esteem
- loss of pleasure in activities
- restlessness

# Criticisms of Probabilistic View

## Criticism 1: What features to match on

- ♦ Any instance can match any other instance on some features

# Criticisms of Probabilistic View

Criticism 2: People have theories about relation among features

- Birds have wings and fly
- Also know that birds fly because they have wings

# Raccoon Study:

Keil, 1989

Purpose: Demonstrated that children do not categorize on basis of feature matching alone

# Raccoon Study:

Keil, 1989

Children still believed that the "skunk" was a raccoon

Conclusion: People do not engage in simple feature matching as prototype and exemplar model propose

**Exam 1 Next  
Thursday**