

F8

Cognitive Systems

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Marcio Lobo Netto

João E. Kogler Jr.

PSI 3560 – COGNITIVE SYSTEMS

class F8

Marcio Lobo Netto
João Eduardo Kogler Junior



Polytechnic School of the University of São Paulo
Department of Electronic Systems Engineering
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SOCIAL COGNITION

Language, Communication, Emotion

Session F8

Summary

- Second session (9:20 – 11:00)
- Social cognition
 - Cognitive processes of social cognition
 - Social cognitive theory
 - Social learning theory
 - Bobo doll experiments
 - Social neurocognitive mechanisms
 - Mirror neurons
 - Communication and language

Social cognition



- Social cognition

Studies...

- The cognitive processes underlying relations with other individuals...

- » ... of the same or of different species

- Related elements of these cognitive processes:

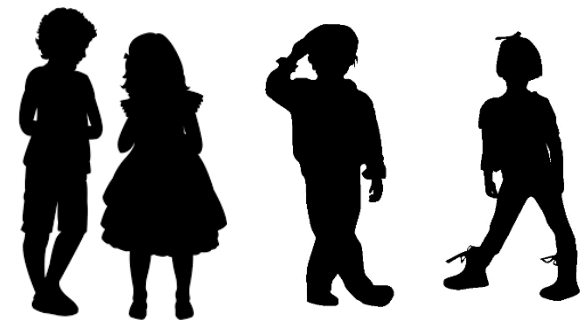
- Schemas (*schemata*)
 - Attributions
 - Saliency
 - Priming

...and...

- How social relations affects cognition

- Social cognitive theory

Social cognition



- Social cognition

- Cognitive processes underlying relations with other individuals

- » Of the same or different species

- Related elements of these cognitive processes:

- Schemas (*schemata*)

- » Patterns of thought, belief or behavior that organizes categories of information or knowledge, namely

- **Prototypes** – (or models) representations of statements, concepts, beliefs, or patterns of behavior

- **Archetypes** – prior (typically primal) prototypes (or models) from which other statements, concepts, beliefs, or patterns of behavior can be built, copied or emulated.

- **Stereotypes** – over-generalized prototype about a particular category of people



Social cognition



- Social cognition
 - Cognitive processes underlying relations with other individuals

» Of the same or different species

- Related elements of these cognitive processes:

- Schemas (*schemata*)

- Attributions

» Processes of **mapping causes to effects** like behaviors of other individuals or events that they are involved in.

» Two types: external and internal

- **External or situational attribution** – interpreting someone's behavior as caused by some situation in which the individual is involved.

- **Internal or dispositional attribution** – assigning cause of behavior to some internal characteristic of the individual.



Social cognition

- Social cognition
 - Cognitive processes underlying relations with other individuals
 - » Of the same or different species

- Related elements of these cognitive processes:

- Schemas (*schemata*)
- Attributions
- Saliency

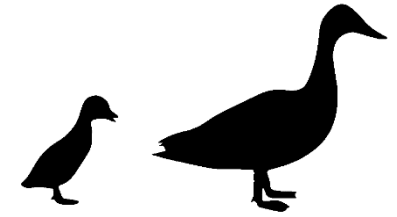


» A distinctive feature that an individual (or object) has by which it stands out from its neighborhood.

- It's a key attentional mechanism.
- Focus the perception, facilitates learning, enable proper scaling of cognitive resources.



Social cognition



- Social cognition
 - Cognitive processes underlying relations with other individuals
 - Schemas (*schemata*) , attributions, saliency
 - Priming



» Process by which the exposure to certain stimulus of some type influences (unconsciously) the responses of subsequent stimuli of the same type.

» Kinds of priming:

- **Positive priming** – the experience with the first stimulus is the same as with the subsequent ones.
- **Negative priming** – the experience with the first stimulus leads to ignore the subsequent stimuli.
- **Perceptual priming** – there is a perceptual similarity between the first and the subsequent stimuli.
- **Conceptual priming** – there is a semantic match or similarity between the first and subsequent stimuli.
- **Direct priming** or **repetition priming** – when each subsequent repetition of the stimulus leads to a quicker or more definite response.
- **Associative priming** – when the subsequent stimuli doesn't have to be of the same aspect of the prior, but is closely or frequently associated with it.

Social cognitive theory

- How social relations affects cognition

- Main principle: learning other's behavior

- one individual's cognitive processes may be driven by observations of others individuals' behaviors
 - and the consequences of those behaviors
 - The individual remember the sequence of events and use this information to guide his/her own subsequent behavior

- » Drivers:

Copy the
sequence of
acts

- **Imitation** – copy the other individual's behavior
 - Matching an act to an appropriate cue of where and when to perform the act

Build the *automaton*
that copies the
sequence

- **Modelling** – build a model of
 - the other individual's behavior or
 - of the other individual performing the behavior
 - **Social motivation** – justify the imitative behavior
 - look for positive reinforcement

Social cognitive theory

- How social relations affects cognition

- Social learning and imitation theory

- By Edwin Holt and Harold Brown (1931)

- animal action is based on fulfilling psychological needs of

- » Feeling, emotion and desire

- Social learning by reinforcement theory

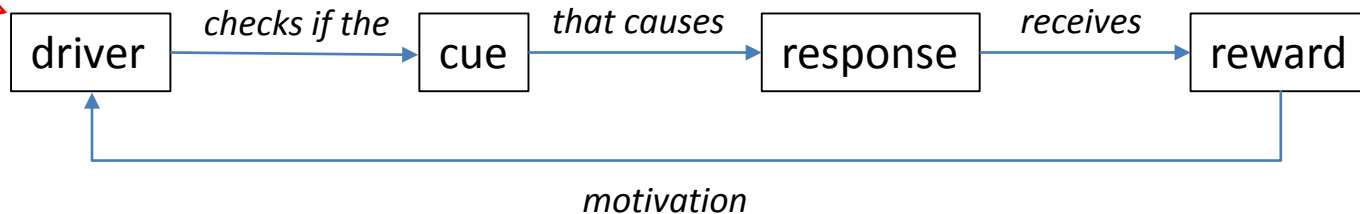
- By Neal Miller and John Dollard (1941)

- Four learning factors:

- » Drives, cues, responses and rewards

imitation
engine
or automaton

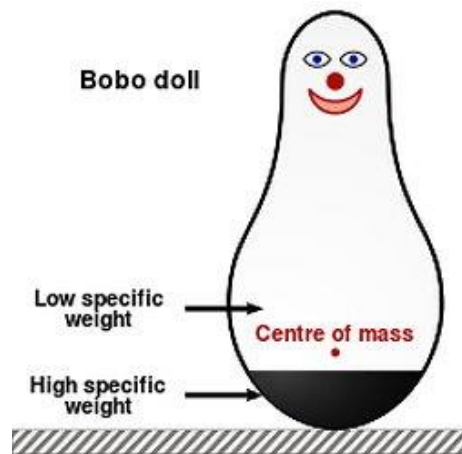
positive or
negative
reinforcement



Social cognitive theory

- How social relations affects cognition (cont.)
 - Social learning theory, then social cognitive theory
 - Albert Bandura (1977)
 - Bobo doll experiments (1961-63)
 - » Study of aggressive behaviors displayed by children

- Results



- For aggression
 - Boys imitated the male model clearly more
 - Girls imitated the male model a little more
- For non-aggression
 - Boys imitated the male model clearly more
 - Girls imitated the female model clearly more

Social cognitive theory

– Bobo doll experiments (1961-63)



Social neurocognitive mechanisms

- Neural basis underlying social cognition
 - Mirror neurons
 - Driver of imitation
 - Modulatory effect of emotions
 - Driver of social motivation
 - ... ?
 - Driver of modelling ?

Social neurocognitive mechanisms

- Neural basis underlying social cognition

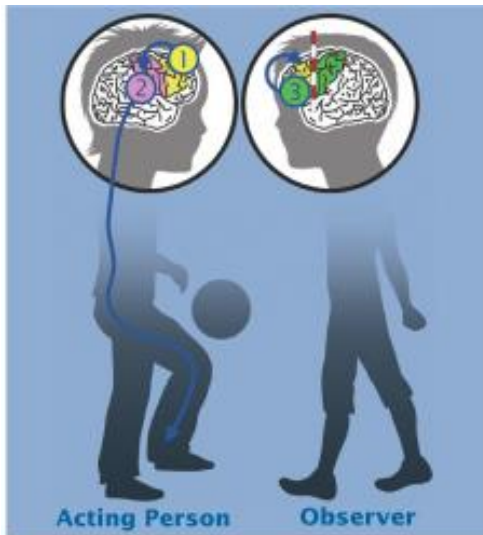
- Mirror neurons

- Driver of imitation

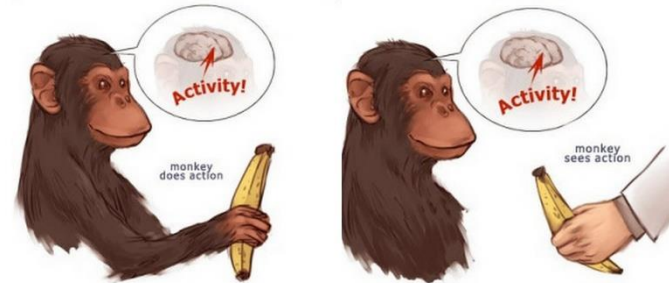
- Directly observed in primates

- » 1980's/1990's – Giacomo Rizzolatti, Giuseppe Di Pellegrino, Luciano Fadiga, Leonardo Fogassi and Vittorio Gallese

- » Ventral premotor cortex of macaque monkey



- 1 The mirror neurons send the order to the motor cortex to move the foot.
- 2 The motor cortex sends the order to the muscle cells in the leg.
- 3 The inhibitor mechanism prevents the transmission within the observer.



- Evidence in birds

- » Resonant social behaviors and responses

- Still open quest for human mirror neurons

- » Consistent responses (indirect observations) in

- Premotor cortex, supplementary motor area, primary somatosensory cortex, inferior parietal cortex

Communication and language

- Communication as a social cognitive process
 - Remote control
 - Intervention
 - Teaching
 - Emotion sharing
 - Cultural organization
 - Social epistemology of culture
- Language a social cognition and communication basis

This is all for today.

See you next week !