Cognitive psychology:
From semantic categories to narratives

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Introduction:  some definitions

- Psychology:  the science of the mind or of mental states and process
- Linguistics:  the science of “language envisaged in itself and for itself”  (Saussure, Cours de linguistique générale)
- Perception:  the art or faculty of apprehending by means of the senses or of the mind
- Mind:  (in a human or other conscious being) the element, part, substance, or process that reasons, feels, wills, perceives, judges, etc.

(from New Webster’s dictionary, 1989)

Object:  *experimental* study of relationships between meaning and perception
Outline

1. Introduction
2. Concepts
3. Methodology
4. Some examples
5. Discussion
6. Conclusion: focusing on the human subject
2. concepts psychophysics

Physical measurement Perceptual measurement Affective measurement

Filter 1, the senses Filter 2, non sensory factors

Physical stimulus Perceived stimulus Likes/dislikes

Sensory sensitivity and selectivity Mood
Sensory sensitivity and selectivity Context
M1 M2 M3

Objective Subjective

Mind material in nature

Pedersen, 1999
ecological approach (Gibson)

• rejects stimulus/response paradigm
  – casts doubt on sensation

• theory of affordances
  – values and meanings are directly perceived

• meaningful perception is direct and immediate
  – no time for checking properties (classical categories)
categorization (Rosch, Lakoff)

- *experimental* categories not based on common properties
  - but similarity of shapes

- existence of **prototypes**
  - elements that better represent category: *robin* for *birds*

- Existence of **basic level**
  - at which our *knowledge* is organized  *cognitive economy*
  - at which the *world* is perceived  co-occurences are not random
  - based on *similarities* and *differences*

The body is in the mind
linguistics (Saussure, Greimas)

• “Language is based on oppositions” (Saussure, *Cours de linguistique générale*)
  – just as experimental categories
  – not a list of labels

• “We perceive differences, and the world takes sense in front of us and for us” (Greimas, *Sémantique structurale*)

• “Meaning springs out of the two terms of an opposition” (idem)

=> elementary structure of signification
semantic model (semiotic square)

\[
\begin{array}{c}
S_1 \\
\text{positive} \\
S_2 \\
\end{array}
\quad \text{complex (opposition)} \quad S_1 + S_2 \quad \begin{array}{c}
S_2 \\
\text{neutral (opposition)} \\
S_1 \\
\end{array}

\text{implication} \quad \text{contradiction} \quad \text{contradiction} \quad \text{implication}

\text{neither } S_1 \text{ nor } S_2

elementary structure of meaning after Greimas = categories
actantial model

axis of transmission / axe de la communication

Sender / destinataire → Object / objet → Receiver / destinataire

Helper / adjuvant → Subject / sujet → Opponent / opposant

axis of desire / axe de la quête

axis of power / axe du pouvoir
3. Methodology

1. free categorization
   - free sorting
   - content analysis with grammatical structure
   - actantial categories

2. ecological validity
   - specifically design listening room
   - stereophonic recording and playback as basic level of cognition

3. role of instructions
   - compensate for missing context
   - exact wordings designed with care need for accurate transcriptions
4. examples from soundscapes

4.1 free categories: loudness similarity

Figures indicate loudness (in dB A)

- event sequences
- amorphous sequences

Maffiolo 1999
High screeching, motorcycles, pedestrians, discussion, near us, many sound events

Bus starting, road works, cannon woman, very loud, very unpleasant, sound sources

Background noise, annoying, intense, stationary, low frequencies

*italics: physical properties*

normal: events, activities, and sound sources

% responses

Physical properties Sound events, sources and activities

Judgements – loudness

○ amorphous sequences

□ event sequences

Maffiolo, 1999
4.2 semantic categories (verbalisation)

Method of analysis (Mzali, 2002)

Open questionnaire

- Free responses
- Size all the responses verbally
- Filter: constructing the grid of categories

| announcements | mobile phones | other people | newspapers | doors | Rolling noise |

Analysis

- general analysis: mean values
- more precise linguistic analysis for some categories
semantics of annoyance

% of all responses

- "agréable" = pleasant
- "désagréable" = unpleasant
- "gênant" = annoying
- "indifférent" = indifferent

Mzali, 2002
4.3 prototypical categories  (Vogel, 1999)

most frequent labels after listening to sounds
influence of context
4.4 graphic categories: naive point of view

Maffiolo and Vogel, 1997
4.5 actantial categories (Taupin 2017)

- Instructions:
  "Imagine the city where you would like to drive"

- Sample:
  N=40 students owners of a driving license, non exposed to Western movie films
  Aged between 21 and 24
  21 JH/ 19 JF

- Outputs are narratives and not simple comments

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My subject is pretty much the same as the work N°1. But what I imagine is rather a small corner in a city. As we all know, the pollution in the city is hyper-severe, the pressure of life is very large. I imagine having this kind of place within the city—, either an amusement park or a cultural district that can offer everyone (a place to) nourish life and relax the body and mind.

I can drive up there, lie down on the lawn and sunbathe. There are very pretty flowers, the views of the street very natural. Next to it, there is water from a very clear lake and the river etc. There, we can take our dogs around and have intimate communications with small animals.

In the shops next door there are top of the range clubhouses to feed life, or yoga clubs, in which you can eat something.
actantial structure of “My healthy life”
Collage in Seoul  

Pleasure in “Repetition”
5. Conclusion: focusing on the human subject

- sociology/social psychology
- sound as a collective representation
- member of a group
- linguistics
- talks/communicates meaningful
- cognitive psychology
- The human subject acts
- psychophysics
- perceives relevant
- physics/acoustics
- sound as signal
- living in the world
- after D. Dubois

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Jean-Dominique Polack
Thank you for your attention

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