Emotion ∩ Language

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February 14, 2024

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1 Issues

1. What is the relevant intersection?
   1.1. How is emotion conveyed linguistically?
   1.2. How do words encode emotion? How is emotion represented lexically?
   1.3. How do speakers communicate emotionally?
   1.4. How is emotion conveyed in communication?
2. What is Emotion/Affect? See, e.g., Itkes et al (2017), "Dissociating affective and semantic valence"
   2.1. A state of physiological arousal arising in response to some stimulus (the emotion response)
      - There doesn't seem to be a single marker..i.e., multiple correllates to emotion in the body,
   2.2. Linguistic content that triggers a physiological response (i.e., a bad slur)
   2.3. Linguistic content that refers to emotions (i.e., the verb "to love", or valence as a lexical feature)
3. Word recognition

1. The affective primacy hypothesis: is affective evaluation of an event prior to cognitive (/semantic) evaluation or identification of the event?

2 A brief intro to the neuroscience of emotion

1. Three main frontal–subcortical pathways where emotion seems to be processed
   - Amygdala
   - Periacqueductal gray (PAG)
   - Hypothalamus (Hy)
2. **Amygdala**
   - Two almond-shaped clusters of nuclei, located in the temporal lobe of the cerbreum
   - Plays a primary role in processing of memory, decision making and emotional responses

- Part of the limbic system
- Rich in adrogen receptors: a hormone that binds to testosterone, regulates gene expression
- **Emotional learning**:
  - formation and storage of memories associated with emotional events
  - Classical conditioned learning
  - Memories stored via long-term potentiation : a persistent strengthening of synapses based on recent patterns of neuronal activity (H̃ebbian learning)

3. **Periacqueductal gray**: a.k.a. midbrain central gray
   - Affect-induced physiological responses
   - Organism-wide resonses
   - Autonomic functions, motivated behavior, behavioral responses to threatening stimuli; Pain
4. **Hypothalamus**
   - Affect-induced physiological responses; in particular threat and stress responses
   - Part of the limbic system
   - Responsable for regulating metabolic processes and the autonomic nervous system
   - Synthesizes and secretes neurohormones which stimulate or inhibit secretion of hormones from the thalamus
   - Controls body temperature, hunger, parenting and maternal attachment behavior, thirst, sleep, circadian rhythm, important for social behaviors (sexual and aggressive behaviors)
5. All these regions are part of the autonomic nervous system
   - Considered a purely motor system
   - Unconscious body functions, heart rate, contraction force, digestion, respiratory rate, pupilary response, urination, sexual arousal, vasomotor activity
   - Fight or flight
   - Reflex actions (swallowing, vomiting, coughing, sneezing)
6. Theories of emotion
   - Adaptive experiential grounding : association between an experience and physiological response to the experience forms a memory
   - **Discrete/basic emotion approach** (Elkman 1992; Izard 1993; Panksepp 1998) several discrete, biologically bounded categories of emotion (corresponding to our folk notions)

- **Dimensional models** (Russell 2003; Russell and Barrett 1999; Cacioppo et al 1999; Watson and Tellegen 1985): valance and arrousal
- **Constructivist approach** (Barrett 2006, 2007; Russell 2003):
  interplay of basic psychological processes that produce many emotional and affective states

7. Rampant heterogeneity in neural basis of emotion (Barrett & Satpute 2013: It seems there is no substatial neuroscientific or peripheral physiological "signatures" for discrete categories
   Many brain areas can be multiply associated, and it seems the generalization is more about goal-directed mehavior and "motivated learning"

3 Is emotion content processed faster than non-emotion content?

3.1 Zajonc (1980, 2000): The affective primacy hypothesis

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3.2 Brain data

3.2.1 ERP

Early P1 modulations between 800-120ms
Analysis: task dependence.....

Palazova et al (2013)

- emotional valence and concreteness effects in a lexical decision task (Indicate with button press whether the word is a word or not). Word rated pre-study for concreteness (seven point likert from -3 to 3) in a norming study, and valence ratings obtained from their own database and Berlin affective word list (Vo, Jacobs, & Conrad 2006). The authors also collected ERP data to look at the timecourse of processing.
- In the RT data, participants responded faster to concrete than to abstract words, and neutral compared to both positive and negatively valenced words. Importantly, there was an interaction that came out in abstract words: participants were faster to respond to neutral abstract words than positive or negative abstract words. There was no such effect in concrete words.
- As for the ERP data:
  - Effects of emotion at multiple time windows: contrast between positive/negative and neutral words at 250-550 and 700-800ms
  - Also at 600-650ms there were differences only between negative and neural verbs

  - Effects of concreteness starting at 500ms (N700)
  - Interaction : Concrete words elicited valence contrasts (positive/negative versus neutral) earlier than abstract words (250-300 vs 300-350ms)
  - Also at 400-450ms
  - Analysis of topographical differences indicated that emotion effects are all posterior negativitities while

- in sum, earlier emotion effects in concrete than in absstract words

3.3 Behavioral data

3.4 Theoretical issues

What do we do with non-truth conditional aspects of meaning? What is meaning, in light of the importance of non-truth-conditional / expressive aspects of meaning?

1. Questions about Affective meaning:
   1.1. Is affect part of the literal meaning?
      i. In light of affect / expressive meaning, can we maintain TC accounts of meaning?
      ii. many years of TC menaing proponents who stumble in the face of this kind of data
         A. Davidson's "derangement" (1986)
         B. Kaplan, Kratzer on "Oops" and "ouch"
   1.2. Which notion of 'affect' is relevant to the present study?
      i. valence as an feature of lexical meaning? $\rightarrow$ first, IS valence lexically represented?
      ii. valence as an indication of an affective (=physiological) response
      iii. valence = affective semantic knowledge?
   1.3. How is affective meaning (=affective semantic knowledge) psychologically represented?
      i. Is it part of the lexicon? ...How is the lexicon represented? as part of long-term memory? How is long-term memory behaviorally distinguished from other kinds of memory?
      ii.
2. Questions about non-Affective Meaning:
   2.1. What is the best way to categorize the non-affectual component of verb meaning?
      - Expressive/Non-TC meaning (a.o.t. affective dimension)
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3. What is meaning?

- Expressive/Non-TC meaning (a.o.t. affective dimension)
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4. What is the goal of the study?
   4.1. Is affect (=VALENCE) lexically encoded?
   4.2.
5. How does affect interact with conceptual representations?
6. Do conceptual representations *Always* trigger a physiological response?
7. Does the valence of a lexical item incur (correspond) with a physiological response?

1.
2. Possible Methodologies
   2.1. Valenece Matching Task (Souter et al)
   2.2.
   2.3.

1. Other Questions
   1.1. In the long run, are we testing cognitive penetrability? otherwise, why mention the firestone and scholl (2016) paper?
   1.2.
   1.3.

first the verbs need to be normed for the strength of their valence

1. Things to absolutely control for
   1.1. Gender (Warriner et al 2013)
   1.2. Frequency
   1.3. Native language / billinguallism
   1.4. word length (cf. hinojoa 2019 et al survey)
   1.5. controlling for word std wrt valence...some words being more or less valenced
   1.6. Semantic Association using Word2Vec or BERT (following souter at al 2023)

1. What are the goals of this project?
   1.1.
   1.2.
   1.3.

4 Groundwork

First things first. Define what we mean when we say “affect”:

5 Current State of Knolwedge

5.1 What we know from neuroscience

5.1.1 Early Posterior Negativity

between 200-300 ms after stimulus onset

5.1.2 Late positive complex