

Emotions in language: Linguistic and computational approaches

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Contents

This tutorial focuses on the relation of emotions with language.

- 1 Contributions to emotion studies from philosophy, psychology, culture and linguistics
- 2 Conceptual models of the emotions
- 3 Connection between emotion and cognition
- 4 Expression of emotion across languages and cultures
- 5 Computational resources for studying emotion in human communication
- 6 Verbal and non-verbal expression of emotion in multimedia

- It is a reduced, streamlined version of a one-week PhD course in Oslo
- It is the result of a long collaboration between the two presenters, at Linguateca, in many other computational linguistic projects
- Emotions in language were the theme of Belinda's PhD thesis a while ago
- For 4 years now Diana has been trying to catch up, inspired by Belinda's work, and wishing to apply emotional annotation to much larger corpora.

Contributions to emotion studies from philosophy, psychology, culture and linguistics

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Overview

- ▶ A bird's eye view of
 - Western philosophy over the centuries
 - The historical and social study of emotions in society
 - Universality v. relativity of emotions – a centuries old discussion

- ▶ Objective – to show how these perspectives have become embedded in our languages

Emotion in the Western world

- ▶ Has had a 'bad press' for centuries!
- ▶ Constant competition with 'Reason'
- ▶ Master-slave metaphor
- ▶ Also discussed as – *passions, appetites, desires, feelings, sentiments, moods, temperament, attitudes, confused perception, distorted judgement.....*
- ▶ Meanings of these expressions?

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...And their translations?

- ▶ EN sentiment
- ▶ ≠PT sentimento

- ▶ EN feeling
- ▶ ≠PT sensação

- ▶ EN mood
- ▶ ?PT estar mal/bem disposto
- ▶ ≠PT disposição / feitio

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Plato (428–347 B.C.)

- ▶ Plato (*The Republic*)
 - Tripartite soul – *reason, spirit, appetite* (in English!)
- ▶ Our notion of *emotion* usually ‘*spirit*’ + ‘*appetite*’
- ▶ But also *reason* at times – e.g. when discussing ‘love of the Good’ (*The Symposium*)

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Aristotle (384–322 B.C.)

- ▶ In *Rhetoric*:
 - ‘that which leads one’s condition to become so transformed that his judgement is affected, and which is accompanied by pleasure and pain’.
 - ‘Examples of emotion include *anger, fear, pity* and the like, as well as the opposites of these’.
- ▶ Discusses *anger* in a way that shows awareness of cognitive element and contribution of physical and psychological circumstances

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Stoics (3rd c. B.C. – 1st c. A.D.)

- ▶ Believed emotions were ‘conceptual errors, conducive to misery’
- ▶ Emotions are judgements of the world and our place in it
 - = emotions are essentially cognitive
- ▶ Stoics lived in difficult times, therefore:
 - Anger = presumptuousness of moral judgement
 - Love = vulnerability
 - Fear = self-absorption of security
- ▶ Ideal – Apathy or ‘psychic indifference’

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Middle Ages and Christianity

- ▶ Study of emotions essentially tied to ethics
- ▶ Emotional temperament associated to physical manifestations – or ‘humours’
- ▶ Emotions > self-interested, self-absorbed desires – i.e. sins > *greed, gluttony, lust, anger, envy, pride* and *sloth*
- ▶ *Love, hope* and *faith* > virtues and ‘equated with reason’

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Descartes (1596–1650)

- ▶ ‘Father of modern philosophy’ – and bridge between Middle Ages and modernity
- ▶ Essentially a scientist, he was fascinated by the human ‘mind’ – seated in the brain > Dualism of Brain and mind
- ▶ Attempted to explain the way the physical manifestations of emotion informed the ‘mind’ through a connection to the brain in the ‘pineal gland’

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17th and 18th centuries

- ▶ Spinoza (1632–1677)
 - Saw emotions as ‘thoughts’ that cause us to misunderstand the world > misery and frustration.
 - We should avoid them and aim for ‘bliss’
- ▶ Hume (1711–1776)
 - Gave more cognitive importance and complexity to the emotions
 - Related emotions to ethics – ‘good’ and ‘bad’ emotions
- ▶ Kant (1724–1804)
 - Separated reason and ‘inclinations’ but ambiguous on details

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19th century

- ▶ Hegel (1770–1831)
 - Called into question an overstated distinction between reason and passion

- ▶ Nietzsche (1844–1900)
 - Romantic influence
 - Celebrated passion, suspected reason
 - Provoked reaction in favour of reason after the 1st World War and perceived chaos of the early 20th century

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20th century

- ▶ James and others – concentrated on physiological dimensions of emotions

- ▶ ‘Logical positivism’ dismissed emotions – and associated ‘ethics’ – as ‘unscientific’

- ▶ ‘Early’ and ‘Late’ Wittgenstein on language

- ▶ Ryle (1949) myth of ‘ghost in the machine’ – Monism

- ▶ Bunge (1977) – “Any notion of Mind unexplainable by science”.

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20th century

- ▶ 'Moral sentiment' theories – ethics based on emotion
- ▶ Phenomenology (Husserl, Heidegger, Ricoeur) emotions central to human existence
- ▶ Sartre – existentialism and emotions as 'magical transformations of the world'
- ▶ And more

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If brain = mind.....

- ▶ Idea of brain as 'black box' – storing memories?
- ▶ Psychology, psychiatry, neurology – what can they tell us?
- ▶ Neuroscience + technology and study of the Brain – where next?
- ▶ Is 'intelligence' or 'mind' just in the brain?
- ▶ E.g. Octopus intelligence – appears to be not just in the brain

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Study of the history of emotion

- ▶ Fairly recent development - 1970s >
- ▶ Part of 'social history'
- ▶ Somewhat fragmented in approach
- ▶ Not always easy to deduce the emotions of dead people!

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Study of the history of emotion

- ▶ Documentation available for elite and educated classes - books, letters, diaries, Literature
- ▶ But also - popular novels and other texts
- ▶ General tendencies expressed in attitudes to:
 - Violence
 - Love and marriage
 - Family relationships
 - Children and their education

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Changes in attitudes

- ▶ Legislation
- ▶ Prevention of violence
- ▶ Protection of women & children (e.g. 19th century labour laws)
- ▶ Rights for
 - Women (20th century)
 - Homosexuals, transgender etc (21st century)

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Debates and consequences

- ▶ Spontaneity of emotions
- ▶ Gradual control of more basic emotions – resulted from social, political and cultural changes
- ▶ Religion and political/cultural influence important factors

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ANGER

- ▶ Aristotle argued for 'right' and 'wrong' anger
- ▶ But the control of anger – and resulting violence – gradual change of socially acceptable violence > laws <> practice
- ▶ See also Steven Pinker (2011) *The Better Angels of Our Nature: Why Violence has Declined*.

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FEAR

- ▶ Dominant emotion in societies where life is precarious
- ▶ In Middle Ages – important due to:
 - Poverty
 - Disease
 - War
 - Social factors
 - Religious factors
- ▶ And today

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SHAME and GUILT

- ▶ Tend to develop later in societies > result of:
- ▶ Need to control anger
- ▶ Society's way of increasing consciousness of 'wrong' behaviour
- ▶ Partly substitute exaggerated behaviour based on notions of 'Honour'

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LOVE

- ▶ Various types of love
- ▶ Social history focuses on family relationships as indicators of change
 - Romantic love - troubadours > till now
 - Love in marriage
 - Parent <> child
 - Heterosexual & homosexual love
- ▶ Social changes
 - Reflected in laws and attitudes

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SADNESS and CHEERFULNESS

- ▶ Sadness, misery and negative emotions -- e.g. in early Protestant religion
- ▶ Victorian ritualisation of grief – funerals etc
- ▶ 19th century > increasing emphasis on encouraging outward display of cheerfulness
- ▶ Note: Modern society's emphasis on 'enforced' cheerfulness > increased depression in individuals who cannot cope?

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Social aspects

- ▶ Differences in class behaviour – e.g.:
 - Distinction between 'respectable' and 'unrespectable' in 19th century middle-class
- ▶ Changes start in educated elite > filter down the social scale – e.g.:
 - Attitudes to violence
 - Changes in parent <> child relationship

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Social aspects

- ▶ Differences in gender and acceptability of emotion – e.g.:
 - Fear unacceptable in men
 - Anger unacceptable in women

- ▶ Cultural differences and acceptability of expression of emotion:
 - Japanese restraint v. American openness
 - Traditional English v. traditional Portuguese demonstration of grief.

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History and Sociology of emotions

- ▶ Objectives:
 - To see how societies change
 - To understand how emotions evolve
 - To explain changes over time and in different social situations
 - To understand complexities of modern life
 - To understand the conflicts between different cultures

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General conclusions

- ▶ The 'big picture' of the emotions is
Enormous!
- ▶ Contemporary analysis of emotion is still controlled by concepts with roots in philosophical, cultural and historical factors

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General conclusions

- ▶ Modern expression of emotion uses language containing 'fossilized' concepts and attitudes
- ▶ Language has grown and integrated attitudes over the centuries
- ▶ These attitudes differ from culture to culture and language to language

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2. Conceptual models of the emotions: Psychology and linguistics

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Theories of emotions seen from psychology

In *The Science of Emotion* (1996), Randolph Cornelius presents four schools in psychology that study emotions:

- Darwinian
- Jamesian
- cognitive
- social constructivist

They study and look at different issues, but one can learn from all, and they are all “alive” (in the sense that they have followers).

The Darwinian perspective

Main interest: study the emotions as part of the evolutionary paradigm: how they helped in natural selection, what is shared with animals.
Modern work: Ekman, Izard, Plutchik...

facial expressions for happiness, surprise, sadness, fear, disgust and anger are correctly identified by people from vastly different cultures (Ekman,

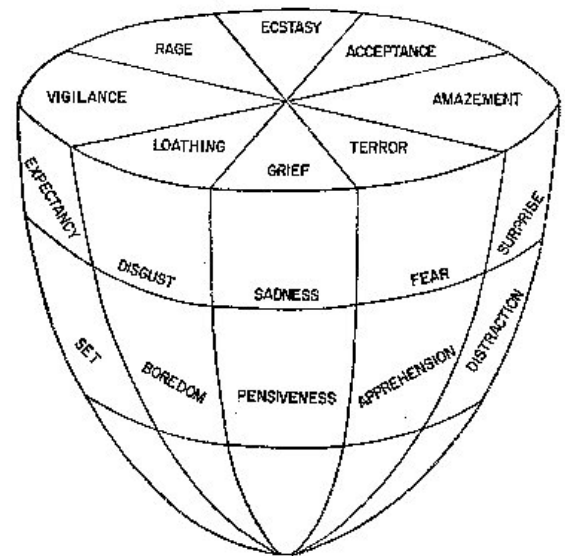


Fig. 1 A MULTI-DIMENSIONAL MODEL OF THE EMOTIONS



The Darwinian perspective: some objections

- Do universals of facial expressions imply universals of emotions?
- Primary emotions serve the adaptive interests of the organism. But what about the social meaning?
- Expression or context of the expression?
- Spontaneous emotion is much harder to detect than posed emotion...



The Jamesian perspective

- William James contended that it is the bodily changes that induce the emotion, not the other way around.
(bodily changes= visceral change, or expressive behaviour. A set of “nervous anticipations”...)

Take away the bodily symptoms from a frightened individual; let his pulse beat calmly, his look be firm... ; and what remains of his fear? (Lange, 1885)

- Tenet: There are distinct patterns of physiological responses for at least some emotions...
- James Laird, the facial feedback hypothesis (“awareness of one’s facial expressions is the emotion”)

But: Not all emotions have bodily correlates

- According to Oatley & Jenkins (p.117), some emotions share the same or similar forms:

some state of arousal could be interpreted as happiness or anger, depending on the social situation (Schachter & Singer, 1962)

- Does one smile for oneself?
According to Fridlund (1994), facial expressions are expressions not of emotions, but of intentions. Or, in other words, “Communicative conventions” (Manstead et al. 1999).

NB! It is important to distinguish between **experience** of an emotion, and **expression** of an emotion – and subsequent **describing** of an emotion.

The cognitive perspective: you need to understand to feel

- The primacy of appraisal by Magda Arnold:

a person's emotional response to an event depends on how he or she appraises the event



- (measuring skin conductance while viewing a highly disturbing film)
- the cognitive-motivational-relational theory of Lazarus, suggesting a molecular level (specific judgements) and a molar level (combination)

Important: must objects be cognized before they can be evaluated?

Automatic/unconscious process, or processes more automatic than others?

Liking vs. guilt.

The cognitive perspective: interaction

Other theories

- Emotions deal with arousal and perception of arousal, brought about by interruption (Mandler)

the function of emotions is to call attention to events in our environment that have possible adaptive significance for us

- Emotions are central to the organization of cognitive processing (like in an operating system) (Oatley & Johnson-Laird)

emotions come at the junctures of our plans, when our plans have been interrupted or fulfilled.

According to Lang (1985), there are three separate response systems related to emotions, with different functions or goals

- 1 cognitive-verbal
- 2 bodily/physiological
- 3 behavioral/expressive

The cognitive perspective: You need to feel to understand

Frijda et al. (2000) emphasize the impact of emotion on beliefs:

- Emotions are among the determinants of an individual's beliefs
emotions are states that make the mind inclined to think one thing rather than another (Spinoza)
- emotions provide information and guide attention
- emotions lead to new beliefs
- (some) sentiments (warm affection, despondency, and antipathy) structure our relationships with other people, in distributed cognition (social relations)

Zajonc (1980) claims that “Preferences need no inferences”

it was a wise designer who provided separately for each of these processes instead of presenting us with a multiple purpose appliance that, like the rotisserie-broiler-oven-toaster, performs none of its functions well (p. 170)

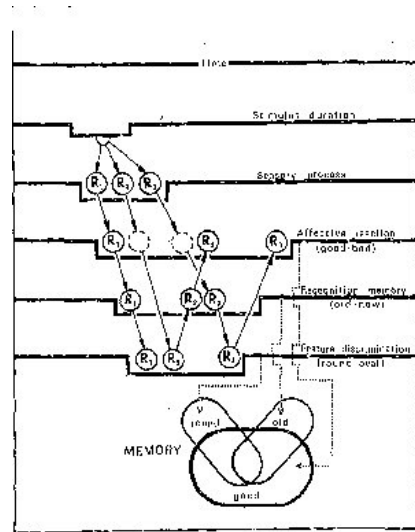
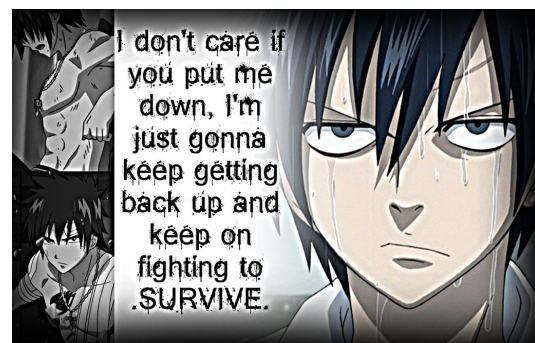


Figure 5. Time course of the stimulus, sensation, affect, and cold cognitions (R = response).

The difference (?) between emotion and opinion

There are many cases where it is hard to distinguish between the two:

- by displaying an emotion we express an opinion
- by expressing an opinion we express a feeling *I don't care*
 - He sneered: “bla bla”
 - *franzir o sobrolho*
 - *um coração nas mãos*
- by doing a gesture that displays an opinion we show a feeling



See Pang & Lee (2008) for an excellent survey of opinion mining **and** sentiment analysis.

The social constructivist (or cultural) perspective

Emotions are products of culture.

*They can be fully understood only on a social level of analysis.
(Averill, 1980)*

*emotions are characterized by attitudes such as beliefs,
judgements and desires, the contents of which are not natural,
but are determined by the systems of cultural belief, value and
moral value of particular communities (Armon-Jones, 1986)*

Example: if a person does not appraise a situation as one involving a unjustified transgression against him or herself, he or she will not enact the transitory social role that is anger.

The social constructivist perspective

Objects of fear can be culturally determined

*fear of people with AIDS, of urban spaces, of pesticides, of
contraceptives*

And the social function of fear is “instrumental in sustaining social values”

*members of a society are encouraged to be afraid of departing
from what is expected of them and what is tolerated.*

This brings us to the cross-cultural studies of emotions...

Language matters. The language of emotion is a vital part of the experience of emotion

emotional experience requires a language of emotion (Lewis & Saarni, 1958)

But

emotion talk does not exist in isolation from other domains of knowledge (Heelas)

there are an indefinite number of emotions: societies can shape, mold, or construct as many different emotions as are functional with the social system. (Averill)

Moral emotions

According to Haidt (2003), moral emotions do “a tremendous amount of work in the creation and daily functioning of human morality”

- difference between *homo sapiens* and *homo economicus*
- four (traditional Indian) emotion families: **other condemning** (contempt, anger, disgust); **self-conscious** (shame, embarrassment, guilt); **other suffering** (compassion), **other praising** (gratitude, elevation)
- two axes: degree of disinterestedness of elicitors; degree of pro-social action tendencies
- he argues that anger is a highly moral emotion

Objections to cultural approaches

- Human nature.
- Evolution and survival.
- Dangers of too much relativism.
- Martha Nussbaum's (1988) suggestion of different emotions related to different "grounding" experiences or domains of knowledge, or spheres of experience, following Aristotle.



Are we all talking about the same thing?

What is an emotion? Different researchers define them differently, have different opinions as to what should be included under the label, and also how "emotions" differ from other related notions.

One (relatively objective) way to separate concepts is by looking at the time profile, since emotions can span over many different time frames (figure from Oatley et al. 2000: 30):

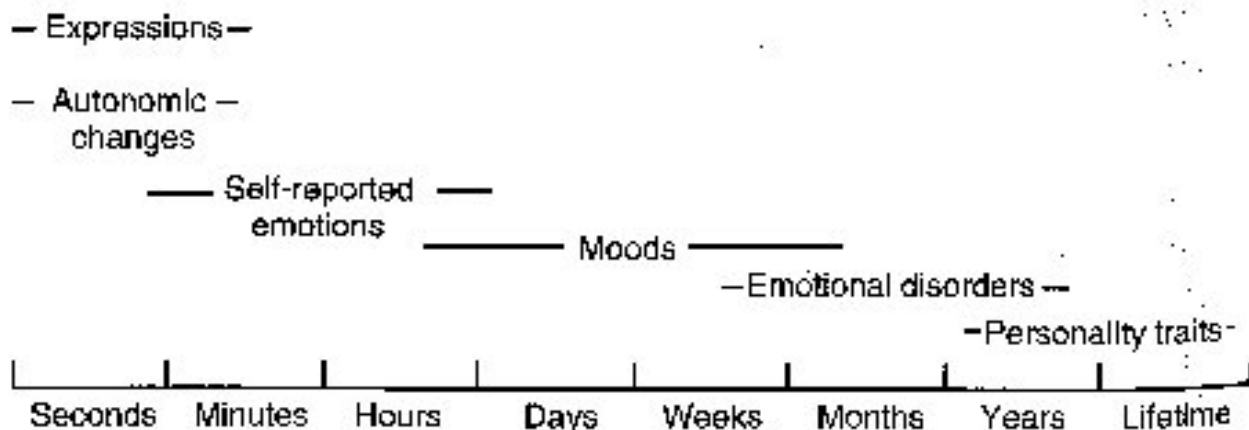


Figure 4.6 A spectrum of affective phenomena in terms of the time course of each.

Two approaches for modelling emotions

Another way where people can really differ is about the methodology of the definition. According to Oatley & Jenkins (1996), there is a general dichotomy:

- componentialists: emotions can be divided in different components
- some emotions are basic, the others are mixtures of them

You may also emphasize a dimensional theory, where components are no longer discrete.

The dimensionality of emotions

Inspired by Nora Eggen's reflections on "trust" in Arabic (2016), I define a prototypical emotion as something with several axes:

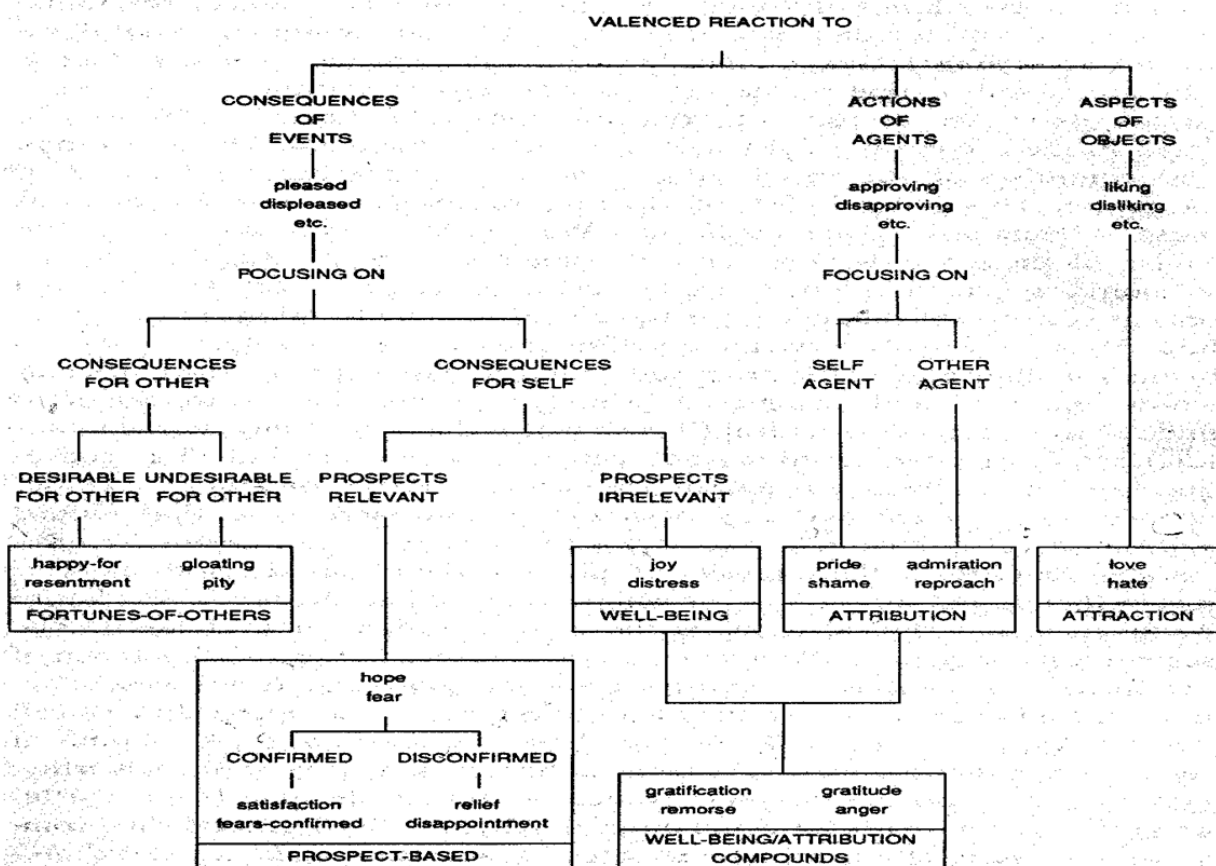
- S cognitive/physical state
- A attitude
- E ethical perspective
- P action (potentiality or actuality)

The most accomplished (important/central) emotions are those who have strength/information in all those axes, instead of choosing just one axis to define emotion.

Generally most concerned with studying language, and languages

- Ortony et al propose a framework to characterize emotions
- Wierzbicka proposes a language to describe to emotions
- Lakoff & Johnson (1980) propose to study the metaphorical power of emotions
- Literature scholars advance literature as the ground to study emotions

How to describe emotions independently of language



Relation with the body

There are several ways an emotion is linked to body:

- physical expression, especially facial expression, but also “body language”
- description of an emotion through the bodily posture/action, *laugh, cry, smile, clap*
- There are many embodied metaphors for emotion (as pointed out by cognitive linguistics)
- folk theories of the emotion use metonymically body parts for emotions, *my heart broke*

Depending on your school of thought

- Some researchers claim that one can induce emotions by doing body movements

The purpose and reason of emotions

- Emotions are needed to give priorities among multiple goals, especially guiding our relations with others.
- Emotions are heuristics to cope with life, a middle way between automatic reflexes of lower animals... and omniscience of a god.

An extremely important relationship, which is not always recognized, is that children's emotional development is mainly done through and with the help of language. Very coarsely, the development proceeds this way

- 1 identification of self (only after that one can feel embarrassed)
- 2 recognizing other people's emotions
- 3 understanding the difference between feeling and showing the feelings
- 4 recognizing causes and consequences of an emotion
- 5 understanding ambivalence: feeling different emotions towards the same "object"

Psycholinguistics: learning language is a social process

And in all cases, the interaction with parents and others is essential to verbalize and therefore understand the emotions.

*Learning for the infant brain is not a passive process. Social interaction is an essential prerequisite for mastering a language.
(Kuhl, 2015)*



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The connection between emotion and cognition:

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Overview

- ▶ Association of Emotion and Cognition over centuries of philosophy
- ▶ Universals & Relativity in Language
- ▶ Mind v. Brain debate
- ▶ Psychological and neurological evidence

- ▶ Evidence in Language – general view

Emotion and Cognition – centuries of philosophy

- ▶ Emotion and Cognition (or Reason) have been associated over the centuries
- ▶ Reason = master
- ▶ Emotion = slave
- ▶ ‘Good’ emotions > virtues > support relationship to cognition
- ▶ ‘Bad’ emotions > sins > the ‘bestial’ part of human nature
- ▶ Understanding right and wrong > cognition?

The Brain and Emotion

- ▶ Brain – centre of emotion > limbic system – evolutionarily most primitive part
- ▶ But sensory perception – except smell – is processed between limbic system and pre-frontal lobes in complex interaction
- ▶ If brain is damaged, malformed or develops abnormally – this will affect normal interaction – e.g. certain types of autism
- ▶ Damage to the brain can affect processing of emotion and language

The Brain and Communication

- ▶ What is hard-wired – what is learnt?
- ▶ Communication in non-human species
 - Lorenz (1952) – birds; Frisch (1967) – bees; Goodall and Hussey and primates
- ▶ Human brain's capacity for language – Broca's and Wernicke's areas, have little or no counterpart in the brains of other species
- ▶ Chomsky (1947) – *Language and Mind* – yet language structures in the brain?

Damasio (1995) *Descartes' Error*

- ▶ Used neurological evidence to argue that Descartes' theory of dualism of mind and brain > essentially flawed
- ▶ The brain + the sensory information fed in by every fibre of our bodies contributes to the way we function
- ▶ The connections between the information stored in the brain and incoming information from our bodies in context – very complex

Questions

- ▶ Do we experience emotion and then reason about it?
- ▶ How 'instinctive'/'unconscious' is our reaction?
 - E.g. Is there time to reason when in danger?
- ▶ Do we appraise a situation and then react emotionally?
 - Do we 'instinctively' love someone – or does love result from cognitive appreciation?

Quick response or Intuitions = result of instinct or learning?

- ▶ Compare:
 - Learner driver v. expert driver
 - Beginners v. champions of ping pong
 - Learning to play the piano v. a concert pianist
- ▶ Consider:
 - Fear of – spiders, snakes, lions, dogs, people we know, strangers, the dark
 - Love of – God, parents, children, partners, dogs, swimming, coffee

Language Universals

- ▶ Plato >>>>> Chomsky
- ▶ History of attempts to find:
 - Universal concepts
 - 'Original' language – (see Crystal)
 - Innate language structures – (Chomsky)
 - Innate ideas – (Jung's archetypes)
 - Innate behaviour in animals >>> and man (Darwin, Lorenz and others)

Psychologists – Emotion & Universals

- ▶ Fridja (1986) and others – Universals and behaviour
- ▶ Plutchik (1990) – Universals and categories of emotions
- ▶ Ekman (2003) – Universals of facial expressions

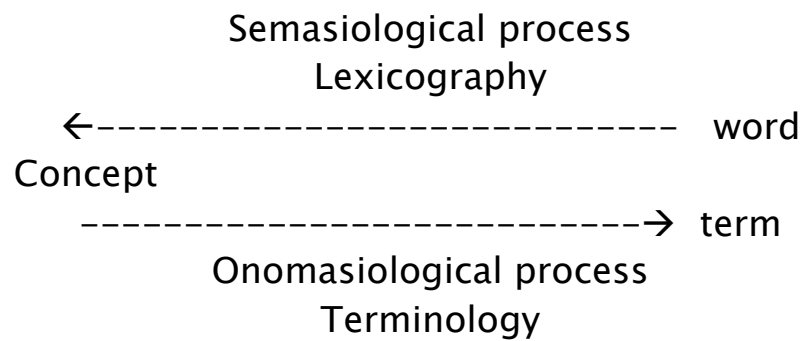
Lazarus (1991) – Emotion & Cognition

- ▶ Gradual ‘Retreat from Radical Behaviorism and the Rise of Cognitivism’ (pp. 8–15)
- ▶ Lazarus (pp.15–29) Perspectives on Emotion:
 - The Individual
 - The Observer
 - The Society
 - The Species
- ▶ Lazarus (p. 39) – “a theory of emotion that is cognitive, motivational and relational”...

Language and Emotion?

- ▶ What does language usage tell us about emotion?

Lexicography v. terminology



Classical dilemmas

- ▶ Which comes first – concept or word? The chicken or the egg?
- ▶ Can we arrive at new ideas without using language?
- ▶ Is our ‘folk’ understanding of the world embedded in our language?
- ▶ OR does our language contribute to our view of the world?
- ▶ The language debate > Universals v. Relativism

Reality check!

- ▶ Churchland (1986: 302) "the image of a *homo habilis* Newton squatting at the cave mouth and finally sketching out the basics of psychology with jawbone and berry juice, is not very plausible".
- ▶ However, some degree of universality of semantic fields is result of man's experience of the world > culture > society

Semantic fields, lexical sets and ontologies

- ▶ Semantic fields = areas of meaning:
EMOTION, WEATHER, COLOUR, ANIMALS ...
 - Usually diagrammed as 'trees'
- ▶ Ontologies = words connected by meaning and usage
 - Usually diagrammed as 'nets'
- ▶ Lexical sets = words used within semantic field / ontology: e.g. EMOTION lexicon

Basic emotions lists

- ▶ Plagiarised from
<http://www.personalityresearch.org/basicemotions.html>
- ▶ Latest update 1998
- ▶ Who copied from Ortony – 1990!

	Basic Emotions	Basis for Inclusion
Arnold	Anger, aversion, courage, dejection, desire, despair, fear, hate, hope, love, sadness	Relation to action tendencies
Ekman, Friesen, and Ellsworth	Anger, disgust, fear, joy, sadness, surprise	Universal facial expressions
Frijda	Desire, happiness, interest, surprise, wonder, sorrow	Forms of action readiness
Gray	Rage and terror, anxiety, joy	Hardwired
Izard	Anger, contempt, disgust, distress, fear, guilt, interest, joy, shame, surprise	Hardwired
James	Fear, grief, love, rage	Bodily involvement
McDougall	Anger, disgust, elation, fear, subjection, tender-emotion, wonder	Relation to instincts

Mowrer	Pain, pleasure	Unlearned emotional states
Oatley and Johnson-Laird	Anger, disgust, anxiety, happiness, sadness	Do not require propositional content
Panksepp	Expectancy, fear, rage, panic	Hardwired
Plutchik	Acceptance, anger, anticipation, disgust, joy, fear, sadness, surprise	Relation to adaptive biological processes
Tomkins	Anger, interest, contempt, disgust, distress, fear, joy, shame, surprise	Density of neural firing
Watson	Fear, love, rage	Hardwired
Weiner and Graham	Happiness, sadness	Attribution independent

Emotion words and polysemy

1. 'Quality' of emotion varies with context
 - John loves his wife / his parents / football / coffee
2. Meaning of word in context
 - *I'm afraid* the train is twenty minutes late. = polite regret Or fear of missing the connection?
3. Sense = + 'cognitive'
 - I *fear* millions of hard-pressed customers are having to pay for past mistakes by the banks. (BNC)

Semantics and Syntax > non-volitional status of emotion?

- ▶ Semantic case + emotion verbs
- ▶ Subject = Senser
- ▶ Object = Phenomenon
 - *John* (Senser) loves/hates *Mary* (Phenomenon)
 - *Mary's mother* (Senser) was delighted with her *exam results* (Phenomenon)
- ▶ Tendency to reject verbs in:
 - Imperative – ?Love/hate John!
 - Passive – ?Mary was loved/hated by John
 - Progressive aspect – ?John was loving/hating Mary

Semantics and Syntax of emotion

- ▶ Argument for emotion as 'state' – not 'action'
- ▶ Verbs of emotion and cognition – classified as 'state' verbs
- ▶ Use of 'temporary state' forms of BE
- ▶ Portuguese – SER or ESTAR?
 - John is angry
 - O João está zangado
 - Not *O João é zangado
 - John was angry
 - O João estava zangado
 - *O João foi zangado

Central emotion & cognition verbs

- ▶ Compare:
 - John loves/ hates Mary
 - *John is loving / hating Mary
 - 'I'm loving it' (McDonald's slogan) > love = enjoy
 - John thinks/ believes climate change is inevitable (state?).
 - *John is thinking / believing climate change is inevitable.
 - BUT
 - John is thinking about how he will solve this problem (mental process).

Central emotion & cognition verbs

- ▶ Compare:
 - Love God! (religious command – nature of 'love'?)
 - *Love / hate Mary. (personal relationship)
 - *Think / believe climate change is inevitable.
 - ?Mary is loved/hated by John.
 - ?That climate change is inevitable is thought / believed by John.

Expressions of emotion

- ▶ Emotion word
 - To *look surprised / frightened / horrified*
 - *Loving / irritating* behaviour
- ▶ Word describing emotional response:
 - Facial expression: *blush, smile, grimace*
 - Verbal reaction: *gasp, sob, scream*
 - Bodily movement: *run away, tremble, jump, kiss, hit*
- ▶ Words describing interior physical reaction
 - *Heart beating, pulse racing, sweating*

Metaphors of emotion – theory

- ▶ Lakoff and Johnson *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought* (1999: 3)
- ▶ How Cognitive Science Reopens Central Philosophical Questions
 - “The mind is inherently embodied.
 - Thought is mainly unconscious.
 - Abstract concepts are largely metaphorical”.

Lakoff (1980/2003)

- ▶ Metaphors and emotion
- ▶ RATIONAL IS UP; EMOTIONAL IS DOWN
- ▶ The discussion *fell to the emotional* level, but I *raised* it back *up to the rational* plane.
- ▶ We put our *feelings* aside and had a *high-level intellectual* discussion *of* the matter.
- ▶ He couldn't *rise above* his *emotions*.

.... A few examples

- ▶ THE EYES ARE CONTAINERS FOR THE EMOTIONS
 - I could see the fear *in* his eyes.
 - His eyes were *filled* with anger.
 - There was passion *in* her eyes.
 - His eyes *displayed* his compassion.
 - She couldn't *get* the fear *out* of her eyes. Love *showed in* his eyes.
- ▶ EMOTIONAL EFFECT IS PHYSICAL CONTACT
 - His mother's death *hit* him *hard*.
 - That idea *bowled me over*.
 - She's *a knockout*.
 - I was *struck* by his sincerity.
 - I was *touched* by his remark. That *blew me away*.

Remember ...

- ▶ Metonymmy
- ▶ Metaphors
- ▶ Fixed expressions
- ▶ Clichés
- ▶ General subjective language

- ▶ We can – and do – express our emotions, feeling, sentiments, opinions, attitudes in many different ways

And

- ▶ Any good translator will tell you how difficult it is to:
- ▶ Translate the central emotion lexicon
- ▶ Translate the metonyms / metaphors / fixed expressions
- ▶ Get the right balance of formality / politeness / informality in subjective language....

- ▶ As you will see in the next session...

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4. Expression of emotion across languages

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The core: emotions **and** language

- What is language? Why did it develop and how do we use it? Three major contributions: George Steiner, John M. Ellis and Nick Campbell.
- Language and thought are two faces of the same coin. And emotions are an integral part of thought and beliefs.

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This tutorial focuses on the relation of emotions with language.

- Language is the categorization machine: how do we categorize emotions?
- Language allows the difference between **expressing** and **describing** real or fake emotions, and emotions of others.
- Different languages = different emotions?

Relationship with language (2)

- Language functions: arousal of emotions, sharing of emotions, negotiation of emotions. Through language you can infuriate, and soothe, augment or diminish feelings of the others. (Aristotelian rhetorics)
- Language does not occur in a vacuum, which means that gestures, facial expressions, intonation, volume, overt (physical) display of emotions, etc. do interact with language (words and syntax). Emoticons are a proof of para-language means.
- Teaching of emotions and emotional behaviour is done through language (both as in mother-child interaction and in literature/drama).

Language matters.

The language of emotion is a vital part of the experience of emotion:

emotional experience requires a language of emotion (Lewis & Saarni, 1958)

Language exists in context:

emotion talk does not exist in isolation from other domains of knowledge (Heelas)

Wierzbicka: linguistic and cultural

Against the primacy of the concept of *emotion*, Wierzbicka (1999: 24-45):

even languages culturally (as well as genetically) closely related to English provide evidence of different ways of conceptualizing and categorizing human experience.

(...) the concept of feeling is universal and can be safely used in the investigation of human experience and human nature (...), the concept of “emotion” is culture-bound and cannot be similarly relied on.

There is no reason why we should have to make such choices, linking “emotion” either with bodily processes, or with feelings, or with thoughts, or with culture. (...) All these things can be and need to be studied...

see also: *When cultural scripts clash: Miscommunication in “multicultural Australia”*, 2012.

Amae in Japan, *fago* in Ifaluk (Micronesia)

Amae is an emotion that is central to Japanese family and social life in that it provides the bond that holds the various personal and social relationships that a person may have together.

Those who are close to each other (...) do not need words to express their feelings. (Doi, 1973)

Fago in Ifaluk is the most used word in the cluster of “connection and loss”, meaning:

one's relationship with a more unfortunate other (Lutz, 1986)

How many emotions? The same emotions?

Averill contends

there are an indefinite number of emotions: societies can shape, mold, or construct as many different emotions as are functional with the social system.

doubt whether anyone would fall in love if they had not heard of it (Averill & Nunley)

Emotionology: the evolution of anger in American society; Stearns & Stearns (1986):

the conventions and standards by which Americans evaluated anger, and the standards they developed to reflect and encourage these standards

The importance of culture...

In answer to the question “In which language does the phrase I love you feel stronger?”, Rie, a native speaker of Japanese with English as a second language (L2), points out that the Japanese avoid expressing their emotion overtly: “... silence is beautiful in Japanese society. We try to read an atmosphere” (Dewaele, 2008)

- My own experience: *amuado, fazer caixinha*: feelings/expression of feelings you should grow up from. Examples and impressions from Norway.



Wierzbicka, 1999, pages 24-25

- Battle against ethnocentrism in the study of emotions.
- Can we draw any conclusions about the emotional universe of a culture by examining its emotion lexicon? (Paul Harris, 1995)
- it calls for very little acquaintance with history or ethnography to provoke serious doubt on the correctness of the view that “in their emotional lives human beings anywhere are by and large essentially alike” (Needham, 1981)
- the first lesson is that simply in the numbers of emotions discriminated they diverge very greatly (ibid)

Ekman and emotion universals

No one to date has obtained strong evidence of cross-cultural disagreement about the interpretation of fear, anger, disgust, sadness or enjoyment expressions. (Ekman, 1993:384)

Inside Out focuses on five emotions -- anger, fear, sadness, disgust and joy. By a lucky coincidence, these are the five emotions that scientists who focus on emotions consider to be very well established*. Three of the emotions that *Inside Out* does not consider, but which are present even in very young children, are guilt (regret about having done something wrong), shame (feeling there is something bad about oneself that must be hidden from others), and pride (feeling good about what one has been able to accomplish).



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* Ekman, P. (2016). What Scientists Who Study Emotion Agree About. *Perspectives in Psychological Science*.

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Wierzbicka's *Natural Semantic Metalanguage*

disappointed: X was disappointed

- ① X felt something because X thought something
- ② sometimes a person thinks:
- ③ "I thought that something good would happen
- ④ I felt something good because of this
- ⑤ I know now: this good thing will not happen"
- ⑥ when this person thinks this, this person feels something bad
- ⑦ X felt something like this
- ⑧ because X thought something like this

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Examples: *omoiyari*: A kind of Japanese empathy

X-wa omoiyar ga aru (X has omoiyari)

- ① X often thinks something like this of people
- ② “I think I can know what this person feels/wants/thinks
- ③ if this person does not say it to me
- ④ I can do good things to this person because of this”
- ⑤ because of this, X does something

Example of a Chinese emotion (Leimin Tian)

X feels 

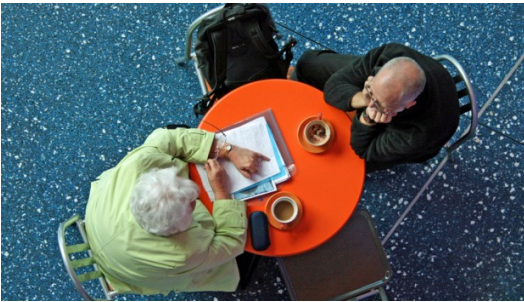
- ① sometimes X thinks something like this:
- ② (a) “Y did something
- ③ (b) I like Y
- ④ (c) I don’t like this thing Y did
- ⑤ (d) I want Y to know that I don’t like this thing (s)he did
- ⑥ (e) If I tell Y that I don’t like this thing (s)he did, Y can think it’s because I don’t like him/her
- ⑦ (f) Y will feel bad if (s)he thinks that I don’t like him/her
- ⑧ (g) I don’t want Y to feel bad”
- ⑨ Because of this, X feels something towards Y
- ⑩ Because of this, X wants to do something

Cultural differences on appraisal

- Appraisal of cultural traits depends on your culture (or stereotypes and how they influence one's reception)
- Are cultural traits good or bad?

True story, uttered by a Norwegian student of Portuguese – as praise:

*Portuguese and Norwegians are quite similar: they are both calm.
("Portugisere og nordmenn er ganske like: de er begge rolige")*



What is culture?

- It is a specific ranking of values (Delfim Santos).
- Hence, it can also be a specific ranking of emotions... as the paper by Wierzbicka illustrates: *Comparing emotional norms across languages and cultures: Polish vs. Anglo-American*
- In every society there are culturally specific rituals, socially scripted occasions for rejoicing (or mourning). So, many forms of expression are socially governed and taught.

How often are you sorry when you say I'm sorry?

The cultural reader (Wulff, 2007)

Other areas of study concerned with emotions: anthropology, sociology, cultural studies, ...

- Manipulation of tourists' emotions (by Jonathan Skinner)
- The Performance Hypothesis: practising emotions (by William O. Beeman)
- Nationalistic emotions: feeling of belonging? (already mentioned by Aristotle)



Which emotions you talk about/recognize

In "Emotion talk", the constructivist Paul Heelas cites:

- emotions, such as pride, ambition, guilt or remorse, imply a certain view of ourselves. They are probably not felt in cultures in which little importance is attached to individual effort and responsibility (Peters, 1974)
- the emotion words of a culture exert a powerful influence on the actual experience of emotion (Malatesta & Haviland, 1985)

- 1 use pictures (Ekman)
- 2 use comparable corpora (Belinda Maia)
- 3 use translation
- 4 use diachrony



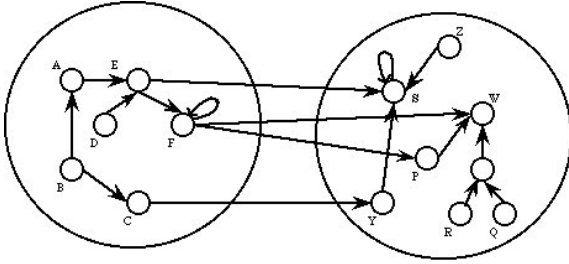
Emotions in comparable corpora: Maia's comparison

Aiming to find out how emotion works in Portuguese and in English, lexically, syntactically and semantically. From 11 novels in each language (819,000 and 778,650 words) 25,000 sentences were extracted, and annotated according to PoS, Senser-related or Phenomenon-related, and whether it was behaviour (beh)

- Some differences: high proportion of adjectives without copular verb in Portuguese, while much higher frequency of *ly* adverbs in English
- What did he do? Feeling in Portuguese (*O que é que ele fez? Amou*)
- vagueness of Portuguese adjectives: *divertido* for amusing and amused
- No passives of *hope* or *fear* in Portuguese
- Opposite frequency distribution in the two languages for *surprise/surpresa* and *surprising/surpreendente*

The translation of emotions

Using translation to investigate differences:



A meaning only reveals its depths once it has encountered and come into contact with another, foreign meaning: they engage in a kind of dialogue... We seek answers to our own questions in [the foreign culture]; and [it] responds to us by revealing to us new aspects and new semantic depths... (Bakhtin, 1986:7)

- Using translation to see better, while also getting some distance
- Translation data is informative because it is not conscious
- The TN model does not assume equivalence!

Examples of translation of emotions

Some claims one could empirically test using translation

- Germanic languages are focused on reality (facts, how the world is), while Romance languages are focused on moral values. Therefore there should be much more differentiation on “moral” emotions (those that are endowed with a judgment as well) in Portuguese than in Norwegian.
- Some emotions have ethical connotations in one language and not in another. Example: different connotations in Portuguese and Norwegian of *ciúmes* and *sjalu* (jealousy). Considered natural vs. morally wrong.

Examples of translation of emotions (2)

- Particular emotions have different application areas/objects, such as *respeito* vs. *respekt* (respect?) (Santos, 2016)
- Particular emotions are lexically connected in some languages and not in others:
 - *admirar* can convey (both) surprise and respect in Portuguese (Santos & Mota, 2015)
 - *sorry* in English is used for repentance and sadness in behalf of others.
- humor or humoristic targets can change with history (Østmoe 2016, nationalism in Norwegian translation from old Greek)

Examples of translation-based studies



- *Respeito* in PANTERA (a Portuguese-Norwegian parallel corpus)
- A research group at the Faculty of Arts of the University of Oslo: travelling emotions, <http://www.hf.uio.no/iln/forskning/nettverk/digital-humaniora/travelling-emotions.html>
- Feelings in book reviews on the Internet

Use of diachrony

Study the differences in emotion names or meanings throughout time (or also through contact or translation)

- *pathos* (emotion/feeling in Ancient Greek) – in Arabic translation afflicting pains – because of Christ's passion (Christian Syriac) – and “pathos” meaning illness, pathological – Bjørnsnøs (2015)
- *megalopsuchia* in Aristotle, greatness of soul, Christian denial of the body and of the worth of earthly life – Nussbaum (1988)
- *honour* emotional dispositions; rooted in the heart; physiologically felt, most noteworthy emotion – Frevert (2011)



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Corpus-based emotion study: preliminaries

Being more precise about my work, the kind of corpora I use, using authentic texts people have written in all sorts of situations, it

- only concerns talk about emotions (so already cognized)
 - recognition in others, as causes or consequences of actions
 - self-avowal, as justification or mere expression
 - fictional creation by authors
- suffers from all problems of corpus-based studies in that the corpora cannot be said to be representative, and that they encompass too much variation, etc.

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Corpus-based emotion study: examples

Still, it uses vast amounts of text, written by many distinct people in several different genres and with different goals, so it may help us to understand the framework of talking about emotions in Portuguese.

- how is emotion presented/named? *sentimento* vs. *emoção* (thrill)
- how is emotion categorized? which words/concepts?
- how is emotion valued? *sentimentalista*, *sentimentalão*, *sentimentalóide*...
- who are the bearers/causers of emotion or attitude?
- how to cluster emotion words?

In Portuguese, emotions are things that fill us (in the CHAVE corpus):

Corpus-based emotion study: examples

coragem, orgulho, respeito, alegria, brio, esperança, contentamento, tristeza, satisfação, felicidade, furor, júbilo, expectativa, indignação, confiança, espanto, nojo, remorso, gozo, mágoa, revolta, ânimo, angústia, inquietação, entusiasmo, ternura, otimismo, saudade, nostalgia, terror, confusão, complexos, ódio, suspeitas, pânico, preocupação, amor, vontade de..., emoção, raiva, fé, dignidade, rancor, cumplicidade, sentimentos X..., convicções, pena, interesse, amargura, cautela, curiosidade, ambição, cuidado, antagonismo, bonomia, reticência, pudor, ressentimento, “garra”, humanidade, paixão, simpatia, vergonha, sofrimento, culpa, afecto, contrição, prurido, gratidão, fervor, melancolia, melindre, ventura, ira, horror, desprezo, inveja, receio, nervos, ansiedade, ousadia, perplexidade, temor, paciência, emotividade, autopiedade, desdém, picardia, benevolência

It may not give YOU the ultimate answer, but it gives us all a fair idea of the frames of the culture, the emotional topoi, which one needs for intercultural translation (BSS, 2015).

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5. Computational resources for studying emotion in human communication

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Computational resources

The practical/engineering angle

- Lexicons/ontologies for emotion
- Annotated corpora for emotion
- Some applications

Where can I start? Do different lexical resources embody different assumptions?

- The General Inquirer
- Lexical ontologies
- Emotion lexicons

BUT:

Creativity, context, rethorics (to which irony is the end of the spectrum)?

The other face of language: words in context

First of all, a lot of emotion is expressed, not described/referred. The single word “No” can mean several totally different things the way it is expressed.

- General corpora and how to use them
- Specific corpora (implicitly) annotated for emotion or opinion
- Specific corpora (explicitly) annotated for emotion or opinion

BUT:

The question of genre and the question of grounding (you have to know what is the feeling behind the utterance).

Some applications: and then what?

In addition to the highly relevant purpose of understanding emotion and language better, we give examples of using these resources for other purposes

- getting sentiment about a politician or a product
- differentiating authors and literary genres
- improving email communication by highlighting potential conflicting or misunderstanding prone words or expressions

ETC... ETC...

The purpose here is not being comprehensive, but to point out that different areas of emotion may be at stake in different applications. That is, the perfect lexicon or corpus annotation may depend on the application.

Lexical resources for emotion (1)

A subpart of a general computational lexicon:

- The General Inquirer: a content analysis resource based on “shrewd guesswork”, having 182 categories developed for “social-science content-analysis research applications”, the “negative” category being the largest one with 2,291 entries. There is a direct application of the GI in epinions (www.epinions.com)
- WordNet: simply select the “emotional” synsets
- (proto-)SentiLex-PT: simply select the emotional human words and MWE from a large computational lexicon for Portuguese

Lexical resources for emotion (2)

Modifications (filtering, adding) from the original computational lexicon

- SentiLex-PT (Carvalho & Silva 2015): checking in corpora and using a special algorithm to assign automatic polarity to adjectives
- WordNet-Affect (Valitutti et al. 2004): adding (11 different) a-labels to the WordNet synsets from a manually compiled set of 1903 words, extended by using dictionaries, and associated (when possible) with different theories (Elliot, Ortony, etc.). Then used the graph structure of WordNet (antonymy, derived-from etc.) to get further synsets, and manually correct for other relations such as hyperonymy.
- SentiWordNet (Esuli & Sebastiani 2006): assigning three numerical scores – for positive, negative or neutral – to all Wordnet synsets.

Lexical resources for emotion (3)

Built from corpora or the Web

- polarity of adjectives classified from Web patterns (Hatzivassiloglou & McKeown 1997)
- extraction pattern bootstrapping (Riloff et al. 2003)
- Greffenstette et al. 2006: hand-developed an affect lexicon for English, 3,772 entries assigned to 86 different affect classes, not mutually exclusively, and used the Web to test the completeness
- Pitel and Greffenstette 2008: human translation into French of 43 paired axes, and choosing seed (2-4) words for each dimension, manually extended to 881 words... and then automatically classified 3,513 new words compiled using a synonym dictionary, manually revised, a gold standard, using an 44-SVM classifier on cooccurrence matrices in the French EuroParl (and other methods). Searched the Web for some patterns to get more candidates

Corpus resources for emotion (1)

Using previously annotated corpora for opinion or emotion

- reviews, stars, emoticons...
- blogs with optional mood (LiveJournal.com, used by Strapparava & Mihalcea 2008)
- Niculae & Danescu-Niulescu-Mizil (2014) cross-check figurativity and utility in reviews: the more figurative, the more expressive but the less useful
- Staiano & Guerini (2014) used crowd sourcing on news: which emotion do you feel reading the text?

Corpus resources for emotion (2)

Annotating corpora for emotion and opinion

- Bruce & Wiebe (1999) studied the task complexity
- Wilson et al. (2009) use corpora annotated with attributions and private states for MPQA
- Strapparava & Mihalcea (2008) tagged news headlines as provoking six different emotions
- ReLi (Freitas et al. 2012) annotated the sentence polarity, and the part of the sentence which was targeted, and its polarity, for 1,600 book reviews.
- Mota & Santos (2015) annotated the lexical content in large corpora in Portuguese

Problems for computational applications

It is important to take into account non-trivial linguistic properties (see Pang & Lee 2008)

- Context and genre change the meaning (and therefore the emotion/opinion conveyed)
- Discourse structure: not all positions are equally important. In a review, the last sentence! In a summary, the first...
- The order of presentation of a debate (two opposing views) is also important
- Most adjectives depend on the noun they modify: *big ant* smaller than *a small elephant*, *fast car* vs. *fast food*...
- Polarity depends on the context:
They have not succeeded, and will never succeed, in breaking the will of this valiant people (Wilson et al. 2009)

Some applications of emotion in literature and other domains

- Opinion question answering
- Find emotional parts in testimonies, interviews, TV programs
- Visualize literature and distinguish between authors and genres (Mohammad 2012)

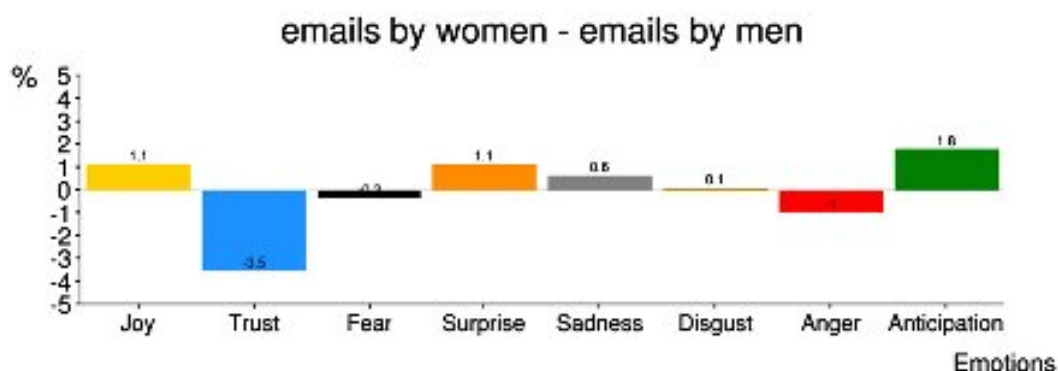


Fig. 11. Difference in percentages of emotion words in emails sent by women and emails sent by men.

Some other applications

- Describe the overall emotional character of the text (Volkova et al. 2010)
- Produce reliable, believable characters in educational games (Paiva et al. 2005)

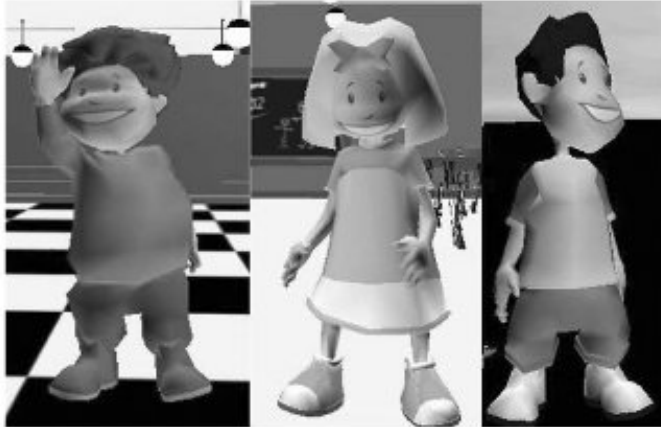


FIGURE 10 Three of the characters developed for the FearNot! application (John, the victim, Martinha, the neutral, and Luke, the bully).

Verbal and non-verbal expression of emotion in multimedia

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Verbal and non-verbal language research

- ◆ This area of research is not new
- ◆ Search the LREC 2002 Proceedings > LREC 2016 abstracts using 'speech', 'prosody', 'emotional speech', 'multimodal'..
- ◆ IST Calls
 - ◆ 1999/2000/2001 – focus on 'Natural (and multilingual) interactivity
 - ◆ 2002 – Multi-modal and multi-sensorial dialogue modes
 - ◆ 2002-6 - Multi-modal interfaces
- ◆ BUT it requires interdisciplinary cooperation

Verbal and non-verbal language – research practice

- ◆ Tools to record, tag and analyze natural human interaction
- ◆ As with corpora:
 - ◆ Difficulties in obtaining 'natural' data
 - ◆ 'Manual' ground work to train technology
- ◆ Research to provide a real application requires a team
 - ◆ Compilation of proper resources – not easy
 - ◆ Manual training of computer analysis of resources
 - ◆ Human > computer interpretation of results

Objectives

- ◆ To understand / improve human communication – using technology + quantitative empirical data
- ◆ To improve human <> computer communication
- ◆ To help people with disabilities:
 - ◆ Cerebral palsy, paralysis, blindness, deafness
 - ◆ Illiteracy
 - ◆ Autism and other problems

Understanding human communication

- ◆ Quantitative data <> theories for analysis of:
 - ◆ Paralinguistic features - cry, gasp, laugh....
 - ◆ Pronunciation, prosody, hesitation, silence
 - ◆ Discourse – politeness, turn-taking
 - ◆ Facial expressions
 - ◆ Gestures and body language
- ◆ Objective – to document what we understand intuitively from these features of communication

Areas of research – verbal language

- ◆ Text-to-speech – from ? and ! > emoticons > ‘natural’ language production
- ◆ Speech recognition - ‘standard’ language + emotional prosody and paralinguistics
- ◆ Positive / negative reactions to geographical / social dialects
- ◆ Emotions expressed / caused by other sounds – e.g. singing
- ◆ Intercultural differences in discourse strategies

Areas of research – non-verbal language

- ◆ Facial expressions – mapping of facial muscles
- ◆ Gestures, kinesics, proxemics
- ◆ Genuine v. faked emotion
- ◆ Universals v. intercultural differences in (un)acceptable emotional facial expressions, gestures and body language
- ◆ Differences in individuals

Verbal + non-verbal – research

- ◆ Research:
 - ◆ Relationship of speech to gesture
 - ◆ Cognitive & emotive connections between verbal and non-verbal language
- ◆ BUT
 - ◆ Inherent difficulties of obtaining 'natural' data
 - ◆ Individual and cultural differences

Verbal + non-verbal – applications

- ◆ Training human actors / politicians / public figures
- ◆ Questions:
 - ◆ Why may one singer thrill you with the music of the last aria of 'La Traviata' but another also reduce you to tears with her acting?
 - ◆ How does the character Vera (actor – Brenda Blethyn) use empathy, emotion, and a local accent in the crime series 'Vera'?
 - ◆ How can a ballet of Othello's murder of Desdemona move one as much as Shakespeare's text?
 - ◆ Why has Trump been such a success?

Verbal + non-verbal – applications

- ◆ Forensic linguistics
- ◆ Identification of individuals via use of language
- ◆ Identification of voices – e.g. phone tapping
- ◆ 'Reading' body language
- ◆ Lie detection – facial expressions + speech

Computer > human communication

- ◆ Text to natural sounding speech
 - ◆ Reading to the blind /illiterate
 - ◆ Helping the blind/illiterate use the Internet
- ◆ Supplying the deaf with contextual information in films – sub-titling of contextual (emotional) sounds

Human <> computer communication

- ◆ Allowing paralyzed people more natural speech production
 - e.g. cases like Stephen Hawking
- ◆ Speech to text
 - ◆ Automatic sub-titling (via re-speaking) in real time
 - ◆ But is emotional content understood from gesture?
- ◆ Human interaction with computers
 - ◆ Recognition of emotional expressions > better communication with computers ... or robots?

Human <> computer communication

- ◆ Speech > speech interpretation = Speech > text > MT > text > speech presumes:
 - ◆ Good speech recognition > text format
 - ◆ Well-trained MT
 - ◆ And good text-to speech
- ◆ Can work in controlled situations like a conference with appropriate language databases – e.g, European Commission
- ◆ But when will it interpret natural conversation + emotional reactions?

Localization of multimedia

- ◆ Globalization v. localization of culture
- ◆ Theatre: e.g. 'localized' translations / interpretations of Shakespeare
- ◆ Films: possibility of localization?
 - ◆ Different versions for different audiences + dubbing with manipulation of film of actors' faces and expressions to fit another language and culture. E.g. Tintin (2011)
- ◆ Videogames – are the users already globalized? Or would they prefer a degree of localization? Is this a question of generations – older 'local' v. younger (global)?

LREC 2016

- ◆ Thursday, 26 May – 9.00 – 9.40
- ◆ “The challenge of conversational machines: from MUSA to Jibo”
- ◆ By Roberto Pieraccini
Director of Advanced Conversational Technologies, Jibo
- ◆ “Jibo has a moving body that helps him communicate more effectively, express emotions, and create social bonds with his users”.

...not to mention

- ◆ Session: O4 - Spoken Corpus Dialogue
- ◆ Session: O24 - Speech Corpus for Health
- ◆ Session: O30 - Multimodality, Multimedia and Evaluation
- ◆ Session: O36 - Speech Synthesis
- ◆ Session: O37 - Robots and Conversational Agents Interaction
- ◆ Session: O44 - Speech Resources

...and

- ◆ Session: O2 Sentiment Analysis and Emotion Recognition
- ◆ Session: O25 - Sentiment Analysis

The future ... ?

- ◆ Use your imagination!
- ◆ But Emotion is the key to authentic spoken communication..... Both human and via computer
- ◆ Thank you for your attention!

Further reading

- ◆ Publications by the International Society for Gesture studies - www.gesturestudies.com/
- ◆ LREC conferences – several articles
- ◆ Galvão, Elena 2015. *Gesture in Simultaneous Interpreting from English into European Portuguese*. Doctoral thesis: Universidade do Porto
- ◆ Mendes, A. S. Ibrahim, and I. Vaz. 2013. 'Fado's Voice – Acoustic Features'. In Proceedings 12th Western Pacific Acoustics conference.

Further reading

- ◆ Bonin, Francesca, Nick Campbell & Carl Vogel. "The discourse value of social signals at topic change moments". Interspeech 2015, September 6-10, 2015, Dresden, Germany, pp. 1967-1971 <http://www.tara.tcd.ie/bitstream/handle/2262/74581/IS151273.PDF?sequence=1&isAllowed=>
- ◆ Campbell, Nick. "Getting to the Heart of the Matter; Speech is more than just the Expression of Text or Language", Keynote at LREC 2004, <http://www.lrec-conf.org/proceedings/lrec2004/pdf/kIII.pdf>