

# FACING NADINE'S SPEECH

## Multimodal annotation of emotions in the elderly



Catherine Bolly

University of Paris 8, CNRS & Université catholique de Louvain  
[catherine.bolly@uclouvain.be](mailto:catherine.bolly@uclouvain.be)



2<sup>nd</sup> European and 5<sup>th</sup> Nordic Symposium on Multimodal Communication  
University of Tartu (Estonia), August 6-8 2014

## Plan

1. Key issues in aging studies connected with human-human interaction
2. Objectives and research questions
3. Data and method
  - 3.1 Study subjects and tasks
  - 3.2 Psychometric evaluation of empathy
  - 3.3 Annotation of facial displays
  - 3.4 Recognition of emotions from the face
  - 3.5 Intersubjectivity and discourse markers
4. Preliminary results
  - 4.1 Inter-individual variation
  - 4.2 Intra-individual variation in Nadine's speech
5. Conclusion



2<sup>nd</sup> European and 5<sup>th</sup> Nordic Symposium on Multimodal Communication  
University of Tartu (Estonia), August 6-8 2014

# 1. Key issues in aging and H-H interaction

3

- ◎ **Pragmatic competence** = the ability to use available language resources in a contextually appropriate manner (Kasper, 1997)
  - Very little attention has been paid to date to the study of pragmatic competence of very old healthy people in real-world settings (Hamilton, 2001; Bolly & Sandoz, 2012)
  - Yet, several pragmatic features seem to be specific to the communication mode of/with the healthy elderly people

Experimental studies

## **Accommodation Communication Theory**

“when people interact they adjust their speech, their vocal patterns and their gestures, to accommodate to others” (Turner & West, 2010)

- ✧ Overaccommodation (Harwood 2007), Patronizing talk, Elderspeak, secondary baby talk

## **The Pragmatic Change Hypothesis**

The age-associated increase in copious off-topic speech as an adaptive strategy to meet age-associated changes in communicative goals and social context (James *et al.*, 1998)

- ✧ Off-target verbosity (OTV): decrease in coherence together with an increase in amount of speech (loquaciousness) (Arbuckle *et al.*, 2000)

# 1. Key issues in aging and H-H interaction

4

- ◎ **Corpus and aging studies?** very few studies (Hupet, 1992)
  - Recent initiatives in pathology (Lee, 2012; Davis & MacLagan, 2014)
  - ... and normal aging (Gerstenberg, 2009)



## **CorpAGEst Marie Curie project (2013-2015)**

+ PhD. Thesis of Gu. Duboisindien (Paris Ouest Nanterre)

“A corpus-based multimodal approach to the pragmatic competence of the elderly” (PIEF-GA-2012-328282)

**Aim:** Establishing the gestural and verbal profile of very old people in normal aging, looking at their pragmatic competence from a naturalistic perspective



## **Corpora for Language and Aging Research group**

Scientific network created at the initiative of Catherine Bolly and Annette Gerstenberg in April 2014 (University of Paris 8, University of Louvain and Freie Universität Berlin)

**Aim:** Questioning the language of the elderly people through the glasses of linguists working on authentic language data

# 1. Key issues in aging and H-H interaction

5

- ◎ **Empathic ability** and the psycho-cognitive perspective
  - The healthy subjects' advancing age may be accompanied by a loss of empathic ability, liable to affect their ability to successfully engage in social interaction (Bailey and Henry, 2008)
- ◎ **Discourse markers** and the linguistic perspective
  - Increase and repeated use of discourse markers (e.g., *so, oh, well*) in the aging subject to remain involved in the interaction, as a compensatory strategy at early stage of dementia (Davis et al., 2013; Davis and MacLagan, 2014)
- ◎ **Gestures** and the nonverbal perspective
  - Decrease in the frequency of use of representational gestures (Feyereisen and Havard, 1999) coinciding with an increase in beats among older people
    - Task-sensitive
    - Functional specialization of beats in later life

## 2. Aims and research questions

6

- ◎ **Aims**
  - **CorpAGEst**: (inter)subjective verbal and nonverbal language units as relevant cues for the measurement of empathic ability of the elderly
    - > intra-group, inter-group, and longitudinal
  - **Pilot study**: reconstruction of the emotional and attitudinal profile of healthy very old people in their everyday communication
    - > inter-individual, intra-individual
- ◎ **Research questions (pilot study)**
  - ① To what extent do the verbal and nonverbal modes converge in the information they convey about the authentic emotional and attitudinal states of older people in their everyday communication?
  - ② More precisely, what can emotional or attitudinal markers reveal about the empathic ability of the old-old person?
    - e.g., *enfin* 'well' or opening the eyes wide to indicate surprise; *tu sais* 'you know' and gaze towards the interlocutor (Kärkkäinen, 2006; Martin et al., 2006)

### 3. An 'ecological-like' multimodal approach

7

#### Multi-level and multimodal

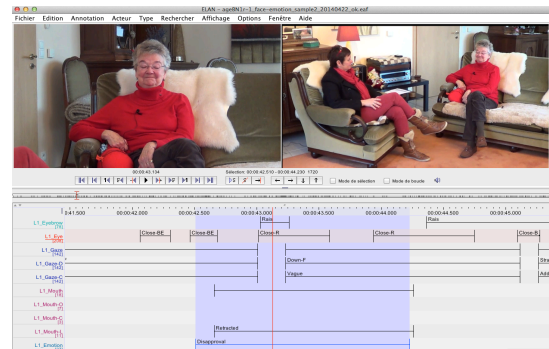
| Modality        | Level of annotation              |
|-----------------|----------------------------------|
| Facial displays | Eyebrows                         |
|                 | Eyes                             |
|                 | Gaze                             |
|                 | Mouth                            |
|                 | Head                             |
|                 | Trunk                            |
|                 | Shoulders                        |
|                 | Arms                             |
|                 | Legs                             |
|                 | Feet                             |
| Gesture         | Hands                            |
| Speech          | Glose/Ortho/Transcript           |
|                 | Words segmentation and alignment |
|                 | Pragmatic markers annotation     |

Pilot study

- Understanding language interaction in its globality and in real-world settings
- Language = socially and temporally situated + embodied phenomena (NOT logocentric) (Mondada, 2006, 2007)

#### Some principles for the **nonverbal** mode

- Sampling > 15' per interview (3\*5')
- Physical and functional analysis of "gestures" (McNeill, 1992; Bressemer & Ladewig 2011)
- Parameters' annotation independently from the sound signal to avoid interpretive bias in the semiotics of gesture (Bressemer, 2008)



### 3. An 'ecological-like' multimodal approach

8

#### Multi-level and multimodal

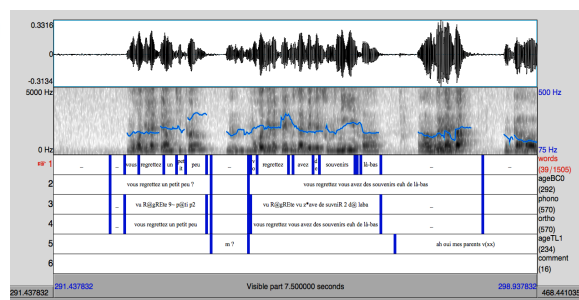
| Modality        | Level of annotation              |
|-----------------|----------------------------------|
| Facial displays | Eyebrows                         |
|                 | Eyes                             |
|                 | Gaze                             |
|                 | Mouth                            |
|                 | Head                             |
|                 | Trunk                            |
|                 | Shoulders                        |
|                 | Arms                             |
|                 | Legs                             |
|                 | Feet                             |
| Gesture         | Hands                            |
| Speech          | Glose/Ortho/Transcript           |
|                 | Words segmentation and alignment |
|                 | Pragmatic markers annotation     |

Pilot study

- Understanding language interaction in its globality and in real-world settings
- Language = socially and temporally situated + embodied phenomena (NOT logocentric) (Mondada, 2006, 2007)

#### Some principles for the **verbal** mode

- Parameter and functional analysis of DMs (MDMA Working Group)
- Transcription standards from Valibel center (Praat)
- Oral data semi-automatically aligned on the sound signal (EasyAlign program)
- Annotations (ELAN software)





## 3.1 Study subjects and tasks

9

### Interviews and participants

9 subjects (mean age: 85), 18 interv.  
Living at home or in residential home  
Without any major injury or cognitive impairment

### Audio-video data

250.000 words, 16.8 hrs.

- Audio: 1 (or 2) sound signal(s), wav, mono, 44.000 > 22.050 Hz, 16 bits
- Video: 2 cameras, H264, MPEG4

| Task Type                                                 | Interview N°1<br>(with a familiar person) | Interview N°2<br>(with an unknown person) |
|-----------------------------------------------------------|-------------------------------------------|-------------------------------------------|
| Task A: Descriptive task with a focus on past events      | Task 1A: Milestones in aging              | Task 2A: Milestones in progress           |
| Task B: Explicative task with a focus on present-day life | Task 1B: Self-perception of aging         | Task 2B: Self-perception of environment   |

+ longitudinal corpus (in progress)

**Pilot study:** 4 women living at home (mean age: 80)  
Normal cognitive score (\*MoCA test  $\geq 26/30$ )

\* Montreal Cognitive Assessment test, Copyright© Dr Z. Nasreddine 2003 to 2014

## 3.2 Psychometric evaluation of empathy

12

### Psychological definition of empathy

- The cognitive and affective ability to understand other people's emotions and/or perspective and, often, to be in-tune with others' emotional states (see Eisenberg et al. 2014 for a more in-depth discussion)

### French version of the Interpersonal Reactivity Index (IRI) (Gilet et al. 2013)

- Cognitive**
- ① **Fantasy**: "the tendency to imaginatively transpose oneself into fictional situations"
  - ② **Perspective-taking**: "the tendency to spontaneously adopt the psychological view of others in everyday life"
- Affective**
- ③ **Empathic concern**: "the tendency to experience feelings of sympathy or compassion for unfortunate others"
  - ④ **Personal distress**: "tendency to experience distress or discomfort in response to extreme distress in others"

### Questionnaire

28 items (7 items per component)  
5-point scale (1 = does not describe me well / 5 = describes me very well)

Échelle de réponse :

1 ----- 2 ----- 3 ----- 4 ----- 5

Ne me décrit pas vraiment Me décrit très bien

☐ 1. J'imagine et songe assez régulièrement aux choses qui pourraient m'arriver.

☐ 2. J'éprouve souvent de la sollicitude et me sens préoccupé(e) pour les personnes ayant moins de chance que moi.

☐ 3. Je trouve parfois difficile de voir les choses du point de vue de quelqu'un d'autre.

☐ 4. Il m'arrive de ne pas être désolé(e) pour les gens qui ont des problèmes.

☐ 5. Je me laisse vraiment prendre par les sentiments ressentis par les personnages d'un roman.

Davis, 1994: 55-57

### 3.3 Annotation of facial displays

13

#### Identification

- According to their location in the face: (general face expressions), eyebrow movements, eye movement, gaze moves, direction and target, mouth openness, position of the lips (and movements of the head)

#### Annotation

- In terms of physiological features (e.g., corners up or down for the lips)

(adapted from Allwood *et al.*, 2004)

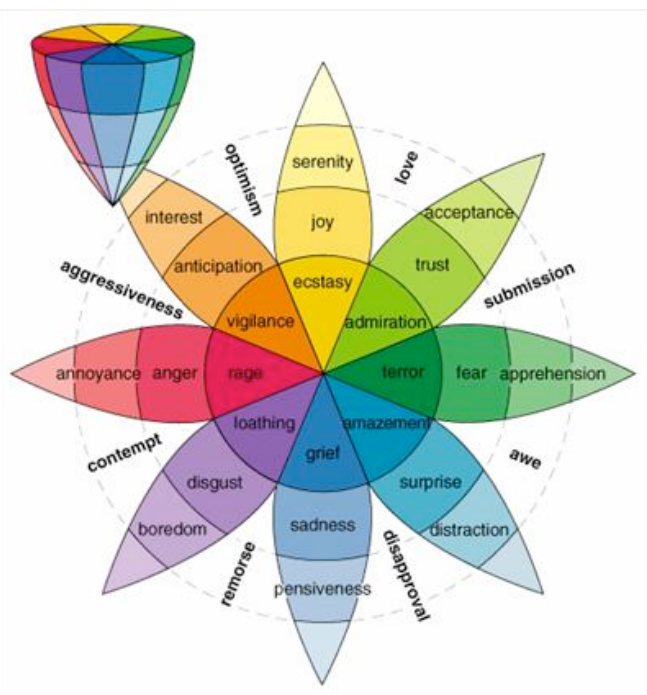
| Tier/Variable/Parameter [Label] |                                      | Controlled Vocabulary/Value [Tag]               |
|---------------------------------|--------------------------------------|-------------------------------------------------|
| Eyebrows movements [Eyebrow]    |                                      | Frowning [Frown]                                |
|                                 |                                      | Raising [Rais]                                  |
|                                 |                                      | Other [Other]                                   |
| Eyes [Eye]                      |                                      | Exaggerated Opening [X-Open]                    |
|                                 |                                      | Closing-Both [Close-BE]                         |
|                                 |                                      | Closing-One [Close-B]                           |
|                                 |                                      | Closing-Repeated [Close-R]                      |
|                                 |                                      | Other [Other] <sup>2</sup>                      |
| Gaze [Gaze]                     | Unit [Gaze-Unit]                     | Transition [Transit]                            |
|                                 |                                      | Unit [Gaze]                                     |
|                                 | Direction [Gaze-Dir] <sup>3</sup>    | Forward-Front [Straight-F]                      |
|                                 |                                      | Forward-Right [Straight-R]                      |
|                                 |                                      | Forward-Left [Straight-L]                       |
|                                 |                                      | Up-Front [Up-F]                                 |
|                                 |                                      | Up-Right [Up-R]                                 |
|                                 |                                      | Up-Left [Up-L]                                  |
|                                 |                                      | Down-Front [Down-F]                             |
|                                 |                                      | Down-Right [Down-R]                             |
|                                 |                                      | Down-Left [Down-L]                              |
|                                 |                                      | Other [Other]                                   |
|                                 | Target [Gaze-Contact]                | Addressee/Participant1 [Addressee] <sup>4</sup> |
|                                 |                                      | Participant2 [Participant]                      |
|                                 |                                      | Vague [Vague]                                   |
|                                 |                                      | Object [Object]                                 |
|                                 |                                      | Body part [Body]                                |
|                                 |                                      | Camera [Cam]                                    |
|                                 |                                      | Other [Other]                                   |
| Mouth [Mouth]                   | Openness [Mouth-O]                   | Open [Open-M] <sup>5</sup>                      |
|                                 | Lips' corners [Mouth-C] <sup>6</sup> | Corners up [Up-C]                               |
|                                 |                                      | Corners down [Down-C]                           |
|                                 |                                      | Other [Other]                                   |
|                                 | Lips' shape [Mouth-L]                | Protruded [Protruded]                           |
|                                 |                                      | Retracted [Retracted]                           |
|                                 |                                      | Other [Other]                                   |

### 3.4 Recognition of emotions from the face

14

- Additional level > Plutchik's wheel of emotions (32 labels + 2) (1980)
  - Based on 8 primary emotional dimensions organized in polarity dyads (ecstasy vs. grief)
  - Declined into several combinations (optimism = anticipation + joy)
  - Nuanced according to the degree of intensity (acceptance – trust – admiration)

Inter-agreement: Annotation scheme tested by 2 annotators on 3 video samples (15 mins.; only from the face)
- Emotional and attitudinal expression transmitted through multiple modes of communication (among others face, voice, words, and gestures) (Gendron *et al.*, 2012)
  - Annotation of the contextual relation (with sound and the entire body): complementary, redundant or conflicting



## 3.5 Intersubjectivity and discourse markers

16

### ⊙ Definition

- A [discourse] marker is defined as a phonologically short item that is not syntactically connected to the rest of the clause (i.e., is parenthetical), and has little or no referential meaning but serves pragmatic or procedural purposes (Brinton, 2008: 1)

### ⊙ Focus on (inter)subjective discourse markers (Fitzmaurice, 2004; Kärkkäinen, 2006)

- **Expressive function** (speaker-oriented), conveying the speaker's attitude, feelings, emotions, value judgments, stance, etc. (e.g., *franchement* 'frankly', *je pense* 'I think')
- **Interactive function** (addressee-oriented), that helps to achieve cooperation, to maintain the speech flow or to create shared values and intimacy (e.g., *mm*, *tu sais* 'you know')

## Example n°2 – Face + Emotions + DMs

17

Fichier Edition Ann



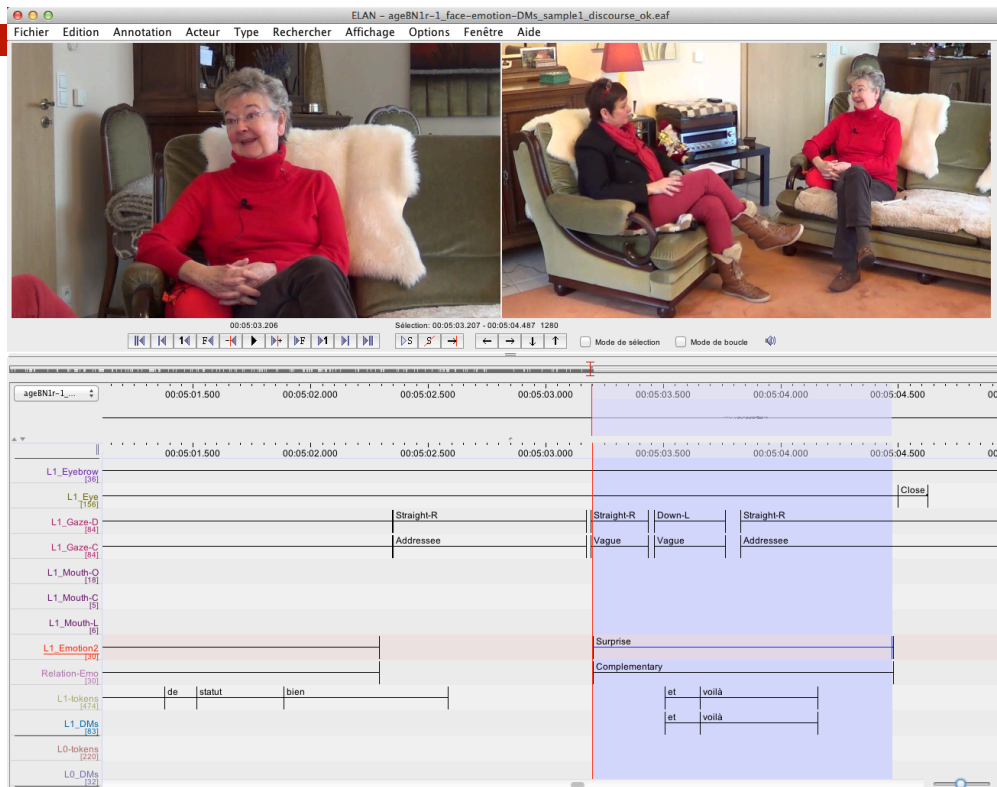
j'étais une petite fille très espiègle

00:00:06.000 00:00:06.500 00:00:07.000 00:00:07.500 00:00:08.000

| Layer            | 00:00:06.000 | 00:00:06.500  | 00:00:07.000 | 00:00:07.500 | 00:00:08.000      |
|------------------|--------------|---------------|--------------|--------------|-------------------|
| L1_Eye [11]      |              | Clos          | Close-BE     | Close-B      | Close             |
| L1_Gaze [5]      |              |               |              |              |                   |
| L1_Gaze-D [5]    |              | Straight-R    | Straight-F   |              |                   |
| L1_Gaze-C [5]    |              | Vague         | Vague        |              |                   |
| L1_Emotion2 [2]  |              | Nostalg       |              |              |                   |
| Relation-Emo [2] |              | Complementary |              |              |                   |
| L1_tokens [26]   |              |               | pf           | un           | peu garçon manqué |
| L1_DM [6]        |              |               | pf           |              |                   |

## Example n°3 – Face + Emotions + DMs

18



## 4. Preliminary results

### 1) Inter-individual variation

19

#### ⊙ Inter-individual variation

- Highly significant variability in the individual profiles with respect to the four sub-categories of Davis' empathy ( $\chi^2 = 31.426$  ;  $df = 9$  ;  $p < 0.05$ )

| Pseudo (L1) | Age | Birth | Educa-<br>tion | MoCA<br>test | F-IRI<br>(%) | Persp.-<br>Taking | Fantasy | Empathic<br>Concern | Personal<br>Distress |
|-------------|-----|-------|----------------|--------------|--------------|-------------------|---------|---------------------|----------------------|
| Nadine      | 75  | 1938  | 12             | 29           | 63,57        | 57,14             | 60,00   | 85,71               | 51,43                |
| Louise      | 79  | 1933  | 12             | 26           | 66,43        | 80,00             | 51,43   | 91,43               | 42,86                |
| Anne-Marie  | 82  | 1932  | 12             | 28           | 61,43        | 94,29             | 28,57   | 91,43               | 31,43                |
| Albertine   | 84  | 1929  | 14             | 29           | 61,43        | 65,71             | 45,71   | 77,14               | 57,14                |

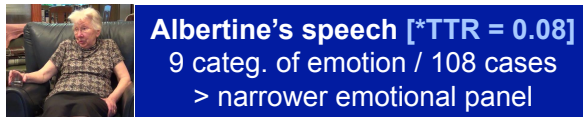
#### ⊙ Absence of inter-individual variation

- Relatively homogeneous global score of empathy (from 61% to 66%)
- Similar proportion of emotions polarity (more than 69% of the emotions were negative)

# 1) Inter-individual variation

20

- Subjects slightly differ in facial emotional richness, measured in terms of types of expressed emotions within the samples



|                |             |         |
|----------------|-------------|---------|
| Disapproval    | 27 negative | Neutral |
| Pensiveness    | 25 negative | Low     |
| Annoyance      | 19 negative | Low     |
| Attention      | 9 positive  | Low     |
| Interest       | 7 positive  | Medium  |
| Trust          | 7 positive  | Medium  |
| Disappointment | 6 negative  | Low     |
| Surprise       | 5 negative  | Medium  |
| Joy            | 3 positive  | Medium  |



|                |             |         |
|----------------|-------------|---------|
| Surprise       | 22 negative | Medium  |
| Pensiveness    | 14 negative | Low     |
| Annoyance      | 13 negative | Low     |
| Nostalgia      | 9 positive  | Neutral |
| Trust          | 9 positive  | Medium  |
| Disappointment | 8 negative  | Low     |
| Disapproval    | 8 negative  | Neutral |
| Joy            | 8 positive  | Medium  |
| Fear           | 7 negative  | Medium  |
| Sadness        | 4 negative  | Medium  |
| Interest       | 3 positive  | Medium  |
| Other          | 3 other     | Other   |
| Serenity       | 3 positive  | Low     |
| Anger          | 2 negative  | Medium  |
| Apprehension   | 1 negative  | Low     |
| Attention      | 1 positive  | Low     |
| Disgust        | 1 negative  | Medium  |

\* TTR = Type Token Ratio

## 2) Intra-individual variation in Nadine's speech

21

- Nadine
  - Socio-cultural portrait: 75 years old woman, married, still living at home, with a good level of education (12 years), physically and socially active (promenades, cultural activities, family environment)
  - Empathic score (IRI) = 64%
    - Empathic Concern (86%) > Fantasy (60%) > Perspective-Taking (57%) > Personal Distress (51%)
- Physiological patterning from face and gaze expressions
  - Some intra-individual regularity noticed for the most frequent emotions
    - ✓ "Surprise" = eyebrow raising (19/22 cases), often combined with an exaggerated opening of the eyes (12/22 cases)
    - BUT this combination of parameters is also true for "fear" (5/7 cases), "disappointment" (3/8 cases) and "annoyance" (3/16 cases)
  - No clear physiological pattern that can be considered specific to one emotion or another

## 2) Intra-individual variation: Nadine's speech

22

- ⊙ The most frequent emotions expressed through the face are congruent (complementary or redundant) with the contextual and linguistic information
  - Yet, some facial emotions contradict the information conveyed by the context
  - For instance, the annotation of “joy” does not mirror the information expressed

Ex.: *c'était un peu jeune quoi hein j'ai été un peu malheureuse là*  
'I was a little bit too young well I have been quite unhappy there'



## 2) Intra-individual variation: Nadine's speech

23

- ⊙ The most frequent emotions expressed through the face are congruent (complementary or redundant) with the contextual and linguistic information
  - Yet, some facial emotions contradict the information conveyed by the context
  - For instance, the annotation of “joy” does not mirror the information expressed

Ex.: *c'était un peu jeune quoi hein j'ai été un peu malheureuse là*  
'I was a little bit too young well I have been quite unhappy there'

- ⊙ How can this contradiction be explained? What's the role played by speech and/or discourse markers in the disambiguation of emotional states?
  - Nadine is maybe smiling here to mitigate the pain she is remembering > redundant with the function of the modal marker *un peu* “a bit”
  - Discourse markers *quoi, hein, là* may have here an interpersonal function, stressing the need to share her painful experience with the interlocutor



# Conclusion

24

- ⊙ Nonverbal resources are a major channel of emotional expressivity and interactivity in the communicating subject
  - Due to their ambiguous and complex structure, emotions are challenging to detect, even more in natural context (Douglas-Cowie et al., 2003: 36-38)
- ⊙ Observations from findings
  - The visual mode, if taken alone, is not sufficient to understand what kind of information the speaker is actually transmitting to the interlocutor
  - Needs more “words” in order to be interpreted in accordance with the speaker’s intention
- ⊙ Methodological consequence? The most “reasonable” choices are:
  - Going on with the step by step annotation process, from uni-modal to multimodal analyses
  - Psychometric results seem to have no added value > to be abandoned?
  - Emotion recognition from the audio-visual data (not only from the face)
  - Prosodic information to be explored

Thanks to them all...



[corpagest.org](http://corpagest.org)



| Sample | Begin time | End time | Duration | L1_Emotion   | L0_Discourse-value | L1_Discourse-value                                                                                                                                                                                                                                                       | Relation-Emo-value | L1_Eye-value                                                               | L1_Eyebrow-value       | L1_Gaze-C-no-ann | L1_Gaze-C-value                              | L1_Gaze-D-no-ann | L1_Gaze-D-value                                                                                                                                | L1_Mouth-C-value | L1_Mouth-L-value | L1_Mouth-O-value |
|--------|------------|----------|----------|--------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------|------------------------|------------------|----------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|------------------|
| 2      | 146325     | 147698   | 1373     | Acceptance   | -                  | voilà                                                                                                                                                                                                                                                                    | MM-Redondant       | Close-BE                                                                   | Rais                   | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | -                | -                |
| 2      | 157744     | 158464   | 720      | Acceptance   | -                  |                                                                                                                                                                                                                                                                          | UM-Accordance      | Close-BE, Close-BE                                                         | Rais                   | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | -                | -                |
| 2      | 232465     | 235328   | 2863     | Acceptance   | -                  | avec les moyens qui nous sont permis hein bien sûr                                                                                                                                                                                                                       | MM-Redondant       | Close-BE                                                                   | Rais, Rais             | 3                | Addressee                                    | 3                | R                                                                                                                                              | -                | -                | -                |
| 2      | 203415     | 204114   | 699      | Amusement    | -                  | [oui] quel on peut se à ces choses                                                                                                                                                                                                                                       | MM-Complementary   | X-Open, Close-R                                                            | Rais                   | 2                | Addressee, Vague                             | 2                | Straight-R, Straight-R                                                                                                                         | -                | -                | -                |
| 2      | 190430     | 191221   | 791      | Anger        | -                  | mon dieu seigneur[!]                                                                                                                                                                                                                                                     | MM-Contradictory   | X-Open                                                                     | Rais                   | 2                | Vague, Vague                                 | 2                | Up-R, Straight-R                                                                                                                               | -                | -                | -                |
| 3      | 305575     | 306755   | 1180     | Anger        | -                  | on sait que ça arrivera un jour                                                                                                                                                                                                                                          | MM-Complementary   | -                                                                          | -                      | 2                | Vague, Vague                                 | 2                | Straight-R, Straight-L                                                                                                                         | -                | -                | -                |
| 3      | 307145     | 307825   | 680      | Anger        | -                  | mon sentiment                                                                                                                                                                                                                                                            | MM-Complementary   | -                                                                          | -                      | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | -                | -                |
| 1      | 89130      | 91070    | 1940     | Annoyance    | -                  | que j'ai été adulte trop jeu[ne]                                                                                                                                                                                                                                         | MM-Redondant       | Close-BE                                                                   | Frown                  | 5                | Vague, Addressee                             | 5                | R, Straight-F, Straight-R                                                                                                                      | -                | -                | -                |
| 1      | 136310     | 140870   | 4560     | Annoyance    | -                  | Notre-Dame à l'âge de huit ans à M.                                                                                                                                                                                                                                      | MM-Complementary   | Close-BE, Close-BE, Close-BE                                               | Rais, Rais             | 5                | Vague, Vague                                 | 5                | Straight-R, Straight-F                                                                                                                         | -                | -                | -                |
| 1      | 162340     | 163740   | 1400     | Annoyance    | -                  |                                                                                                                                                                                                                                                                          | UM-Accordance      | Close-BE, Close-BE, Close-BE, Close-BE                                     | Rais, Rais             | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | -                | -                |
| 1      | 254990     | 258240   | 3250     | Annoyance    | -                  | [dé]jirée quand je suis née / mon parrain euh                                                                                                                                                                                                                            | MM-Complementary   | Close-BE, Close-BE, Close-BE                                               | Rais, Rais             | 3                | Addressee, Vague, Vague                      | 3                | Straight-R, Up-R, Straight-F                                                                                                                   | -                | Retracted        | -                |
| 2      | 62364      | 66958    | 4594     | Annoyance    | -                  | ben voilà Madame euh au point de vue hormonal etoiera vous êtes au stade trois                                                                                                                                                                                           | MM-Contradictory   | Close-BE, Close-BE, Close-BE, Close-R                                      | Rais, Rais             | 2                | Vague, Vague                                 | 2                | Up-R, Up-F                                                                                                                                     | -                | -                | -                |
| 2      | 120784     | 129299   | 8515     | Annoyance    | -                  | les jeunes c'est ça / je n/ je ne me sens pas faire partie des / des trois fois vingt à jouer aux cartes etc[era]                                                                                                                                                        | MM-Complementary   | Close-R, Close-BE, Close-BE, Close-BE, Close-BE                            | Rais, Rais, Rais, Rais | 7                | Vague, Addressee, Vague, Vague, Vague, Vague | 7                | Straight-F, Straight-R, Straight-F, Down-R, Up-F, Up-L, Straight-R                                                                             | -                | -                | -                |
| 2      | 208366     | 213946   | 5580     | Annoyance    | -                  | [a]pa a) é/ a eu son a été opéré de son cancer ça a été très mal qu'il on pensait qu'il allait passer l'anne à gauche                                                                                                                                                    | MM-Complementary   | X-Open, Close-BE, Close-BE, X-Open                                         | Rais                   | 6                | Vague, Addressee, Vague                      | 6                | Straight-R                                                                                                                                     | -                | -                | -                |
| 3      | 59850      | 60840    | 990      | Annoyance    | -                  | ben oui                                                                                                                                                                                                                                                                  | MM-Contradictory   | Close-BE, Close-BE                                                         | Rais                   | 1                | Vague                                        | 1                | Down-R                                                                                                                                         | -                | -                | -                |
| 3      | 109025     | 110575   | 1070     | Annoyance    | -                  | répète la question                                                                                                                                                                                                                                                       | MM-Complementary   | Close-BE                                                                   | -                      | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | -                | -                |
| 3      | 127555     | 128745   | 1190     | Annoyance    | -                  | pf                                                                                                                                                                                                                                                                       | MM-Complementary   | -                                                                          | Rais                   | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | -                | -                |
| 3      | 131245     | 133115   | 1870     | Annoyance    | -                  | on les supporte parce qu'ils sont là mais                                                                                                                                                                                                                                | MM-Complementary   | -                                                                          | Rais                   | 3                | Addressee                                    | 3                | Straight-R, Straight-F                                                                                                                         | -                | -                | -                |
| 3      | 208700     | 214750   | 6050     | Annoyance    | -                  | tu sais qui pleine de bijoux et de / de brac[ele]ts                                                                                                                                                                                                                      | MM-Complementary   | Close-BE                                                                   | -                      | 3                | Addressee                                    | 3                | Straight-R, Down-R                                                                                                                             | -                | -                | -                |
| 3      | 252715     | 254655   | 1940     | Annoyance    | -                  | oh là la je sais                                                                                                                                                                                                                                                         | MM-Redondant       | Close-BE                                                                   | Rais                   | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | -                | -                |
| 3      | 256875     | 269965   | 13090    | Annoyance    | -                  | cinq ans qu'elle est ici il y a cinq ans chaque fois qu'on sort qu'elle dit la même chose / je dis je vais quand même avoir le courage de j'ai pas le courage je j'ai pas [j] je vais pas lui répondre quelque chose de méchant mais j'en ai marre de l'entendre dire ça | MM-Redondant       | Close-R, Other, Close-BE, Close-BE, Close-BE, Close-BE, Close-BE, Close-BE | Rais, Rais             | 11               | Addressee                                    | 11               | Straight-R, Up-R, Down-R, Straight-R, Straight-R, Straight-F, Down-F, Down-L, Up-R, Down-L, Straight-R                                         | -                | -                | Open-M           |
| 3      | 274310     | 277650   | 3340     | Annoyance    | -                  | ça me pf me hérisse ces [ré]flexions                                                                                                                                                                                                                                     | MM-Complementary   | X-Open, Close-BE, Close-BE                                                 | Rais                   | 4                | Vague, Addressee                             | 4                | Down-F, Straight-R                                                                                                                             | Down-C           | -                | Open-M           |
| 3      | 286230     | 299880   | 13650    | Annoyance    | -                  | ben non parce que j'ai vécu avec papa euh une période difficile où on ne savait pas s'il allait vivre ou pas vivre / et et et c'était dur à vivre quand même malgré qu'on on vivait intensément / mais                                                                   | MM-Complementary   | X-Open, Close-BE                                                           | Rais                   | 12               | Vague                                        | 12               | Straight-R, Straight-R, Straight-R, Straight-R, Straight-R, Straight-R, Straight-R, Straight-R, Straight-R, Straight-R, Straight-R, Straight-R | -                | -                | -                |
| 2      | 88342      | 90812    | 2470     | Apprehension | -                  | et en quoi est-ce un problème pour toi ?                                                                                                                                                                                                                                 | UM-Independent     | -                                                                          | Rais                   | 1                | Addressee                                    | 1                | Straight-R                                                                                                                                     | -                | Retracted        | -                |
| 2      | 131284     | 134046   | 2762     | Apprehension | -                  | j/ non / euh je ne me vois pas comme                                                                                                                                                                                                                                     | MM-Redondant       | X-Open                                                                     | Rais                   | 3                | Addressee                                    | 3                | R                                                                                                                                              | -                | -                | -                |
| 2      | 197778     | 198792   | 1014     | Apprehension | -                  | déjà quelques temps ça ça                                                                                                                                                                                                                                                | MM-Complementary   | X-Open                                                                     | -                      | 1                | Vague                                        | 1                | Straight-R                                                                                                                                     | -                | -                | -                |