

# Smile change and topic change : links between these two actions

Mary Amoyal, Béatrice Priego-Valverde, Stéphane Rauzy

Aix Marseille Université, CNRS, Laboratoire Parole et Langage UMR 7309,  
Aix-en-Provence, France

`mary.amoyal@univ-amu.fr`

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1 Context

2 Methodology

3 Résultats

4 Conclusion

## Main objectives

- Smile as a “facial gesture” (Bavelas et al., 1991)
- Thematic transition : better understanding of conversation organization
- Interactants' degree of acquaintance

# Conversation

- Conversation is a “collaborative production” (Sacks et al., 1974)
- Described as a “system” (Winkin, 1981) organized around constraints
- Mixed approach: qualitative and quantitative analyses of interactional phenomena
- Conversational Analysis (Sacks et al., 1978) Interactional Linguistic (Couper-Kuhlen & Selting, 2001)

## Conversation and gesture

- Multimodal resources are mobilized during interactions (Birdwhistell, 1968; Ferré, 2011)
- Speech and gesture as a whole (Winkin, 1981)
- Facial gesture are particularly observed by the interlocuteur (Barrier, 2013)

## What about facial gesture ?

- Eye gaze (Brône et al., 2017; Auer, 2021)
- Eyebrow movement (Goujon, 2019)
- Eye blink (Hömke et al., 2018; Holler & Bavelas, 2017)
- Laughter (Mazzocconi et al., 2020)

# Smile functions: a polyfunctional gesture

## **Interlocutor**

Feedback	(Jensen, 2015; Boudin et al., 2021)
Listening Marker	(Duncan et al., 1979)
Maintaining attention	(Theonas et al., 2008)

## **Speaker**

Humorous frame	(Priego-Valverde et al., 2018)
Narrative punctuation	(Chovil, 1991)
Emotional transition	(Kaukomaa et al., 2013)

## Thematic transitions

- Main observable of the interactional organization (Cosnier et al., 1987)
- The theme is (1) the focus of shared attention, (2) specific to the participants, (3) co-constructed (Riou, 2015)
- Strategies to make the themes consistent
- Cues and markers of thematic transition
- Several type of thematic transition depending on the coherence (Crow, 1983)



# Main questions

- ① How participants use their smile in thematic transitions ?
- ② Does the role of smile depend on the participants' degree of acquaintance ?

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# Corpus

- 20 interactions
- Instructions: reading of a canned joke then **free discussion** for 15 min
- 5h27 of french conversations

## CHEESE!

(Priego-Valverde et al., 2020)

- 2016
- Acquainted
- 2h37

## PACO

(Amoyal et al., 2020)

- 2018
- Initial interactions
- 2h40

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# Transcription

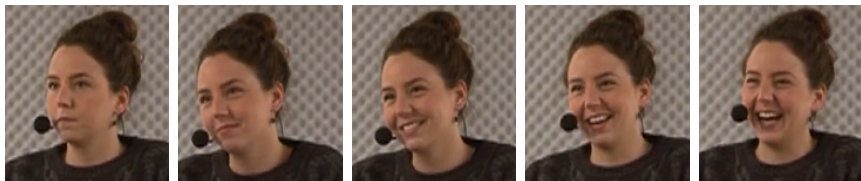
- Automatic slicing into IPU's under SPPAS software (Bigi, 2015)
- Manual transcription according to the "Enriched Orthographic Transcription" convention (Bertrand et al., 2008)

## Transitions annotation

### Manual annotation under Praat (Boersma & Weenink, 2018)

- Thematic segment (e.g. personal relationships, career background, place of residence)
- Transitions types : initiation, shading, insertion, renewal (Crow, 1983) (agreement rate = 69,65%,  $\kappa = 0,46$ )
- Transitions phases : proposition, acceptance, ratification (Traverso, 2012) (agreement rate = 95,12%,  $\kappa = 0,89$ )

## Smiling Intensity Scale (Gironzetti et al., 2016)



S0

S1

S2

S3

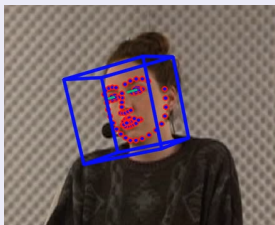
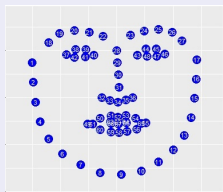
S4

Illustrations from the corpus Cheese! (Priego-Valverde et al., 2020)



# Automatic Smile Detection

## SMAD (Rauzy & Amoyal, 2020)



- Open face (Baltrušaitis et al., 2018) : landmark detection and AU calculation from the video
- Precision : 68% of correct labels
- 10-fold reduction in annotation time

## Smile annotation protocol

- Checking intensities and intervals from video and audio
- Manual correction under ELAN (Brugman et al., 2004)
- Counter-coding :  $\kappa = 0,6$

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## Smile in the whole conversation

- 33% of conversations
- Average duration : 3 secs
- Smile synchrony in the whole interaction and both corpus
- The relationship does not affect the smiles duration nor distribution

# Transitions

- 234 transitions : 121 in CHEESE! et 113 in PACO
- 12 transitions/ interaction : 1 transition every 1min22
- Average duration : 7,18 secs
- No difference between the types of transitions according to the corpus (Student's test,  $p > 0.5$ )

## Smile in every transition phase

### Proposition

- Smile suppression ( $\chi^2 = 180.44$ ,  $DF = 78$ ,  $p < 0.01$ )
- More in PACO (5,6 vs. 4,5)

### Acceptation

- Smile increase ( $\chi^2 = 111,96$ ,  $DF = 78$ ,  $p < 0,01$ )
- More in CHEESE! (2,6 vs. 2,1)

### Ratification

- Maintain the previous intensity
- In both corpus

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## Take home message

- Proposition : reduction of the speaker's smile
- Acceptation : increased smile of the interlocutor
- Smile change is closely related to topic change
- What other multimodal resources contribute to the thematic transition ?

Thank you for your attention !

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Open source corpus, annotation guides and smile software

Cheese : <https://hdl.handle.net/11403/cheese>

PACO : <https://hdl.handle.net/11403/paco>

SMAD : <https://github.com/srauzy/HMAD>

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