MOOD AND LANGUAGE COMPREHENSION: AN ERP STUDY

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Mood and cognitive processing

Many aspects of cognition, such as memory retrieval, decision-making, and social judgments, have been found to be sensitive to mood - the diffuse, objectless affective state a person is in (Clore & Huntsinger, 2007). Although the exact mechanisms are hotly debated, the evidence suggests:

HAPPY:	SAD:
Knowledge-driven	Stimulus-driven
Top-down	Bottom-up
Heuristic	Algorithmic

Research Question

Does mood influence the degree to which readers rely on 'top-down', 'knowledge-driven' conceptual heuristics to anticipate upcoming language?

Index of heuristic anticipation

In *Joe feared Sarah because...*, the verb fear provides readers with a strong conceptual-heuristic cue that the continuation will be about the person who is feared (*Sarah*), not the person experiencing fear. This implicit causality bias can be so strong that the system initially takes a formally correct pronoun (*he*) as a morpho-syntactic error, reflected in an early P600 effect in ERPs (Van Berkum et al., 2007).

Hypotheses

- A sad mood decreases the use of heuristics (Implicit Causality cues) to anticipate upcoming information.
- Syntactic parsing (as indexed by the size of a P600 to a Subject-Verb agreement violation) is not modulated by mood.

|	IC	SV
HAPPY	Early P600	P600
SAD	Smaller or no early P600	P600

Heuristic-based anticipation

Implicit Causality heuristic (IC) - pronoun confirms expectation:
Joe Biden and Sarah Palin prepared themselves for a very important debate. They were both nervous, as this debate would certainly affect the elections. Sarah feared Joe because *he* was fully aware of her ignorance.

Implicit Causality heuristic (IC) - pronoun disconfirms expectation:
Joe Biden and Sarah Palin prepared themselves for a very important debate. They were both nervous, as this debate would certainly affect the elections. Joe feared Sarah because *he* was fully aware of her popularity.
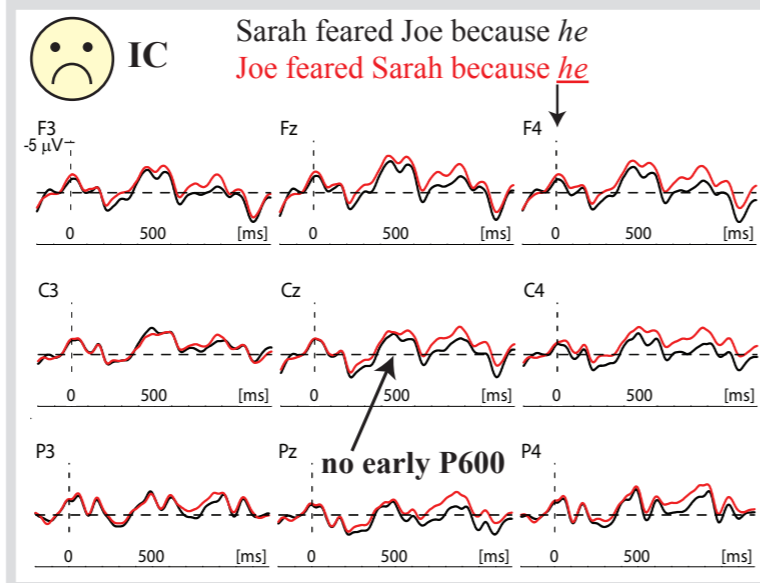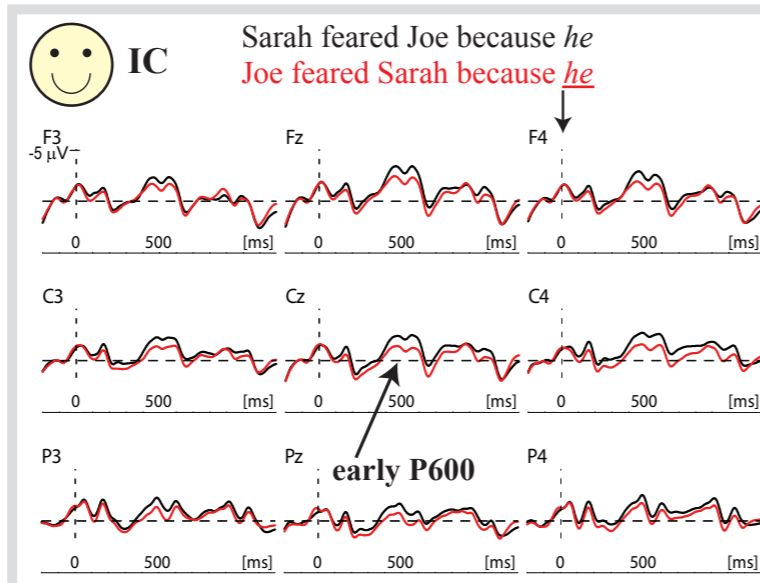
The early P600 for morpho-syntactic disconfirmations disappears in a sad mood.

Syntactic parsing (non-heuristic control)

Syntactic Violation (SV) - verb agrees with subject:
Paul and Jim really like to challenge each other all the time. The boys *turn* even the slightest difference of opinion into a bet.

Syntactic Violation (SV) - verb disagrees with subject:
Paul and Jim really like to challenge each other all the time. The boys *turns* even the slightest difference of opinion into a bet.
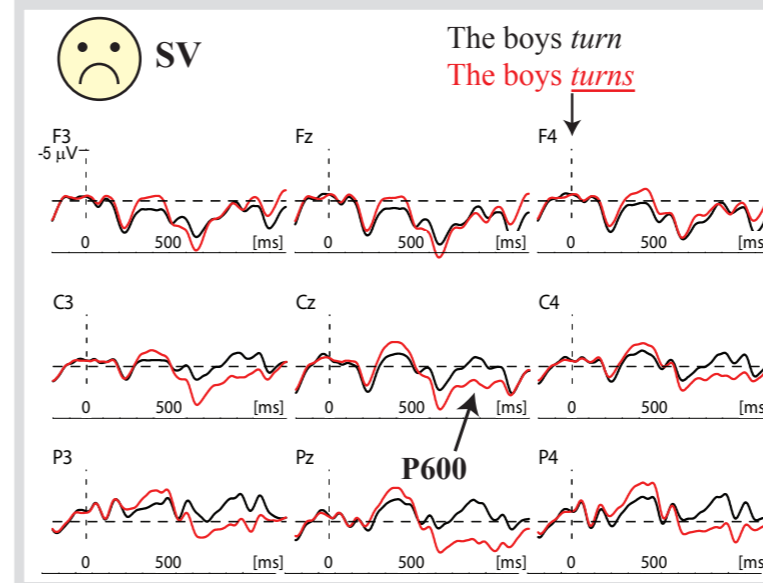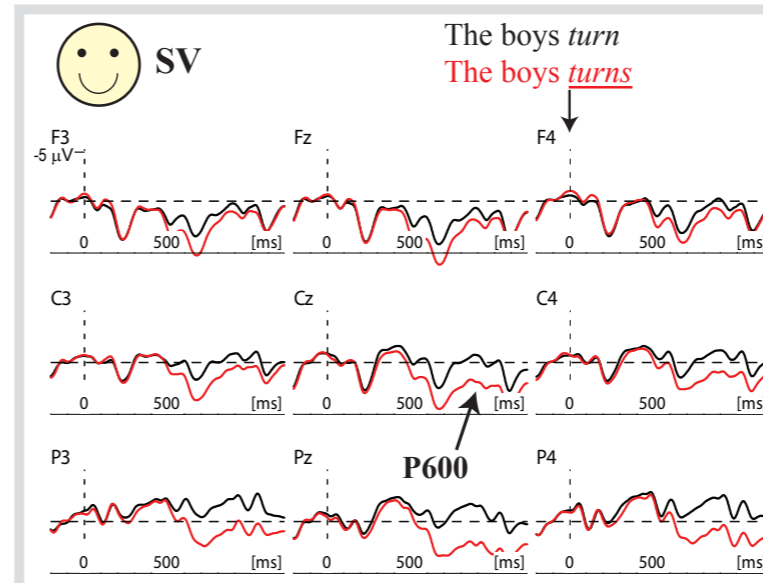
The standard P600 for morpho-syntactic violations is not modulated by mood.

Method

Participants: 32 Right-handed female native Dutch speakers

Design: Two-session (happy vs sad) EEG experiment

Mood induction: video clips (3-4 minutes) before and at four moments throughout the experiment

Video clips: Happy Feet and Sophie's Choice

Conclusion

- Sad readers are less inclined to use conceptual-heuristic cues to anticipate upcoming information than readers in a happy mood.
- The consequences of mood for language processing are selective: syntactic parsing mechanisms continue to do their job irrespective of a person's mood.

This implies that the affective system can selectively alter the mechanisms by which we come to understand language.

Open questions

We followed the mood literature in predicting a mood effect on schema-based, heuristic anticipation – but what is the critical ingredient in IC items, lacking in SV items?

- Heuristic vs algorithmic?
- Meaning vs syntax?
- Disconfirmed expectations vs unrecoverable errors?

Why does mood have this effect on processing anyway?

- *Affect-as-information:* positive mood signals that the situation is benign and therefore it is safe to rely on heuristics/schemata.
- *Alternative accounts:* happy mood decreases processing capacity, reduces processing motivation, or increases breadth of processing.