INFERENCES IN ISOLATION: AN EEG STUDY OF DISCOURSE CONNECTIVES.

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Discourse connectives (DCs), such as *but* and *so*, conjoin two elements of discourse while providing information on the nature of their conjunction. While prior experimental studies have reported a) fast integration of DCs in context-rich environments that affects; b) processing downstream from the connective [1–4], no studies have, to our knowledge, isolated the role of DCs in discourse processing in stark repeatable abstract contexts. The current work does precisely this while testing the idea that DCs a) convey procedural meaning [5] that b) facilitates processing downstream. In line with Relevance Theory, we hypothesize that this procedural meaning is cognitively costly but that it is offset by providing the addressee with positive cognitive effects.

In a paper coming from our lab [in preparation], we used reaction times to compare the cost of processing the extra-logical import of two DCs *but* and *so* (which prompt *contrast* and *causality*, respectively) to the truth-functional *and*, which we presume does not prompt additional procedures. In order to test whether there is a quantifiable inferential effort that can be isolated when processing DCs, we created a (word game) paradigm that allows the DC to be a unique source of inference in test sentences. Two variations of the same experiment provided highly similar results. In one of them, 80 participants saw 108 sentences presented in two segments as in followed by a three-letter word (1) ; they were then asked to press a button to judge whether the word corresponded to the sentence they had read. The factors manipulated were connective type (*and, but, so*) and polarity of the second segment (positive [1a.] or negative [1b.]). The results supported our pre-registered predictions by revealing that 1) *but* and *so* were processed significantly more slowly than *and* and that 2) the presence of *but* facilitates the processing of the contrasting negation in the second segment. This is consistent with previous findings [1-4].

The work that we are currently carrying out extends the same paradigm to an EEG experiment. Participants are presented with 216 sentences as in (1). A fixation cross is displayed between each sentence segment and the connective is presented in isolation. We predict that *but* and *so* will prompt more frontal positivity (P3a at around 300ms after the input followed potentially by positive slow waves) than a mere *and*, which we view as evidence that the participant is recognizing relevance for further processing [6]. As seen in Figure 1, preliminary results from 5 participants point to this outcome. Together, our studies provide insight into the inferential profile of DCs and more generally they provide evidence for an account that claims that extra cognitive effort (in the form of a procedure) is compensated by positive processing effects.

1) a.	There is a B but	there is a T.	BET
	There is a B and		
	There is a B so		
b.	There is a B but	there is no T.	
	There is a B and		
	There is a B so		

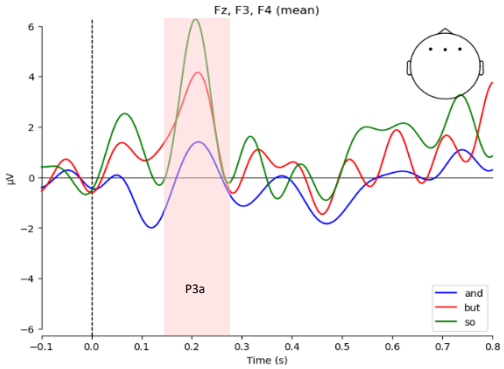

Figure 1 : ERP effect at the discourse connective for 'and' (blue), 'but' (red) and 'so' (green) on the selection of representative frontal electrodes (F3, Fz and F4) as in [2].

References : [1]Xiang & Kuperberg (2015), [2]Koehne-Fuetterer et al. (2021) [3]Schwab & Liu (2020), [4] Fernandez et al. (2023) [5] Blakemore (1992), [6] Bonnefond & Van der Henst (2009)