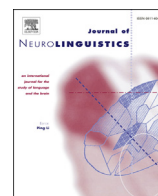




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Contents lists available at ScienceDirect

Journal of Neurolinguistics

journal homepage: www.elsevier.com/locate/jneuroling

Presupposition of new information as a pragmatic garden path: Evidence from Event-Related Brain Potentials



Viviana Masia ^{a, b}, Paolo Canal ^{c, d}, Irene Ricci ^c, Edoardo Lombardi Vallauri ^b,
Valentina Bambini ^{d, *}

^a Department of Educational Sciences - Psychology Unit, University of Genoa, Genoa, Italy

^b Dipartimento di Lingue, Letterature e Culture Straniere, Università Roma Tre, Roma, Italy

^c Laboratorio di Linguistica "G. Nencioni", Scuola Normale Superiore, Pisa, Italy

^d Center for Neurocognition and Theoretical Syntax (NeTS), School of Advanced Studies IUSS Pavia, Pavia, Italy

ARTICLE INFO

Article history:

Received 4 July 2016

Received in revised form 7 November 2016

Accepted 10 November 2016

Available online 23 November 2016

Keywords:

Neuropragmatics

Experimental pragmatics

Discourse

Information structure

N400

ABSTRACT

This study investigates the processing of presupposition in discourse through the Event-Related Brain Potential technique. While theoretical linguistics has largely described the phenomenon of presupposition, there is little empirical investigation, mainly from behavioural studies. Here we employed the Event Related Potential (ERP) technique to search for the brain signature of presupposition as opposed to assertion in discourse. Based on theoretical accounts, we hypothesized that presupposing new information should elicit higher efforts due to the mismatch between the information packaging and the actual knowledge, and to the need of accommodating the presupposed content in the mental model of discourse. We also hypothesized that these efforts could reflect in enhanced N400, similarly to other mechanisms operating at the discourse-context level. Twenty-seven participants were presented with passages containing new information packaged either as presupposition or as assertion. Two types of presupposition triggers were selected: definite descriptions and temporal subordinate clauses. Results evidenced a difference between the processing of presuppositions and that of assertions, reflected in a more enhanced N400 for the former. Results also showed that the temporal development of the presupposition effect is earlier for subordinate clauses than for definite descriptions. Differently from some behavioural studies on presupposition, but consistently with the theoretical literature and with other ERP studies on discourse processing, our data offer the first neurophysiological evidence that presupposition is more costly than assertion when new information is presented, with differences in the time development of the effect across trigger types. We proposed to account for the N400 effect induced by new presuppositions as stemming from a pragmatic "garden path" effect, in that, being presented with a new presupposition, the receiver is led down a mismatch between information packaging and discourse representation.

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* Corresponding author. Center for Neurocognition, Epistemology and theoretical Syntax (NeTS), School of Advanced Studies IUSS Pavia, Piazza della Vittoria 15, 27100 Pavia, Italy.

E-mail address: valentina.bambini@iusspavia.it (V. Bambini).

1. Introduction

1.1. Presupposition vs. assertion

In the philosophical tradition (since Frege, 1892), presuppositions have drawn attention mainly for their peculiar contribution to truth values. The famous example in (1) (Russell, 1905) presupposes (in the opinion of many)¹ the existence of a present King of France, rather than asserting it:

(1) The present King of France is bald

As a consequence, according to Strawson, when France is a republic or in any case when “the present King of France” cannot refer to any actual (unique) individual, the utterance in (1) is not in a condition to be either true or false, because it does not assert that there exists a King of France: rather, his existence is a pre-condition for the assessment of the truth value of (1). In Strawson (1964), the content of a definite description is regarded as attributed to some *shared knowledge* holding between the participants to the communicative act. Moreover, this knowledge is an *identifying knowledge* of that referent, i.e. one that allows the addressee to match the linguistic expression (a definite description) with some precise portion of reality.

The use of a definite noun phrase implies that: (a) the speaker believes that there is an object to which the noun phrase refers, (b) the speaker believes that the hearer believes that there is an object to which the noun phrase refers, and (c) the speaker believes that the hearer knows which object is referred to (Kempson, 1975, p. 17). The recourse to the concept of belief is not unproblematic. Some scholars (e.g. Stalnaker, 2002) contend that belief is not the relevant notion for presuppositions, and propose *common ground* in its stead. Common ground, in Stalnaker's definition, is made not only by the common beliefs of the participants, but also by all the notions which participants *treat as if* they were true, for any communicative/pragmatic reason. In other words, common ground is “the set of propositions that are mutually believed as accepted as true”. We regard this second definition as probably more comprehensive, and derived from the first. In other words we think, with Strawson and Kempson, that the most basic function of presuppositions is to suggest a shared knowledge, and that only when this is not the case does the second function arise (i.e. acceptance to treat that info *as if* it was shared). Stalnaker, though extending the definition of presupposition to both functions, does not explicitly take any position on whether one may be more basic than the other. More generally, we follow Stalnaker (2002, p. 701) in describing presupposition as follows:

“Speaker presupposition is a propositional attitude of the speaker. [...] To presuppose something is to take it for granted, or at least to act as if one takes it for granted, as background information – as *common ground* among the participants in the conversation.”

Importantly, presuppositions are triggered not only by definite descriptions, but also by many other linguistic items, lexical or syntactic in nature (Lombardi Vallauri, 2009), such as factive predicates (Kiparsky & Kiparsky, 1971), defining relative clauses (Fox & Thompson, 1990), adverbial clauses (Lombardi Vallauri, 2000), verbs expressing change of state, judging etc. (Fillmore, 1971), and others.

It has also been proposed that presuppositions may require different processing mechanisms as compared with assertions, corresponding to different ways in which assertion and presupposition relate their contents to the *ongoing discourse model* (Johnson-Laird & Garnham, 1980). In other words, assertions and presuppositions allow to make different assumptions on the state their contents have in the memory of the participants: while assertion presents information as something the addressee does not know yet, presupposition presents its content as to be treated as something either already stocked in the addressee's long-term memory (which is often described in discourse analysis as the “encyclopaedic” component of the discourse model), or presently active in his working memory (which is often described as the “contextual” component of the discourse model). While assertion instructs the addressee to *build a new mental slot* for the information it encodes, presupposition basically instructs him to *recognize* its referent among the concepts already in his possession. For example in (2), whose content is completely asserted, the addressee is told that he must introduce a new neighbour of the speaker into his mental model of discourse:

(2) Yesterday a new neighbour arrived

On the contrary in (3), where the existence of the neighbour is presupposed by means of a definite description, the addressee is instructed to look for him and recognize him among the things he already knows about, i.e. among the things that already belong to the discourse model he shares with the source:

(3) Yesterday the new neighbour gave me a cake

¹ The example in (1) presupposes the existence of a present King of France in the opinion of many, though not Bertrand Russell's himself. This notwithstanding, we quote this example here because it is largely diffuse and especially famous for having catalysed the discussion between Bertrand Russell and Gottlob Frege. Frege's position was subsequently adopted by Peter Frederick Strawson and many others. As can be seen from our text, we follow this position, which is prevalent in linguistic pragmatics.

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