

## Different effects of grammatical violations in Italian: An EEG study on Verb-Particle Constructions

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Despite their widespread diffusion in Germanic languages (Booij & van Marle, 2003), Verb-Particle Constructions (hereafter VPCs), ie complex predicates formed by a verbal base and a modifying post-verbal particle, seem to be scarcely attested in the major Romance languages (Masini, 2005). Italian represents an exception to this scenario, as it has a relatively rich system of VPCs (Cordin, 2011; Iacobini & Masini, 2006) that are more productive in northern dialects and almost absent in the varieties of central and southern Italy. Due to dialectal influences, Italian shows wide regional variations that go beyond superficial aspects, such as phonology, but also concern lexical and syntactic levels.

The present ERP study was designed to analyse cognitive processes related to the comprehension of sentences with different types of VPCs by subjects born and living in Trentino Alto-Adige (a region of north-east Italy). Two different categories of VPCs composed by a verb and a locative particle were selected as stimuli based on their semantic function (Cordin, 2011) and on their geographical distribution (Iacobini, 2009):

- 1) Italian (ITA) VPCs are constructions attested in all varieties of Italian. They have an idiomatic meaning which does not result from the composition of the meanings of the two parts and the particle does not preserve its original locative function (e.g., *fare fuori* “to kill”);
- 2) Trentino (TRN) VPCs are constructions attested in the Trentino variety of Italian. They have compositional meaning and the particle has an aspectual function, acting as a “focalizer” of the dynamic element which, in many cases, emphasizes the final point of the action (e.g., *raschiare via* “\*to scrape away”).

Adults from Trentino (N=44, age range=18-30) were presented with 320 sentences containing VPCs. For each category of VPCs, participants read 160 sentences: 80 sentences contained the correct particle while the other 80 contained an incorrect particle, thus creating two (correct and violated) experimental conditions (see Table 1). Correct and violated items were counterbalanced across subjects. Sentences were visually presented word by word (SOA 600ms) and subjects were asked to read silently for comprehension. Questions about the sentences were randomly asked after 20% of the trials.

Results show that the effects of violation differ for the two categories of VPCs, especially in terms of differential effects elicited by the critical word and by the word that follows it. In particular, a larger negativity, maximal around Pz, emerged for the violations of the ITA category in the 250-350ms interval following the presentation of the critical word and can be classified as an early N400 (see Figure 1). Differently, violations of the TRN category elicited a negativity in the range 1000-1100ms, an interval that corresponds to 400-500ms after the presentation of the word following the critical one (see Figure 2).

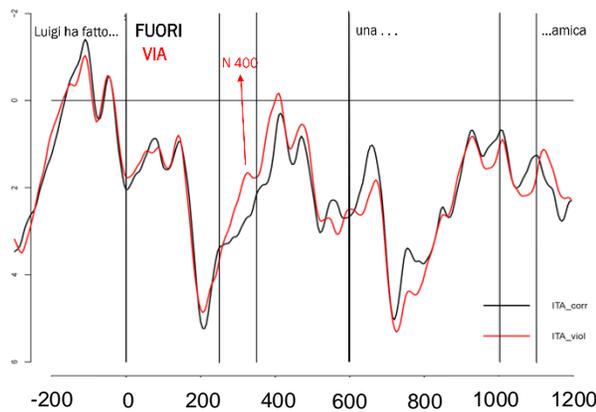
Our results suggest that the violations of VPCs have an immediate impact, confirming previous studies on PVCs in other languages (Piai et al., 2013 for Dutch) demonstrating that particles elicit an N400 effect and that it is largest for particle forming non-existing PVCs.

Moreover, the violation of aspectual VPCs interestingly impacts the processing of the following word confirming the impossibility of parsing, in our material, the particle as a head of an independent prepositional phrase. This latter finding could be due to the compositional nature of the aspectual VPCs with respect to the idiomatic ones. Notably, also this processing difficulty emerges in fact in terms of an N400, despite it is likely that syntactic factors are involved.

**Table 1.** Examples of the experimental stimuli by condition

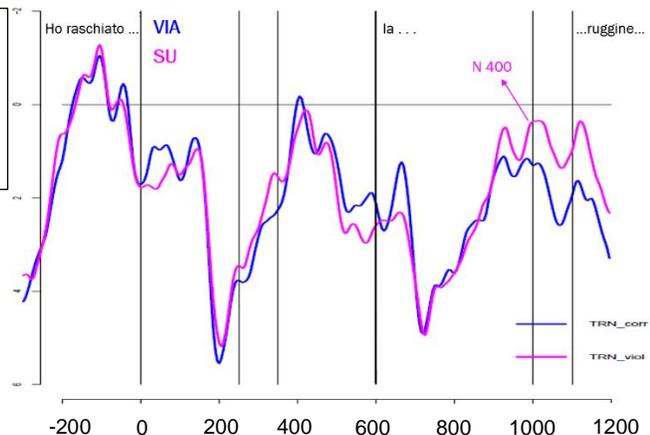
Condition	Category	Sentence
Correct	ITA VPCs	Luigi ha <u>fatto fuori</u> una amica di sua moglie *Luigi <i>made out</i> a friend of his wife “Luigi killed a friend of his wife”
Violated	ITA VPCs	*Luigi ha fatto <u>via</u> una amica di sua moglie *Luigi <i>made away</i> a friend of his wife
Correct	TRN VPCs	Ho <u>raschiato via</u> la ruggine prima di dipingere *I <i>scraped away</i> the rust before painting “I scraped the rust before painting”
Violated	TRN VPCs	Ho <u>raschiato su</u> la ruggine prima di dipingere *I <i>scraped up</i> the rust before painting

Notes: Critical words are shown in bold. Particle-verb constructions are underlined. Literal English translations are presented in italics. Non-literal English translations are placed within the quotation marks and appear only in the correct conditions. The asterisk indicates ungrammaticality.



**Figure 1.** ERP waveforms at electrode Pz for ITA sentences in the two conditions. The black line corresponds to correct condition and the red line to violated condition. Vertical lines are drawn at 0ms, 250ms, 350ms, 600ms, 1000ms, 1100ms.

**Figure 2.** ERP waveforms at electrode Pz for TRN sentences in the two conditions. The blue line corresponds to correct condition and the purple line to violated one. Vertical lines are drawn as shown in Figure 1.



## References

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