

Categorical Properties of Italian Verbs in Written Word Recognition

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Abstract

The study addresses the issue of lexical representation of inflected Italian verbal forms. Linguistic and experimental data suggest the existence of differences in lexical processing of verbs depending on morphological factors. We aimed at verifying whether lexical organization of verbs in the mental lexicon is affected by information about the grammatical category of mood. Two unmasked priming lexical decision experiments were carried out with different SOAs. Prime-target pairs composed of inflected verbs sharing or not mood information were compared. A number of control conditions were also included. The results show that information about mood becomes available in the early stages of lexical processing of verbs, but it is likely to induce priming effects a few hundred milliseconds after its pre-activation. This pattern provides evidence that mood is represented in the input component(s) and is an organizational criterion for verbal forms in the lexicon.

Keywords: verbs; mood; priming; written word recognition.

Introduction

Italian verbal forms result from the combination of a root with one or more suffixes which encode a number of morpho-syntactic properties (Finiteness, Mood, Tense, Person, Number). Each verb belongs to one of the three Inflectional Classes (IC) or Conjugations and its forms are generated according to a specific paradigm.

Our aim is to investigate the role of mood information in recognition of single words. In Palmer's definition (1994), mood (or modality) is a purely morphological verbal category and it is used across languages in order to specify the event denoted by propositions, i.e. to distinguish actions having occurred or actually occurring (real/factual), from actions knowable only through imagination (unreal/unfactual; Mithun, 1999).

We hypothesized that verbal forms encoding different mood information display some differences in lexical access, by analogy with already observed differences exhibited by verbs from different semantic categories (heavy vs. light verbs; Breedin, Saffran & Schwartz, 1998) or by verbs differing in predicative function (transitive vs. intransitive; Collina & Tabossi, 2002).

A partial confirmation of such a hypothesis comes from experimental data revealing that lexical access is sensitive to different degrees of finiteness of verbal forms (Bastiaanse & van Zonneveld, 1998; Laudanna, De Martino, & Postiglione, 2011; Laudanna, Gazzellini, & De Martino, 2004).

Here our purpose was to address the issue of whether or not mood information determines fine-grained distinctions among verbal forms during early stages of visual word recognition.

Therefore, we carried out two lexical decision experiments with the unmasked priming paradigm (Exp. 1, SOA 250 ms; Exp. 2, SOA 500 ms): we aimed at verifying whether indicative verb targets are primed by indicative verb primes differently than by verb primes inflected in a different mood than the target.

Experiment 1

Method

Participants: One hundred undergraduate students from University of Salerno voluntarily took part in the experiment, their age ranged from 18 to 30 years (av.: 22 years). They served for a session lasting about 30 minutes.

Stimuli: Twenty inflected verbs were selected as experimental stimuli and were administered in 5 conditions: A, B, C, D, E. In condition A stimuli were primed by other forms of the same verb inflected in the same mood of the target (venderai, indicative, future, "you will sell"; vendo indicative, present, "I sell"). In condition B stimuli were primed by other forms of the same verb inflected in a different mood than the target (venderei, conditional, present, "I would sell"; vendo, indicative, present "I sell"). Conditions C and D served as orthographic control conditions: here targets were primed by orthographically similar words: a verb in condition C (vendicato, past participle, "revenged"; vendo, indicative, present, "I sell"), and a noun in condition D (vendemmia, "vintage"; vendo indicative, present, "I sell"). Condition E served as a baseline: targets were primed by semantically and orthographically unrelated words (ciabatta, "slipper"; vendo, indicative, present, "I sell"). Prime stimuli of all the experimental conditions were matched for length, token frequency and orthographic similarity with the target.

Results and Discussion

Statistical analyses performed on reaction times revealed a main effect of the variable Condition (ANOVA by participants: $F_{4,76} = 24,44$; $p < 0.001$; ANOVA by items: $F_{16,75} = 2,31$; $p < 0.005$). The two morphological conditions (A and B) differed significantly from the orthographic control conditions (C and D) and from the baseline (E). No significant difference was found between the two critical morphological conditions (A and B). No significant effects were observed on error data.

This finding could be accounted for by assuming that no distinction at all is present within the sub-class of finite forms in a verb's paradigm. However, it is possible that morpho-syntactic effects of mood are not detectable in very

early stage of processing but take place at longer lags. In order to clear up the problem, we carried out Experiment 2.

Experiment 2

One-hundred undergraduate students from University of Salerno (average age: 22 years) were recruited for the experiment. They served for a session lasting about 35 minutes. The materials and the procedure were the same as used in Experiment 1, except for the SOA (250 ms vs. 500 ms): the duration of the prime presentation was kept constant (200 ms) but the blank between prime and target was increased from 50 ms to 300 ms.

Results and Discussion

The results of Experiment 2 overlap quite completely with the results of Experiment 1. On reaction times a main effect of the variable Condition was found (ANOVA by participant: $F_{4,76} = 33,37$; $p < 0.001$; ANOVA by item: $F_{16,75} = 14,31$; $p < 0.001$). No significant effects were observed on error data.

The main difference between the two experiments is that a significant difference was found between the Condition A (Same Mood) and the Condition B (Different Mood), in Experiment 2 but not in Experiment 1. The amount of difference was of about 21 ms ($p < 0.005$), in Experiment 2, and 18 ms ($p < 0.07$), in Experiment 1.

The results show that the pre-activation of mood information induces morphological priming when inflected verbs are recognized outside a syntactic context; prime-target pairs sharing mood information are recognized faster than verb pairs not sharing mood information.

General Discussion

The main aim of the research was to verify whether or not categorical properties of verbs have significant influence on the recognition of inflected verbs. Our attention was focused on mood information.

The results of our experiments are compatible with the hypothesis that information on mood is represented in the mental lexicon. Our data show that the lexical system is sensitive not only to the finiteness of verbal forms (Laudanna et al., 2004; 2011), but also to modality information. Indeed, within the sub-class of finite verbs, different latencies have been observed between indicative verbs primed by other indicative verbs and indicative verbs primed by either subjunctive or conditional verbs.

These data can be considered as pilot observations and the problem must be further investigated.

The main question to be addressed in further studies concerns the time-course of lexical activation of mood information: actually, in our experiments different effects have been observed when the SOA parameter has been manipulated. A possible explanation for the lacking of a priming effect in Experiment 1 is that the pre-activation of modality information is likely to induce significant effects only after the completion of a morpho-syntactic analysis of

the prime stimulus; thus, the lexical system needs additional time in order to accomplish such a process.

Moreover, even though the methodological constraints used in our experiment aimed at keeping semantic and syntactic factors under control, it should be ascertained whether the effect we observed do not reflect any kind of syntactic or semantic influence, beyond the purely morphological effect.

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