

Semantic priming at the sentence level: causal vs. purposive *because*

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Abstract

In the present study we use the property of some linguistic items to express more than one meaning in order to investigate whether there is semantic priming at the sentence level. To test such a priming effect we use the connective *because* that can express a causal or purposive relation. If there is a priming effect, then participants will be expected to use causal *because* following causal primes and purposive *because* following purposive primes more frequently. The preliminary results do not reveal a clear priming effect but a slight trend toward priming, which we will continue to investigate increasing the number of participants.

Key words: semantic priming, pragmatic relationships, connective *because*, causal *because*, purposive *because*

Introduction

Numerous studies found priming effects at the phonological (Schriefers et al., 1990), syntactic (Bock, 1986) and lexical levels (Meyer and Schvaneveldt (1971). However, there is less evidence for priming at the semantic and pragmatic levels. Recent work has demonstrated the online expectation-driven processing of pragmatic relationships between sentences (Rohde&Horton CUNY2010).

The present study is the first one to address the question of semantic priming at the sentential level. The aim is to investigate whether there are priming effects related to the semantic properties of connectives, i.e. the relations they convey.

We propose to use the connective *because* whose semantics allows the expression of two kinds of relations: causal (1a) and purposive (2a).

(1) *Cause* condition

- a. P: Sam failed his exam because he didn't work at all.
- b. T: John turned off the TV because ...
- c. ... he didn't like the show [causal completion expected]

(2) *Purpose* condition

- a. P: Mary read the article carefully because she aims at getting an A
- b. T: Sally turned off the radio because ...
- c. ... she wanted to sleep [purposive completion expected]

The ongoing experiment is designed as a comprehension-to-production priming study where the participants are asked to first read a prime sentence, expressing *cause* in one condition (1a) and *purpose* in the other (2a), and then to complete a target fragment containing the connective *because* (1b/2b). Crucially, the target sentence can have both continuations: causal or purposive. If there is priming, we expect more causal completions (1c) following the cause-prime and more purposive completions (2c) following the purpose-prime.

Material and methods

14 adult (mean age: 27) participants (9 American native speakers and 5 advanced speakers) took part in the study which was an Internet-based written completion task. The participants were presented with a list of sentences containing 6 causal primes (C-primes), 6 purposive primes (P-primes) and 3 fillers between each prime-target pair. Some of the sentences (prime targets and other) were not finished and the participants were asked to invent completions for unfinished sentences.

So, as for now, we have 168 cases to analyze (12 sentences per 14 participants) divided into 2 sub-groups: 84 answers for causal-primes (C-primes) and 84 for purposive-primes (P-primes).

Results

The repeated ANOVA results indicate that there is a significant main effect of answer type: $F(1, 13) = 68.002, p = .000, \eta^2 = .840$, which means that participants provided more causal completions than purposive completions overall irrespective of the prime type they read. But the two-way interaction (prime type*answer type) is not significant which means that at this stage no clear priming effect was found. Nonetheless, it seems that there is a very slight trend towards priming as the figure 1 shows:

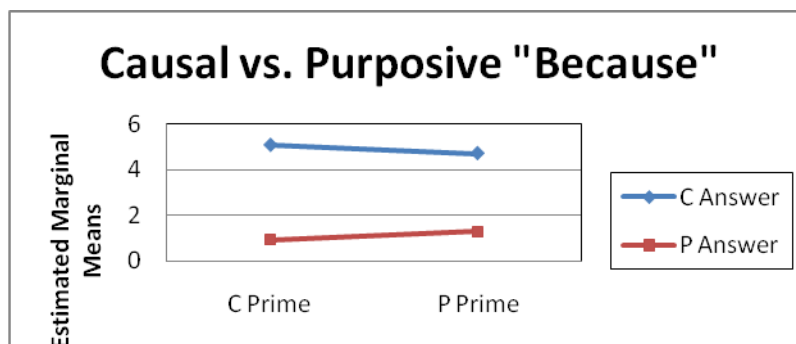


Figure 1. The plot showing the proportion of C- and P-answers to C- and P-primes respectively

Thus, since the experiment is still going on and the number of participants is not big enough, it is worth discussing these preliminary results on raw numbers in order to present our experimental assumptions transparently.

As the first step of our analysis we propose to identify how often in general people use *because* to express purposive relations with respect to causal ones. To this end we define a quantity of relative frequency of purposive *because* (FPB).

The FPB without priming can be obtained from corpus analysis. Our preliminary study of the corpus of journal “The Economist” indicates that people use the connective *because* to express purposive relations about 10 times less frequently than to express causal relations (for 100 occurrences of *because*, 8 cases of purposive uses have been found).

From our experiment we got two FPBs values: 15% (13 cases) with the C-priming and 21% (18 cases) with the P-priming. Thus the results of the experiment show that the average use of purposive relations FPB is increased from 15% up to 21% (18 cases) in presence of purposive primes (P-primes).

From the general rules governing priming we can make a conjecture that as the causal use of *because* is basically the norm and its purposive use is relatively rare, the C-primes have practically no effect and it is the P-primes which really affect the data. In this case we have a 6% increase of FPB (from 15% to 21%).

It is a promising outcome, suggesting manifestation of a priming effect even if the statistical results do not reach significance and therefore do not allow drawing a strong conclusion about the existence of these priming effects at the moment.

Another explanation would be that despite of rarity of purposive use of *because*, C-primes and P-primes could be equally strong. This hypothesis is less probable and will not be discussed here.

Moreover, our experiment and the proposed analysis points to another question: why the percentage of use of purposive relations differs between the result from the corpus study (10%) and the result we obtained from averaging the number of P-answers in presence of both types of primes (18%). The answer we would like to suggest is that this difference is the result of priming that persists over fillers. As we saw from the corpus, expressing purpose with *because* is not common and participants having become aware of this possibility through P-primes, start to exploit this option more frequently.

Conclusions and future developments of the experiment

The presented study is the first one addressing the issue of the semantic priming at the sentence level. Even if the preliminary results have not shown clear priming effects, on the basis of the data at hand we can observe a tendency suggesting the possibility of purposive priming. In order to verify if this tendency is confirmed we continue gathering data on the one hand and on the other, we consider taking some additional measures to test our hypothesis.

One of these measures concerns the FPB factor. For the moment we assume that the corpus' FPB provides a good enough approximation of the FPB without priming but ideally in order to measure FPB factor we should perform an experiment using our sentences in the absence of any priming context, which we are planning to do soon.

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