



Priming effect in indicative and subjunctive exceptive conditionals



Orlando Espino*, & Isana Sánchez-Curbelo

University of La Laguna, Tenerife, Spain

ARTICLE INFO

Article history:

Received 12 April 2014

Received in revised form 28 October 2015

Accepted 24 January 2016

Available online xxx

Keywords:

Reasoning

Mental models

Deductive reasoning

Exceptive conditional

PsycINFO classification:

2340 Cognitive processes

ABSTRACT

We report the results of three experiments that examine the mental representations underlying the comprehension stages of negative exceptive conditionals using subjunctive mood ('B a menos que A', 'B a no ser que A'; 'B excepto que A' = 'B unless A') and indicative mood ('B excepto si A' and 'B salvo si A' = 'B except if A'). The mental representations during the comprehension stage were analyzed using a priming methodology. All experiments showed that participants read the true possibility 'not-B & A' faster when it was primed by exceptive conditionals requiring the subjunctive mood than when it was primed by exceptive conditionals requiring the indicative mood; other possibilities ('B & A', 'B & not-A', 'not-B & not-A') were primed equally by both connectives. The experiments showed that (a) when people understand negative exceptive conditionals using the subjunctive mood, such as 'B a menos que A'/ 'B a no ser que A'/ 'B excepto que A', they access the true possibilities 'not-B & A' and 'B & not-A', and (b) when they understand negative exceptive conditionals using the indicative mood, such as 'B excepto si A'/ 'B salvo si A', they access 'B & not-A', but not 'not-B & A'. We discuss the implications of this for current theories of reasoning.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

Negative exceptive conditionals are important expressions in everyday life commonly used to refer to exceptive situations (such as, 'do not drive the car *unless/except if* you are sober'), with the most common negative exceptive conditionals in the Spanish language being: *excepto si, salvo si* [in English = *except if*], *a no ser que, a menos que*, and *excepto que* [in English = *unless*]. However, there is no consensus about the meaning of these expressions. According to some philosophers, negative exceptive conditionals are semantically equivalent to *if not* (e.g., Quine, 1972; Reichenbach, 1947). Other authors have often disagreed with this view (Fillenbaum, 1986; Montolío, 2000). Fillenbaum (1986) claimed that an important part of the expression *unless*, the stress on the need to 'work harder', is lost in the expression *if not*, and concluded that *unless* is more closely related to *only if* than to *if not*.

In the same sense, Montolío (2000) has claimed that an exceptive conditional, such as 'B except if A/B unless A', is not psychologically equivalent to the conditional 'B, if not-A', because exceptive conditionals establish a much more precise and restricted relationship between the main clause ('B') and the subordinate clause ('A') than the conditional *if not*. This specific relationship between the main clause ('B') and the subordinate clause ('A') in exceptive conditionals is so strong that it cannot be canceled without leading to a semantically and pragmatically

unacceptable utterance. This author (1999, 2000) has claimed that this behavior is similar to the connective *if and only if* and consequently exceptive conditionals are better understood as bi-conditionals. Montolío (2000) has also claimed that exceptive conditionals cannot be iterated in coordinate structures, whereas *if not* clauses can, and she pointed out that the reason behind the unacceptability of the iterated exceptive conditionals lies in the fact that it is not possible to present the only circumstance under which something will not happen and then add another exceptional condition.

At the same time, there is pragmatic reason to believe that exceptive conditionals are not semantically equivalent to *if not* clauses. Generally, the semantics of the exceptive conditional makes it appropriate for use in deterrent contexts (such as, 'I will lend you my car *except if/unless* you drive fast'), while at the same time making it unnatural-sounding in other contexts (for example, causal contexts) in which *if not* clauses can be used. As a consequence, it is not surprising that some authors have claimed that the exceptive conditional is not equivalent to the conditional *if not* (Dancygier, 2002; Dancygier & Sweetser, 2005; Espino, Sánchez-Curbelo, García, & Estupiñán, 2013; Gómez-Veiga, García-Madruga, & Moreno-Ríos, 2012).

Another point of disagreement with respect to negative exceptive conditionals has to do with the fact that for some authors, certain exceptive conditionals are semantically equivalent to others. For example, some authors claim that the conditional *unless* is semantically equivalent to the conditional *except if* (Declerck & Reed, 2000; Geis, 1973), while other authors disagree (Dancygier, 2002). Montolío (2000), for her part, claimed that the Spanish conditionals *a menos que/a no ser que/excepto si/salvo si* are all semantic equivalents.

* Corresponding author at: Departamento de Psicología Cognitiva, Universidad de La Laguna, Campus de Guajara, 38205 Tenerife, Spain.
E-mail address: oespinom@ull.es (O. Espino).

We agree with Montolío that these conditionals are semantically equivalent in the sense that they all have a bi-conditional meaning (Espino et al., 2013; Gómez-Veiga et al., 2012; Montolío, 1999, 2000). However, our main claim is that the mental representation underlying these conditionals is different, and depends on whether the conditional is combined with the indicative or the subjunctive mood. The Spanish conditional connectives *excepto* and *salvo* can be combined with either indicative (such as, 'B excepto si A' and 'B salvo si A') or subjunctive (such as, 'B excepto que A' and 'B salvo que A'), while *a menos que* and *a no ser que* can only be combined with the subjunctive.

Our proposal in this paper is to show that people have in mind different initial representations when they think with subjunctive exceptive conditionals and with indicative exceptive conditionals. We will use the priming methodology to determine the initial possibilities that people generate during the comprehension of exceptive conditionals. Our claim is that participants who have understood different conditionals will keep in mind different possibilities (Johnson-Laird & Byrne, 2002), and we will test this idea by comparing the indicative exceptive conditional against the indicative exceptive conditional, as primes for different conjunctions. In Experiment 1, we compare the indicative conditional 'B excepto si A' [in English = 'B except if A'] against the subjunctive conditional 'B a menos que A' [in English = 'B unless A']. In Experiment 2, we compare the indicative conditional 'B salvo si A' [in English = 'B except if A'] against the subjunctive conditional 'B a no ser que A' [in English = 'B unless A']. In Experiment 3, we compare the indicative conditional 'B excepto si A' [in English = 'B except if A'] against the subjunctive conditional 'B excepto que A' [in English = 'B unless A']. The logic of the procedure (Espino, Santamaría, & Byrne, 2009), based on the priming effect (Meyer & Schvaneveldt, 1971), is that when people have a possibility in mind, it will be easier to process a subsequent conjunction that corresponds to this possibility. The main advantage of this methodological approach is that it allows us to focus on the initial phase of human reasoning, in which the assertion is understood and a mental model of the situation it describes is built. The findings that we present in this paper are discussed within the framework of Mental Model theory (Johnson-Laird & Byrne, 2002).

2. Mental Model theory

Johnson-Laird and Byrne (2002) formulated a theory of the meaning of conditionals, of how this meaning is modulated by semantics and pragmatics, and of its use in reasoning. According to Mental Model theory – or model theory for short – individuals use the meaning of words, the grammatical structure of sentences and their knowledge to construct models of the possibilities to which propositions refer, and a conclusion is considered valid if it holds in all these models (Johnson-Laird & Byrne, 2002; Johnson-Laird, 2006).

Model theory has proposed several key principles that govern the mental representations that people construct. The first principle is that people keep in mind only true possibilities ('truth principle'). For instance, people may understand 'if there is an A, then there is a B' by thinking about the true possibilities, 'there is an A and there is a B', 'there is not an A and there is a B' and 'there is not an A and there is not a B' but not the false possibility 'there is an A and there is not a B' (Johnson-Laird, 2006; Johnson-Laird & Byrne, 2002).

The second principle claims that people keep in mind few true possibilities ('parsimony principle') because of the constraints of working memory (Johnson-Laird, Byrne, & Schaeken, 1992). Hence, when people reason from a basic conditional, such as 'if there is an A, then there is a B', they normally construct a single mental model that represents the first possibility above, in which the conditional's antecedent (A) and its consequent (B) are both true, as well as an implicit mental model (as shown by the ellipsis) that represents the other possibilities in which the antecedent is false:

A B
...

If it is required, people can '*flesh out*' their understanding of the conditional in order to think about the other possibilities and make them fully explicit. However, individuals tend not to think explicitly about what these possibilities entail.

A third principle claims that for some conditionals, people are required to think about two possibilities ('dual possibilities principle'). Our claim is that the subjunctive mood prompts people to think of two initial possibilities, while the indicative mood prompts people to think of one initial possibility. For example, when people understand the subjunctive conditional 'B unless A', they tend to think about two possibilities, 'B & not-A' and 'not-B & A'. However, with the indicative conditional 'B except if' they tend to think about the possibility 'B & not-A'. Table 1 illustrates the initial possibilities for the subjunctive and indicative exceptive conditionals used in this research.

Several authors have found evidence that people keep in mind dual possibilities when they understand and think with counterfactual and semi-factual conditionals but not with indicative conditionals (Byrne, 2005; Byrne & Tasso, 1999; Santamaría, Espino, & Byrne, 2005; Thompson & Byrne, 2002). Counterfactual and semi-factual conditionals are in subjunctive mood. In a comprehension task, Santamaría et al. (2005) found that a counterfactual conditional such as 'if the car had been out of petrol it would have stalled' is understood by keeping in mind not only the affirmative possibility 'the car was out of petrol and it stalled' but also the negative possibility, 'the car was not out of petrol and it did not stall' (Experiment 1). Also, they found that a semi-factual conditional, such as 'even if the runner had taken a painkiller she would have lost the race' is understood by keeping in mind not only the affirmative possibility, 'the runner took a painkiller and she lost the race', but also the negated-antecedent possibility 'the runner did not take a painkiller and she lost the race'. Also, in an inference task, Byrne and Tasso (1999) found that participants made reliably more negative inferences (modus tollens and denial of antecedent) from the subjunctive as compared to the indicative conditional, but the differences were not significant for affirmative inferences (modus ponens and affirmation of the consequent). Byrne (2005) concluded that these results corroborate the prediction that people think about two explicit possibilities when they understand the subjunctive conditional and a single explicit possibility when they understand the indicative conditional.

The fourth principle claims that the interpretation of a conditional is subject to a process of semantic and pragmatic modulation (Johnson-Laird & Byrne, 2002). With respect to this fourth principle, it is claimed that the meaning of the clauses in conditionals and co-referential relations between them can modulate the core meaning in a process of semantic modulation, and the knowledge about the context and the topic of the conditional can modulate the core meaning in a process of pragmatic modulation (Quelhas, Johnson-Laird, & Juhos, 2010). Also, the interpretation of a conditional can be influenced by the type of linguistic expression (such as, *except if*, *on condition that*, *unless*, etc.) and type of mood (indicative versus subjunctive) employed to express the conditional.

Table 1

Proposed initial possibilities for subjunctive ('B a menos que A', 'B a no ser que A' and 'B excepto que A') and indicative ('B excepto si A' and 'B salvo si A') exceptive conditional formulations.

Conditional form	Initial possibilities
<i>Subjunctive</i>	
B a menos que A/B a no ser que A	B & not-A
Excepto que	not-B & A
<i>Indicative</i>	
B excepto si A/B salvo si A	B & not-A
	...

Each horizontal row denotes a model of a separate possibility. The ellipsis (...) indicates that there are other true possibilities consistent with the assertion that may be fleshed out to be more explicit, but that are not mentally represented in the initial models.

Download English Version:

<https://daneshyari.com/en/article/919608>

Download Persian Version:

<https://daneshyari.com/article/919608>

[Daneshyari.com](https://daneshyari.com)