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Pragmatic Factors in Conditional Reasoning with Narrative Texts

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Introduction

In this study the role of pragmatic knowledge in conditional reasoning was investigated (Cheng & Holyoak, 1985; Holyoak & Cheng, 1995). We tried to precisely determine the importance of the variable which we refer to as "the probability of empirical frequency" (Valiña & cols. 1992a, b; Valiña & cols. 1996 a, b). This refers to the frequency with which the expressed relation between the antecedent and the consequent in conditional sentences occurs in the real world.

If, as is proposed by the Theory of Mental Models (Johnson-Laird, 1983; Johnson-Laird & Byrne, 1991), people elaborate representations of the real world, it would be expected that reasoning with conditional sentences in which "empirical possibilities" are expressed will be different from the reasoning involved with statements which imply "empirical necessities" (Johnson-Laird & Byrne, 1992; Byrne & Johnson-Laird, 1992).

Method

149 students participated in this experiment. They haven't received instructions in logic.

A 3 x 2 x 2 x 4 design was used, with repeated measurements in the last two factors. The probability of empirical occurrence expressed between the antecedent and the consequent could occur always (*deterministic*), sometimes (*probabilistic*) or there could be no specific relation (*Without relation*). In conditional arguments (*Modus Ponens*, *Modus Tollens*, *Affirmation of the Consequent* and *Denial of the Antecedent*) we used people with available professions (biologist, clown, etc.) and non-available (axiologist, tightrope walker, etc.). Finally, conditional reasoning problems were presented in the context of 16 narrative texts about scenarios of daily life, with the same procedure as that used in previous experiments about syllogistic reasoning (Valiña y De Vega, 1988). The texts had a *congruent* or registered *incongruent* ending.

Results

Significant differences were registered in the *type of logical rule*. Specifically, the percentage of correct responses for each type of rule were: Modus Ponens (77.56%), Modus Tollens (70.55%), Denial of Antecedent (52.91%) and Affirmation of Consequent (51.85%).

Similarly a significant interactive effect was registered between the *probability of empirical occurrence* and the *type*

of logical rule and the *congruence of the text and the type of logical rule*.

The results are discussed in the framework of the Mental Model Theory and Evans' revision (Evans, 1993) and are not consistent with theories based on formal rules of inference.

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