

The Role of Pragmatic Factors in Conditional Reasoning: A Study on Counterfactual and Hypothetical Conditionals in Mandarin Chinese

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Abstract : Contemporary theories in cognitive linguistics have established that conditional statements, particularly counterfactuals that express scenarios contradicting known facts, activate distinct mental models in language processing. For instance, a counterfactual statement such as "If it had rained, then they would not go to the park" simultaneously triggers two mental representations: a hypothetical but factually impossible scenario ("rain" and "no park visit") and its corresponding reality-based model ("no rain" and "park visit"). This study investigates the differential effects of pragmatic factors on the comprehension and processing of counterfactual versus hypothetical conditional sentences in Mandarin Chinese, with particular attention to the cognitive mechanisms underlying their interpretation. The experimental design incorporated a comprehensive examination of three critical variables: temporal indicators (comparing past versus future markers) in the antecedent clause, polarity variations (presence or absence of negators), and directional verb distinctions (contrasting lai2 [come] versus qu4 [go]) in the consequent clause. Participants were presented with a carefully curated set of Chinese conditional statements and asked to evaluate their comprehensibility. The study employed sophisticated statistical analyses using linear mixed-effects models (LMEM) to process the resulting data. The findings revealed several significant patterns. First, hypothetical conditionals incorporating future temporal indicators demonstrated consistently higher comprehensibility ratings compared to counterfactual conditionals featuring past temporal indicators. Second, detailed semantic similarity analysis within subordinate clauses showed that future temporal indicators exhibited stronger lexical-semantic co-occurrence patterns than their past-tense counterparts, suggesting that temporal marking influences comprehension through complex lexical-semantic relationships within the premise. This pattern indicates that hypothetical conditionals may require less cognitive processing effort, potentially due to their alignment with natural language processing patterns. Interestingly, when examining semantic similarities between main and subordinate clauses, temporal indicators showed no significant effect. This absence of cross-clausal influence suggests that lexical-semantic co-occurrence patterns spanning across clauses play a minimal role in the cognitive distinction between hypothetical and counterfactual conditionals. This finding challenges previous assumptions about the role of cross-clausal semantic relationships in conditional processing. The study also revealed nuanced interactions between temporal indicators, negation, and directional verbs, contributing to a more comprehensive understanding of how these linguistic elements collectively influence conditional sentence processing. These interactions suggest that the cognitive processing of conditionals involves multiple layers of linguistic and pragmatic information integration. These findings make substantial contributions to both theoretical and practical domains. Theoretically, they enhance our understanding of mental model activation in conditional reasoning, particularly within the context of Mandarin Chinese. Practically, they offer insights into language processing mechanisms that could inform pedagogical approaches to teaching complex conditional structures and support the development of more effective language processing systems.

Keywords : counterfactuals, hypothetical, negator, temporal indicator

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