

Semantic Plausibility Elicited by Semantic Anomalous but not Reversed Thematic Roles: Evidence from the Inverted Resultative Construction in Chinese

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Abstract: Language processing is inseparable from two significant language-sensitive components—the N400 and P600. Traditionally, P600 effects are elicited when the syntax of the sentence is violated while N400 effects are excited when the semantics of the sentence is violated. Strikingly, it has been found that some syntactically correct but semantically anomalous sentences also elicited P600 rather than N400. This peculiar P600 caused by semantic anomalies is normally called "Semantic P600". Thematic role and plausibility are considered to be two of the main influences on the production of Semantic P600. However, the stimuli used in previous studies have often both reversed thematic role and violated semantic plausibility (*'The cat that from the mice fled, ran through the room.'*), making it impossible to distinguish which one of the factors contributes more to the production of Semantic P600. This paper uses a particular Chinese structure, the inverted resultative construction, which reverses thematic roles but is semantically plausible(*'青草吃肥了羊儿 -The grass was eaten by the sheep, so the sheep became fat.'*), to test which one of that thematic roles or plausibility contribute more to the emergence of Semantic P600. This particular sentence structure begins with an inanimate thing as the agent, ends with an animate thing as the object, and is joined in the middle by a verb and a resultant complement. The stimulus material was categorized into four different conditions, with the two factors of semantic plausibility and thematic role reversal crossed two by two to form a total of 200 sentences (note: Condition 1 is the baseline and Condition 3 is the Inverted Resultative Construction in Chinese). Stimuli were presented to participants word by word and the subjects were asked to make an acceptability judgement at the end of a sentence. Behavioral results showed good semantic acceptability of the Inverted Resultative Construction by native Chinese speakers (average 83.7% correct for 37 participants), and ERP results illustrated that this type of sentence excited N400 rather than P600 at critical words. These results suggested that it seems to be semantic plausibility that contributes more to the production of Semantic P600.

Key words: Language comprehension; N400; Semantic Illusion; Semantic P600; Inverted Resultative Construction; Chinese

Condition1: Role-Normal Semantic-Normal				
羊儿	吃	光	了	青草
The sheep	Eat	Nothing left	past tense marker	The grass
The sheep ate all <i>the grass</i> .				
Condition2: Role-Reversed Semantic-Anomalous				
青草	吃	光	了	*羊儿
The grass	Eat	Nothing left	past tense marker	The sheep
The grass ate all <i>*the sheep</i> .				
Condition3: Role-Reversed Semantic-Normal				
青草	吃	肥	了	羊儿
The grass	Eat	Fat	past tense marker	The sheep
The grass was eaten by the sheep, so <i>the sheep</i> became fat.				
Condition4: Role-Normal Semantic-Anomalous				
羊儿	吃	肥	了	*青草
The sheep	Eat	Fat	past tense marker	The grass
The sheep ate the grass, so <i>*the grass</i> became fat.				