The influence of causal vs. concessive conjunctions on discourse coherence in Chinese: Evidence from on-line recording of brain activities

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Many psycholinguistic studies have been conducted to deal with the question of how causal conjunctions influence discourse coherence; it is not clear, however, how other types of conjunctions exert their influence on discourse coherence. The purpose of this study is to address the effects of different coherent relations on discourse coherence in a Chinese context by using the Event Related Brain Potential (ERP) technique, specifically investigating the modulation of two types of coherent relations (causal conjunction vs. concessive conjunction) on the process of establishing a coherence situation model. In our experiment, we adopted the sentential structure "NP$_{HUMAN}$ moved from place A to place B, *because* (因为 '*yinwei*') or *although* (尽管 '*jinguan*') + pronoun (*he/she*) + verb (*like*) + *there…* + adjective (the critical word)…". See the following samples for each condition.

An N400 effect (a negative brain activity peaking around 400 ms post-onset of the target, which was associated with semantic/pragmatic processing) is elicited by the critical word when it was consistent with the local context (the subordinate clause) but inconsistent with global context (on the basis of the reader's world knowledge) relative to both locally and globally coherent context; the size of the N400 effect is independent of the coherent conjunction types. A P600 effect (a late positive brain activity peaking around 600 ms post-onset of the target whose amplitude was sensitive to the cost of discourse integration processing), however, is found to be sensitive to both world knowledge coherence and coherent relation type. In comparison to the *yinwei* coherent condition, both incoherent conditions evoked larger P600 effects, and more importantly, the *jinguan* coherent condition evoked a larger brain activity than the *yinwei* coherent condition. The results indicate that the process of retrieving information from long-term memory is identical for both types of conjunction relations, but the process of discourse integration processing is more demanding for clauses connected by the concessive conjunction *jinguan* 'although' than those connected by the causal conjunction *yinwei* 'because', suggesting that the representation of causal and concessive relations can be distinguished at the level of situation model.

Key words: causal conjunction; concessive conjunction; discourse coherence; world knowledge; N400; P600

Samples:
a. *because*-coherent 外婆从哈尔滨迁到了海南，因为/她/喜欢/**那里**/冬天/**暖和**/舒服。
      Waipo cong Harbin qiandaole Hainan, yinwei ta xihuan **nali** dongtian **nuanhuo** shufu.
      *Grandma has moved from Harbin to Hainan, because she liked the winter **there** being **warm** and comfortable.*
b. *because*-incoherent 外婆从海南迁到了哈尔滨，因为/她/喜欢/**那里**/冬天/**暖和**/舒服。
      Waipo cong Hainan qiandaole Harbin, yinwei ta xihuan **nali** dongtian **nuanhuo** shufu.
      *Grandma has moved from Hainan to Harbin, because she liked the winter **there** being **warm** and comfortable.*
c. *although*-coherent 外婆从海南迁到了哈尔滨，尽管/她/喜欢/**那里**/冬天/**暖和**/舒服。
      Waipo cong Hainan qiandaole Harbin, jinguan ta xihuan **nali** dongtian **nuanhuo** shufu.
      *Grandma has moved from Hainan to Harbin, although she liked the winter **there** being **warm** and comfortable.*
d. *although*-incoherent 外婆从哈尔滨迁到了海南，尽管/她/喜欢/**那里**/冬天/**暖和**/舒服。
      Waipo cong Harbin qiandaole Hainan, jinguan ta xihuan **nali** dongtian **nuanhuo** shufu.
      *Grandma has moved from Harbin to Hainan, although she liked the winter **there** being **warm** and comfortable.*