Non-repeated extra complementizers increase syntactic predictability

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INTRODUCTION

Are extra complementizers repetitions, or are they independently generated?

Repeating the complementizer THAT can help comprehenders understand the complement clause in verb-complement structures when the subject of the embedded clause is displaced from the first complementizer by a long adverbial (Staum Casasanto and Sag, 2008). We proposed that rather than being generated by the grammar, extra complementizers are a production strategy for reducing processing difficulty by reactivating syntactic expectations for a complement clause and its constituents immediately before the embedded subject appears. This extra THAT could be interpreted as a repetition of the original complementizer. However, extra THAT also sometimes appears before the subjects of clauses that were originally introduced by other complementizers: ***It seems like, theoretically, that it would be possible to travel along in the middle of a tornado and survive*** (Google). In these cases, the extra THAT is also ungrammatical, but it cannot be interpreted as a repetition – it must be independently generated. Is this extra complementizer also motivated by reducing processing difficulty in the embedded clause? A moving-window self-paced reading experiment investigated whether an extra *that* would help comprehenders read the embedded clause even when it did not match the original clause-introducer.

MATERIALS

Type 1: like…that

Observing our world it looks more and more **like** according to scientists **that** we created some sort of environmental catastrophe.

Observing our world it looks more and more **like** according to scientists we created some sort of environmental catastrophe.

It looks more and more **like** according to scientists observing our world **that** we created some sort of environmental catastrophe.

It looks more and more **like** according to scientists observing our world we created some sort of environmental catastrophe.

original complementizer | additional complementizer | long intervener | short intervener

Type 2: because…that

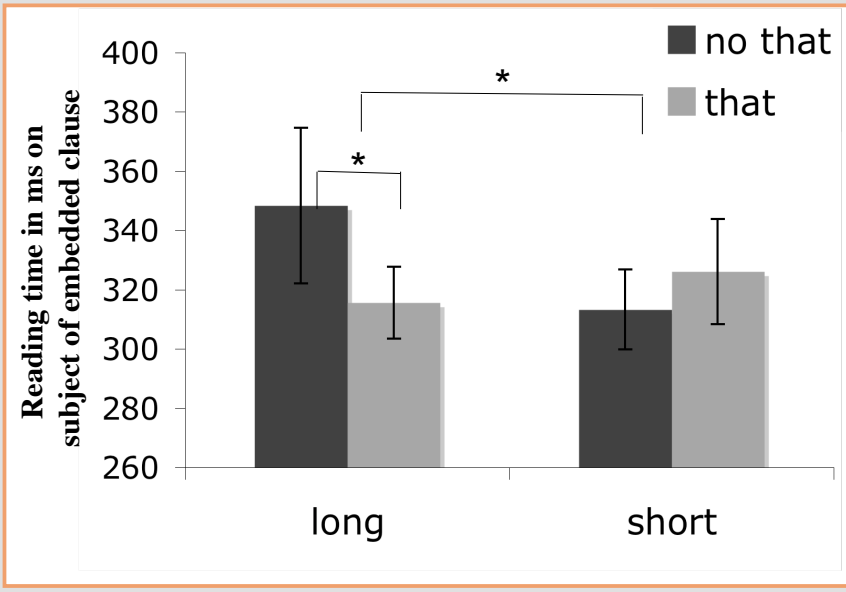
Yesterday evening near the shopping mall maybe the criminal mastermind escaped **because** when we tried to chase him **that** we chased only a hologram of him.

Yesterday evening near the shopping mall maybe the criminal mastermind escaped **because** when we tried to chase him we chased only a hologram of him.

Maybe the criminal mastermind escaped **because** when we tried to chase him yesterday evening near the shopping mall **that** we chased only a hologram of him.

Maybe the criminal mastermind escaped **because** when we tried to chase him yesterday evening near the shopping mall we chased only a hologram of him.

RESULTS



Averaging across item types, including an extra THAT significantly reduced difficulty on the subject of the embedded clause when the distance between the main verb and the embedded clause was long ($t(1,45)=1.73$, $p<.05$), but not when the distance was short, resulting in a significant interaction between the presence/absence of THAT and locality, as predicted ($F(1,45)=4.19$, $p<.05$). This pattern of results is indistinguishable from the interaction between locality and the 'repeated' THAT reported in Staum Casasanto and Sag (2008) ($F(1,72)=.005$, $p=.94$).

CONCLUSION

The results of this experiment suggest that, rather than being a repetition of the original complementizer, an extra complementizer may be independently generated to reduce difficulty in the embedded clause. Extra THAT increases the activation of the syntactic representation of an upcoming embedded clause, thus making the subject of this clause more predictable when it appears, and causing a reading time advantage following the extra complementizer. Because any complementizer can fulfill this function, the original clause-introducer does not need to be repeated, and THAT, the most common complementizer, will suffice. Thus, although it is not licensed by standard grammars, an extra THAT may be generated in response to processing pressure because it is an effective strategy for reducing difficulty in the embedded clause. In order to account for this behavior, a model of language production must allow function words to be generated not just by the grammar but in response to a combination of grammatical and processing constraints. These results are not compatible with a model of production in which all possible utterances are output by the grammar, and processing pressures can only further constrain this set of utterances; rather, processing pressures contribute to the structure-building stage of utterance planning.