

Processing of filler-gap dependencies in complex NP islands: Evidence from Hebrew

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Since Ross's (1967) work on island constraints until many current works, the unacceptability of island effects is mostly explained by violations of universal constraints on grammar. However, it has been claimed that the unacceptability of certain island violations, such as Complex NP island, can be explained by limitations on the cognitive resources associated to the processing of filler-gap dependencies. The advantage of this sort of explanation is that these processing difficulties are known to exist independently of island violations.

This paper examines whether a processing explanation of Complex NP island violations in Hebrew is empirically motivated. The prediction of this account is that by reducing processing difficulties in Complex NP islands, their acceptability should improve while reading times (RTs) of critical regions should decrease.

D(iscourse)-linking is a manipulation over the wh-element that is associated with the processing of filler-gap dependencies. D-linked wh-elements, such as *which movie*, have been shown to increase acceptability and reduce RTs at critical regions in wh-islands, superiority condition violations, and some grammatical structures. The effects of D-linking in Complex NP island was examined in three experiments.

Experiment 1 investigated whether D-linked wh-elements improve the acceptability of Complex NP Islands with extractions from complement clauses (CNPCCs). To this end, subjects participated in an acceptability judgment task and rated questions that included CNPCCs with different types of wh-elements (1a) and a parallel grammatical baseline without D-linking (1b). The results indicate that D-linked wh-elements improve the acceptability of CNPCC violations but not to the level of the grammatical baseline.

(1) (a) {*ma; eize seret*} *doron cien et ha-uvda še-hu ra'a _ be-šavu'a še-avar?*
 {what; which movie} Doron stressed ACC {the fact} {that he} saw _ {in week} {that past}?
 {What; Which movie} did Doron stress the fact that he saw _ last week?

(1) (b) *ma doron cien še-hu ra'a _ be-šavu'a še-avar?*
 what Doron stressed {that he} saw _ {in week} {that past}?
 What did Doron stress that he saw _ last week?

Experiment 2 used the same approach to investigate whether Complex NP Island with extractions from relative clauses (CNPRC) are also susceptible to D-linking. Participants rated questions such as (2) and no parallel baseline could be devised; the results show no significant effect for D-linking. This suggests that CNPRCs are not susceptible to processing factors.

(2) {*ma; eize mexonit*} *Itamar pagaš et ha-iš še-maxar _ lifney šavu'a?*
 {what; which car} Itamar met ACC {the man} {that sold} _ before week?
 {What; Which car} did Itamar meet the man that sold _ last week?

Experiment 3 used the same stimuli as Experiment 1 to investigate whether RTs at critical regions in CNPCCs are affected by D-linking. Subjects participated in an online self-paced reading experiment. This experiment shows that critical regions are read faster in CNPCC conditions with D-linking in comparison with critical regions in both CNPCC and baselines with non-D-linked wh-elements.

The results from experiments 1 and 2 strongly imply that CNPCC and CNPRC are two distinct phenomena, and I argue that the unacceptability in the case of CNPRC is due to its ungrammaticality. Results from experiments 1 and 3 show that acceptability is not correlated with speed-ups in the critical region. In fact, the actual processing of filler-gap dependencies in CNPCC violations can be even faster than in grammatical baselines while the acceptability of all CNPCC conditions is significantly lower than the acceptability of the baseline. Even though filler-gap dependencies impose a burden on the parser and lower the acceptability of sentences with CNPCC violations, this is also true for grammatical sentences. This suggests that the processing of filler-gap dependencies is unrelated to the unacceptability of CNPCC violations.

Reference

Ross, J. (1967). Constraints on variables in syntax. PhD thesis, MIT.