

Where accents do, and do not, affect attachment

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Prosodic boundaries have long been known to affect attachment (e.g., Lehiste 1973, Price et al. 1991), but more recent research has found that pitch accents also affect syntactic attachment in ambiguous sentences (e.g., Schafer et al. 1996, Lee & Watson 2011, Carlson & Tyler 2018). This project turns to two questions about prosody and attachment not yet answered: whether it is necessary to accent the head of a syntactic phrase to draw attachment, and whether there are attachment structures in which accents do not play a role. In two auditory questionnaires, we find that accenting verbs or their objects draws attachment into a VP, while subject accents don't, as predicted by Selkirk (1984); and that possessive structures, though similar in some ways to other attachment ambiguities, are not affected by accent position.

Experiment 1 (N=36) studied sentences as in (1), where both verbs take objects in addition to the higher verb's sentence complement, and where the final adverbial phrase could modify the higher or lower verb (*emailed* vs. *interviewed*). A prosodic boundary always preceded the adverbial to avoid floor effects, and contrastive accents were placed on the subject, verb, or object of clause1 or clause2, for 6 prosodic conditions. Participants chose between paraphrases of the two meanings after hearing each sentence (*Jenny emailed something last night* vs. *Emily interviewed Jackson last night*). We found significant effects of verb accents (Figure 1), with Verb1 accents drawing more high attachments into VP1 ($p < .01$), but non-significant effects of subject accents ($p = .30$), as in research on similar sentences. We also found a significant effect of object accents ($p < .05$). So contrastively accenting either the head of a VP (the verb) or the verb's object drew attachment into that VP, as predicted by Selkirk's (1984) focus projection rules.

In Experiment 2 (N=36), we studied phrases as in (2) following the question *Who was it?* from another speaker. In these structures, the advisor could be the advisor of the daughter of the pharaoh (high attachment), or of just the pharaoh (low attachment). Clifton et al. (2002) showed that prosodic boundaries grouping together (*daughter of the pharaoh*) or (*pharaoh's advisor*) influence their interpretation. We varied the presence of a prosodic boundary before *advisor*, along with either no contrastive accents, contrastive accents on N1 (*daughter*), or contrastive accents on N2 (*pharaoh*), for 6 conditions. After each dialogue, participants chose between paraphrases of the meanings. We found significant effects of the prosodic boundary (Figure 2), as all conditions with the boundary showed more high attachment answers ($p < .01$). The position of the contrastive accent, though, did not affect interpretation significantly. The numerical bias for N2-accented conditions to show more high attachment was in the opposite direction from what would be predicted if the Focus Attraction Hypothesis applied to this structure. (The lack of an accent effect has been replicated in an additional study along with the significant effect of the prosodic boundary.)

We trace the lack of accent effects in Experiment 2 to the syntactic structure of these possessives. Although the final word *advisor* attaches in different positions, it is not a modifier of either of the previous phrases (*daughter of the pharaoh* or *pharaoh*): instead, it becomes the head of the NP and subordinates the previous phrase into the possessive position. In every other structure which has shown accent effects on attachment, the ambiguously-attached phrase modified some part of the previous structure, and indeed the Focus Attraction Hypothesis specifically claims that modifiers prefer to attach into focused material, not that heads do.

This research ends up supporting the Focus Attraction Hypothesis (Schafer et al. 1996) from two different angles. First, accent position turns out to affect (or not affect) attachment according to focus projection rules which were independently proposed to explain the interface between accent position and focus. Second, a possessive structure which differs in the position of an ambiguously attached head is not affected by accents, while several different structures involving modifier attachment are sensitive to accents and focus position. As a whole, this body of research shows the importance of the entire prosodic structure, both accents and prosodic phrasing, to sentence processing.

- (1) a. JENNY emailed Hannah that Emily interviewed Jackson # last night.
 b. Jenny emailed Hannah that EMILY interviewed Jackson # last night.
 c. Jenny EMAILED Hannah that Emily interviewed Jackson # last night.
 d. Jenny emailed Hannah that Emily INTERVIEWED Jackson # last night.
 e. Jenny emailed HANNAH that Emily interviewed Jackson # last night.
 f. Jenny emailed Hannah that Emily interviewed JACKSON # last night.

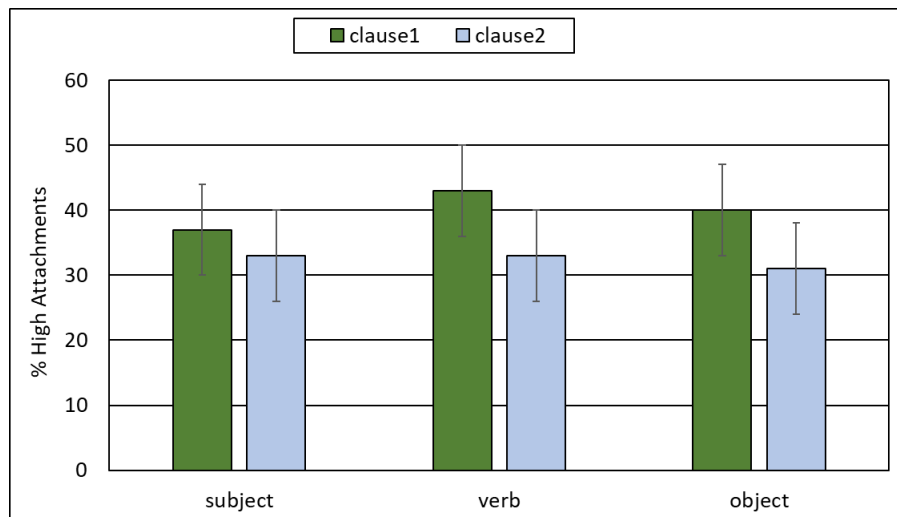


Figure 1:
Experiment 1 Results

- (2) a. the daughter of the pharaoh's # advisor
 b. the daughter of the pharaoh's advisor
 c. the DAUGHTER of the pharaoh's # advisor
 d. the DAUGHTER of the pharaoh's advisor
 e. the daughter of the PHARAOH's # advisor
 f. the daughter of the PHARAOH's advisor

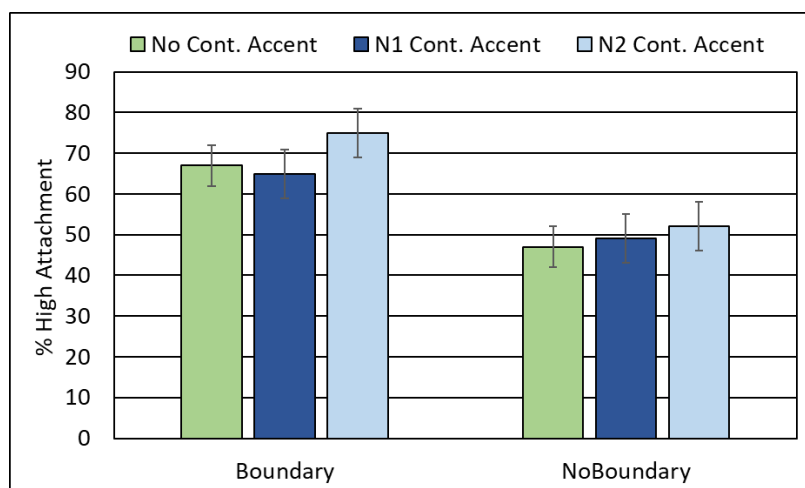


Figure 2:
Experiment 2 Results

References:

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