

## Prosodic Constraints on Adverb Placement

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We describe a case where an apparent syntactic restriction on placement of an adverb turns out to be due to prosodic factors, not syntactic ones. We begin with an observation of Blight (1999), who claims that “degree of perfection” adverbs in English can precede passive but not active verbs (1a–b). His data are repeated by Caponigro and Schütze (2003) and Richards (2016), who conclude from (1a–b) that active verbs undergo a step of V-movement that passive ones do not. Ernst (2002) adds that “less active” verbs also permit the Adv-V order (1c), which would complicate the verb-movement analysis if correct.

We have found disagreement with these judgments and so decided to check them in a formal acceptability study using Amazon Mechanical Turk (AMT). In what follows, we describe a series of acceptability surveys designed to explore what is behind the unacceptability of (1a). Each experiment elicited judgments from approximately 80 subjects with IP addresses restricted to the US. Subjects rated sentences on a 1–7 scale, where 7 represents fully acceptable. Fillers outnumbered test sentences 2–1.

Experiments 1 and 2 sought to verify the judgments in (1) and test for an effect of age. These two experiments were identical except that experiment 1 collected judgments from people under the age of 40, and experiment 2 collected judgments from people age 40 and over. Results are shown for each age group in Table 1. Our findings indicate that there is a difference in age, with judgments of the 40+ group coming closest to those of the literature. The younger group rates all three sentence types in the acceptable range, while the older group rates the Adv ActiveV order significantly lower ( $p < .01$ ) than every other sentence type in Table 1.

Experiments 3 and 4 (again identical except for age) tested various manipulations that we suspected might affect judgments on adverb placement. The factors are those shown in Table 2, which also shows the results (raw scores for space reasons). As can be seen, Fronting, Right Node Raising (RNR), Adv Coordination, and Verb Coordination significantly improve ratings for the older group ( $p < .05$ ) but not for the younger group. Adding an additional object to the VP lowers acceptability slightly (but is not significant for either group). We conclude that the verb-raising account cannot be correct, even for the older speakers. Experiment 5 (not shown) confirms this, showing that preverbal adverb placement is unacceptable in the over-40 grammar in the passive of a double object verb. If only the voice of the verb mattered, a passive of a double object verb should be acceptable.

Experiment 6 shows us that the judgments here are not about syntax at all. This experiment investigated why Ernst’s “less active” verbs permit a preverbal adverb. All of these verbs are long, over a single foot. To test whether it is the length of the verb that matters, we constructed minimal pairs with long and short near-synonymous verbs. Table 3 shows the paradigm and the results. The condition rated the lowest was ShortV Active. Three-syllable active verbs (LongV Active) were rated the highest, even higher than the passive version of the same verb. This points to a prosodic rather than a syntactic account, since syntax does not care about verb length.

We propose three prosodic constraints, in (2)–(4). ALIGNV only holds in the over-40 grammar and leads to a conflict in all-new sentences: the verb cannot be left-aligned with the major phrase that bears main stress if a preverbal adverb bears main stress. The various manipulations in Table 2 make elements given or focused and render the constraints inactive. **Important implication:** Researchers must use caution when interpreting judgments regarding Adv placement; the common

conclusion that it indicates V-movement may be unsound.

- (1) a. \* The workers were poorly building the house.
- b. The house was being poorly built by the construction workers.
- c. She beautifully interprets these ideas in her new play.

Condition	18–39		40+	
	Mean	SD	Mean	SD
NP Adv ActiveV NP	5.83 (z = .22)	1.24	<b>3.62</b> (z = -.92)	0.54
NP ActiveV NP Adv	6.30 (z = .46)	1.01	6.90 (z = .67)	0.31
NP Adv PassiveV PP	6.51 (z = .56)	0.68	6.25 (z = .35)	0.43
NP PassiveV Adv PP	5.58 (z = .11)	1.28	6.96 (z = .70)	0.19
NP Adv LessTransitiveV NP	5.49 (z = .06)	1.22	5.49 (z = -.01)	0.88
NP LessTransitiveV NP Adv	5.23 (z = -.07)	1.69	6.94 (z = .69)	0.25

Table 2: Results of Experiments 3 and 4

Condition	18–39		40+	
	Mean	SD	Mean	SD
Baseline: A young girl perfectly threw the ball with frayed laces.	5.85	1.19	<b>4.13</b>	1.58
Fronting: It was the ball with frayed laces that Carola perfectly threw.	4.70	1.07	5.12	1.25
RNR: Carola perfectly caught, and perfectly threw, the tennis ball from the game.	4.48	1.39	6.29	0.70
VerbCoord: Maxine did a terrible job with those ballets: She badly wrote them, badly planned them, and badly danced them!	4.59	1.52	5.10	1.59
AdvCoord: A young girl quickly and perfectly threw the ball with frayed laces.	4.65	1.19	5.56	1.05
HeavyVP: George poorly played his wife a sonata by Mozart.	5.60	0.86	3.92	1.56

Table 3: Results of Experiment 6

Condition	Age 40+	
	Mean	SD
ShortV Active: The student horribly threw the ball into the basket.	4.35 (z = 0.00)	1.54
LongV Active: The student horribly catapulted the ball into the basket.	<b>6.07</b> (z = 0.73)	1.34
ShortV Passive: The ball was horribly thrown into the basket.	5.68 (z = 0.57)	1.42
LongV Passive: The ball was horribly catapulted into the basket.	5.43 (z = 0.46)	1.59

- (2) DOPSTRESS: Degree of perfection adverbs must receive primary stress unless given.
- (3) ADVINVP: An AdvP that dominates only an Adv head must be parsed into a major phrase that includes pronounced material dominated by the VP that the AdvP modifies.
- (4) ALIGNV (Over 40 grammar only): In an all-new sentence, the left edge of a lexical V that is no larger than a single foot must align with the left edge of the major phrase that includes primary stress.