Agreement processing across African American Language and Dominant American English: An ERP Study

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Speakers of different dialects use different morphosyntactic rules, and in a diverse world, listeners must sometimes adjust to varieties different from their own. For example, regularized subject-verb agreement (e.g., *They was happy)* is common in African American Language (AAL), but not in Dominant ("Standard/Mainstream") American English (DAE). How do listeners make these adjustments in real time, and are listeners' expectations specifically tuned to the grammar of a given dialect? Recent behavioral work by Maher et al. (2024) has suggested that even monodialectal speakers of DAE recognize the agreement paradigm of AAL, rating *They was* as likely and **He were* as unlikely. In the present study, we use EEG methods to test whether this knowledge is deployed in real-time processing of sentences spoken by a Black speaker of AAL and a white speaker of DAE, hypothesizing a P600 effect where agreement patterns violate a listener's model of a speaker's grammar.

Method: Participants (*n*=45, 40 retained in analysis) were speakers of DAE and did not use another dialect or language. They listened to naturalistic sentences and responded to comprehension questions following 25% of items. Sentences were recorded by a Black speaker of AAL and a white speaker of DAE and were presented along with images of Black and white individuals, respectively (Ma et al., 2015), since face cues support processing across varieties (Grey et al., 2020). Critical subject-verb agreement sentences appeared in four conditions (Table 1): unmarked (*They don't*), marked and grammatical in DAE (*He doesn't*), regularized (unmarked) and grammatical in AAL (*He don't*), and marked and ungrammatical in both varieties (**They doesn't*). Filler items illustrated well-known grammatical contrasts between AAL and DAE (e.g., negative concord) but were neutral with regard to agreement. All variables were manipulated within-participants, with sentences from both speakers presented in random order.

Results: Marked-ungrammatical errors (compared to marked-grammatical items) elicited a broadly-distributed enhanced negativity for the DAE condition in approximately the 200-800 ms window following verb offset (see Fig. 1). Given the hypothesized P600 effect, we used a linear mixed-effects model to test central-parietal electrodes in the 500-900 ms window, using estimated marginal means to compare grammaticality conditions with dialect and markedness held constant. Marked-ungrammatical verbs (**They doesn't*) showed a significantly more negative amplitude than marked-grammatical verbs (*They were*) in DAE (Tukey-adjusted p=0.03); no other pairings reached statistical significance.

Discussion: While we did not observe a P600 effect, the sustained negativity is consistent with other research on agreement errors in auditory ERPs (e.g., Dube et al, 2016) and reveals sensitivity to some violations. However, these results reveal two areas of apparent insensitivity relative to grammatical violations: marked-ungrammatical agreement patterns (**They doesn't*) in AAL and regularized agreement patterns (*He don't*) in DAE. In the case of *He don't* in DAE, this might reflect some latent familiarity with this common pattern or a distinction between marked and unmarked forms. In the case of **They doesn't* in AAL, this suggests that DAE-speaking listeners broadly expect differences in agreement when processing AAL. This parallels ERP findings by Weissler and Brennan (2020) for a different AAL phenomenon but contrasts with the more granular knowledge observed by Maher et al. (2024) using a behavioral sentence rating paradigm. Together, these findings reflect theoretically relevant differences between listeners' off-line knowledge and their online processing strategies.

References

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Table 1. Example sentences

Agreement Phenomenon	**Frame**	**Un-marked**	**Marked/DAE-Grammatical**	**Regular-ized**	**Marked-Ungrammatical**
Was/Were	The life __ __ hard to put on.	jacket was	jackets were	jackets was	jacket were
Don't/Doesn't	After moving around __ __ have a favorite team.	they don't	he doesn't	he don't	they doesn't
Verbal S/Zero marking	Every vacation __ __ in love with somebody new.	they fall	she falls	she fall	they falls

Figure 1. Grand mean waveforms for central-parietal electrodes (C3, Cz, C4, P3, Pz, P4) by verb and dialect condition. A 15 Hz low-pass filter has been applied for plotting purposes.