

Auditory comprehension of double versus single modal constructions in Mainstream American English listeners

Holly A. Zaharchuk, Adrianna Shevlin, Janet G. van Hell

Department of Psychology & Center for Language Science, The Pennsylvania State University



Background

How do listeners process dialectal variation?

- Dialectal (regional, social, or ethnocultural) variation is inherent to language
- Theories of language processing are limited in their explanatory power of everyday speech without including variation
- Neurocognitive studies of dialect tend to focus on phonological (acoustic) or lexical (word-based) rather than syntactic (structural) variation
- Syntactic processing research with EEG typically relies written stimuli containing grammatical violations or ambiguities
- **Double modals**: indirectness or hedging (Hasty, 2012; Mishoe & Montgomery, 1994)

Stimuli

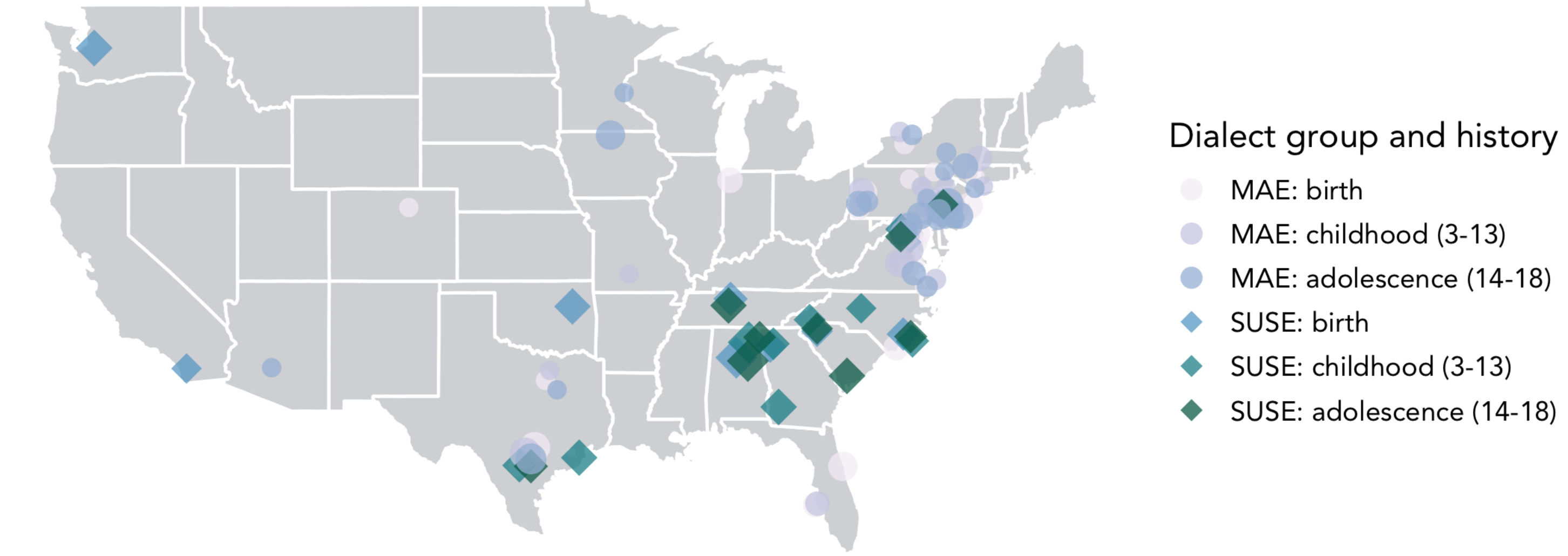
Condition	Context sentence	Type	Experimental sentence	ERP prediction	Offline prediction
Critical	"Kaitlyn is having a hard time with her essay."	Standard single modal	"She thinks she <i>should</i> ask the professor for an extension."	Baseline	Baseline
		Attested double modal	"She thinks she <i>might should</i> ask the professor for an extension."	(N400)-P600	Pattern together
		Unattested double modal	"She thinks she <i>could should</i> ask the professor for an extension."	Not applicable	
Filler	"Kaitlyn waits for the bus every morning to go to work."		"She said <i>the that</i> bus is usually late."	Not analyzed	Not applicable

ERP time-locked to second modal (could or should) in double modal sentences to compare to standard single modal

Participants

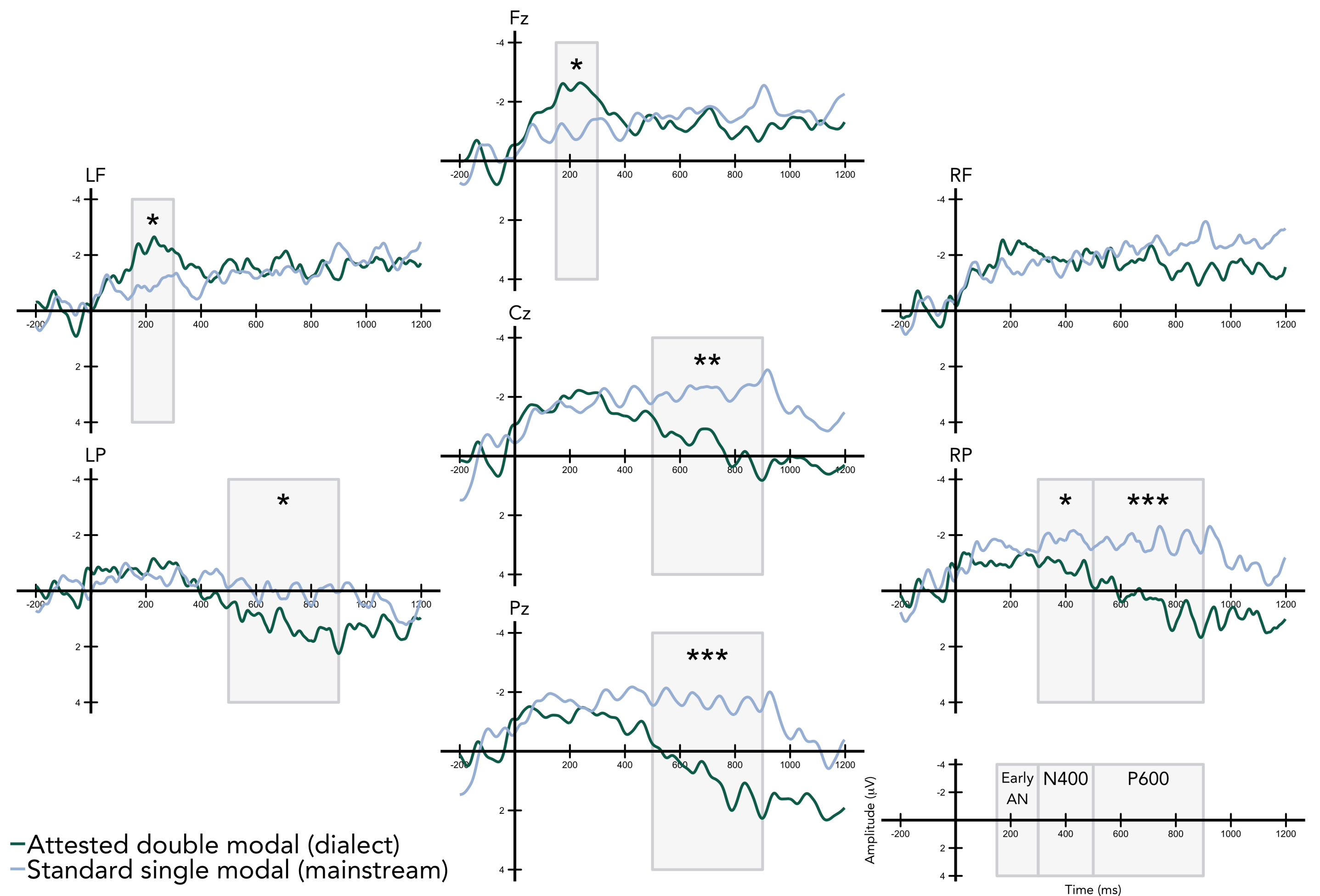
Group	Exposure and familiarity	Stage	Results presented	Total	Geography	ERP	Offline
MAE	< both scale means	Complete	All	32	30	27	29
SUSE	≥ either scale mean	Ongoing	Geography	10	9		

Regional dialect exposure from birth through adolescence

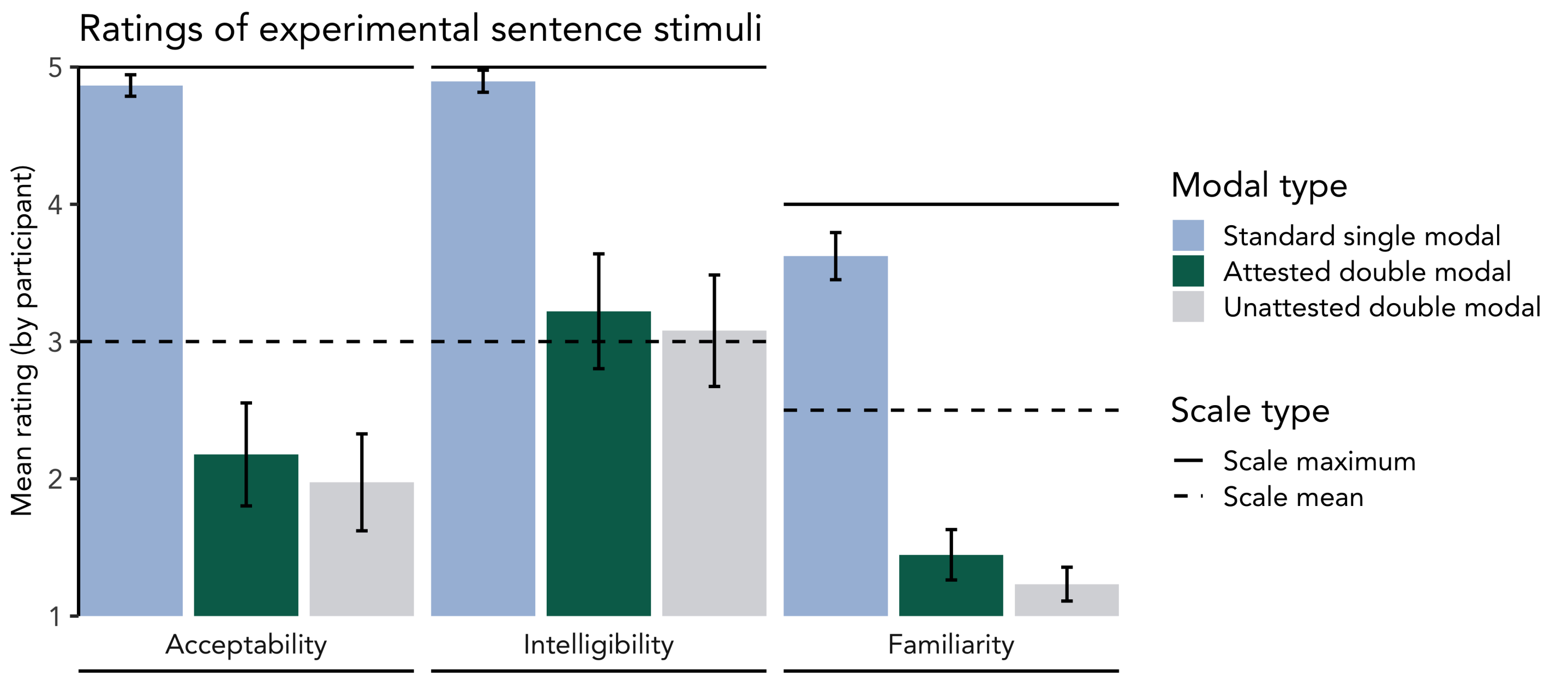
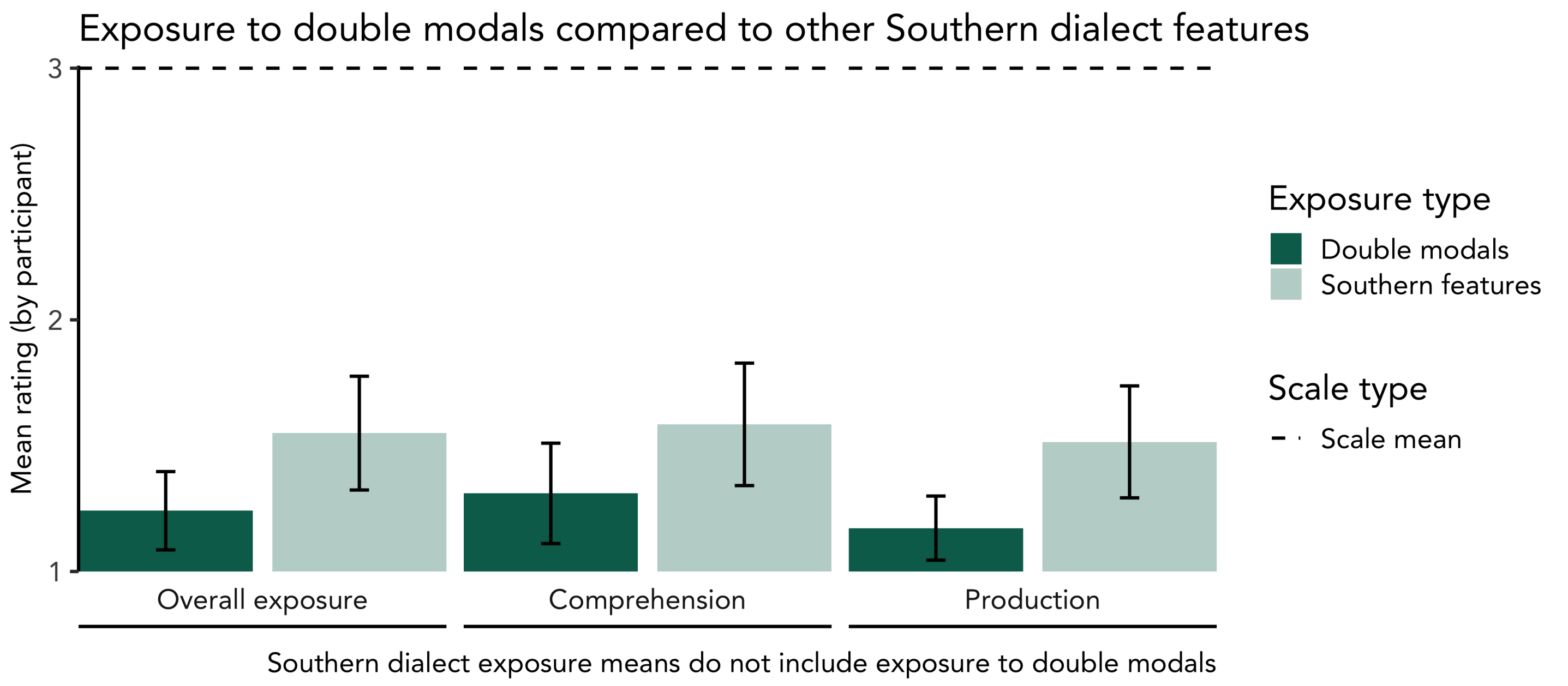


Symbol size indicates "Southernness" score: sum of double modal exposure and familiarity

Mainstream American English listeners are sensitive to syntactic variation at both structure-building (early AN) and integration (P600) levels of processing

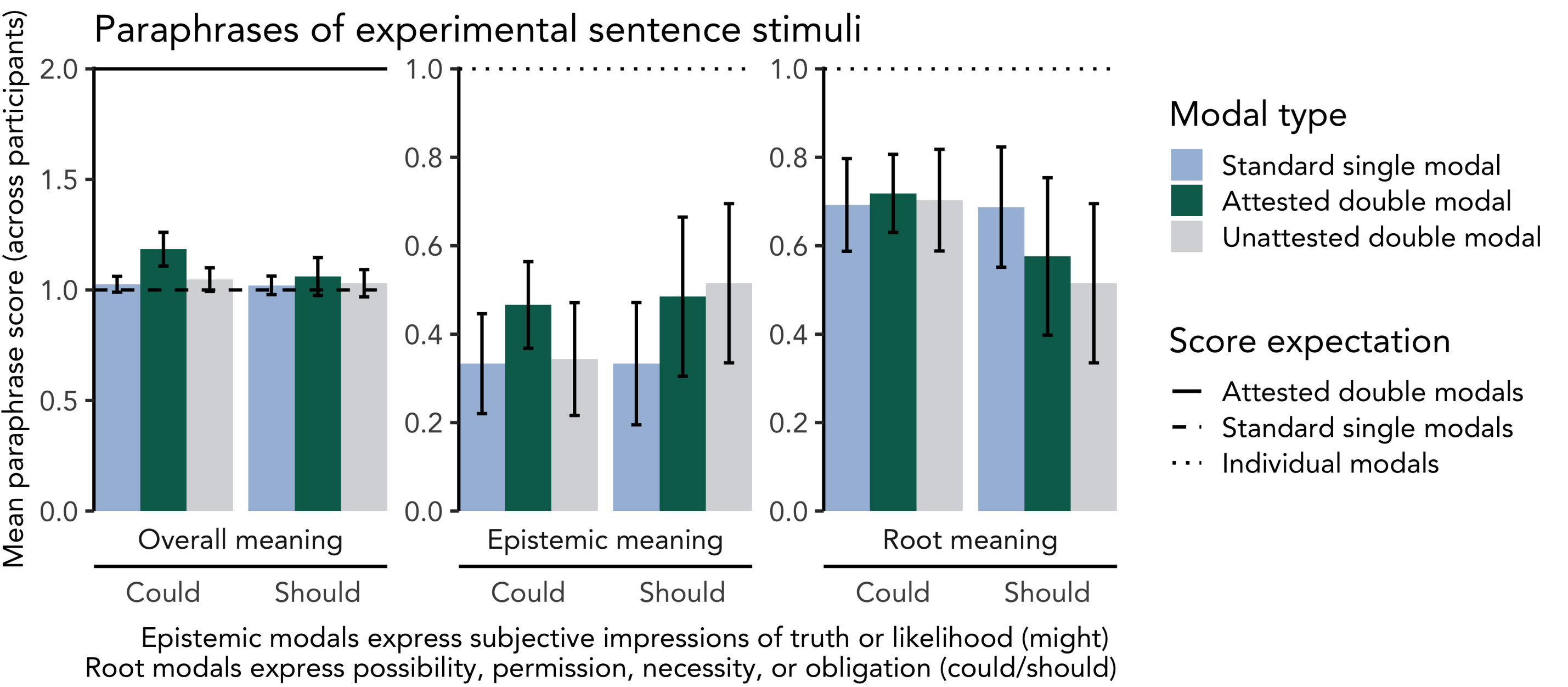


Offline tasks



Pairwise Pearson correlation matrix						
Variables	Acceptability	Familiarity	Intelligibility	Exposure (DM)	Exposure (SUSE)	Culture
Acceptability	1	0.50**	0.54**	0.53**	0.36	-0.08
Familiarity	0.50**	1	0.52**	0.47**	0.07	0.20
Intelligibility	0.54**	0.52**	1	0.35	0.36	0.12
Exposure (DM)	0.53**	0.47**	0.35	1	0.48**	0.29
Exposure (SUSE)	0.36	0.07	0.36	0.48**	1	0.37*
Culture	-0.08	0.20	0.12	0.29	0.37*	1

All pairwise correlations with centro-parietal P600 amplitude and language attitudes n.s. at $p < .05$ level



Results

- Biphasic response to syntactic variation transitions from anterior negativity to centro-parietal positivity
 - Early anterior negativity (early AN) suggests **automatic detection** of non-standard language
 - Robust P600 effect reflects **syntactic reanalysis** for double modal sentences
- Likelihood of hearing attested double modals significantly **higher** than likelihood of saying them, but significantly **lower** than likelihood of hearing other Southern dialect features (e.g., negative concord)
- Familiarity with attested double modals significantly **higher** than unattested
- Attested double modals, especially *might could*, significantly **easier** to paraphrase than unattested double modals

Conclusion

- Combining neurocognitive and linguistic methods reveals dynamic interactions among language exposure, use, and processing
- MAE listeners require additional neural resources during online processing of double modals but show successful integration offline
- SUSE listeners are expected to show enhanced processing for attested double modals compared to standard single modals
- **Future direction**: studying SUSE speakers in their local communities with *The Brain Bus* (mobile EEG system)

References and acknowledgements

Hasty, J. D. (2012). We might should oughta take a second look at this: A syntactic re-analysis of double modals in Southern United States English. *Lingua*, 122(14), 1716–1738.

Mishoe, M., & Montgomery, M. (1994). The pragmatics of multiple modal variation in North and South Carolina. *American Speech*, 69(1), 3–29.



Holly Zaharchuk: hzaharchuk@psu.edu
University Graduate Fellow (UGF)