Out of context: When social context increases uncertainty

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Social information is critical in speech perception. Listeners interpret the same signal differently when paired with different social information [1,2] and they typically perform better in listening tasks when the signal and the social context are congruent [3,4]. These findings have been accounted for in the literature by assuming that listeners use this linguistically-informative social information to alter something about their perceptual settings – for example, they change the exemplars they activate, their priors, and/or their mappings [5,6,7] – based on what they have previously heard in similar social situations. For this system to work, it requires both that listeners have relevant, previous sociolinguistic experiences to invoke, and that the context is informative about which experiences are relevant. In this talk, I investigate what happens when these conditions are not met: when context appears to not facilitate, and even hinder, lexical access.

In a series of ongoing experiments (NSF BCS 2041264), we've been manipulating the dialectal expectations of listeners through talker-identity, using audio-video familiarization [8, 9]. Stimuli for these studies were produced by six actresses, who were audio- and video-recorded producing two monologues about their character's lives as well as 300 real words and 120 pseudowords. They recorded the materials in two guises: with a Mainstream, US English accent (MUSE), and with a Southern US English accent (SUSE). Participants in the studies are introduced to these six talkers in a familiarization stage, two of whom only use SUSE (SUSE-talkers), two who only use MUSE (MUSE-talkers), and two who switch between the two dialects (Unpredictable-talkers). After watching short videos where these individuals share stories about their lives, critically allowing participants to form strong expectations about their accents, listeners then do an auditory-visual lexical decision task, where they see the same six talkers saying real or nonsense words. In these test trials, for SUSE- and MUSE-talkers, 25% of real words are incongruent with the talker's accent at familiarization, allowing us to investigate the impact of dialect-expectation violations, while maintaining the overarching association between a talker and a given dialect. For the Unpredictable-talkers, 50% of their words are in SUSE, and 50% are in MUSE, maintaining these talkers' dialectal unpredictability. We expected that listeners would use information about talker identity to adjust their perceptual systems, such that they would be slower at recognizing real words in incongruent trials compared to congruent trials. We also expected that listeners would be slower at recognizing words from the Unpredictable talkers, given the ambiguous social context [8,9].

In a behavioral version of the task that had both Southern and non-Southern listener groups [10], we do find a slow down for talker-incongruent trials, but only for Southern-accented listeners; non-Southern listeners were faster to respond to the MUSE accent regardless of whether it was congruent or incongruent for the social context (the talker identity). For both groups of listeners, participants are slowest to respond to words from the Unpredictable-talkers.

In an EEG version of the task, so far run on non-Southern listeners only, we see a classic (late) N400 lexicality effect [9, 11] when tokens come from a MUSE-talker, regardless of whether, in the particular trial, the talker is using MUSE (congruent) or SUSE (incongruent). This effect is only marginally significant for SUSE-talkers (again regardless of the actual accent used in the trial), and it disappears entirely for Unpredictable-talkers: there is no clear separation of brain responses to real and pseudowords when the listeners can't predict the speaker's accent.

Sociolinguistically-meaningful context is not equally useful to all listeners. Receptively bidialectal SUSE listeners, who hear substantial amounts of both SUSE (locally) and MUSE (minimally through media), use talker-identity to adjust how they process incoming speech, such that they expect SUSE-accents from SUSE-talkers and MUSE-accents from MUSE-talkers. Relatively monodialectal MUSE listeners do not (and possibly cannot) adjust their systems to facilitate SUSE-processing. In fact, the attenuated lexicality effects for SUSE-talkers, even for MUSE-accented tokens, suggests that even unambiguous context can sometimes just add more confusion to the system. When the context is explicitly ambiguous, as in the Unpredictable-talker trials, perception is most impacted. Critically then, it does not appear to be the case that listeners ignore unhelpful or ambiguous context. Instead, when context introduces uncertainty, listeners may invoke slower but ultimately more flexible listening strategies [12].

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