What does Kansas speech sound like? It depends who you ask.

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Abstract

Perceptual dialectology investigates lay perceptions of how linguistic information relates to geographic information, often by asking participants to mark how people speak in different areas on a blank map. In studies of the US, Kansas is often left off these maps as not particularly notable. This study investigates the beliefs and attitudes that Kansans and non-Kansans have about speech in the state by asking about the likelihood of talkers with various US regional dialects of being from Kansas. Participants rated talkers from various US dialect regions on how "accented" they sounded and how likely they were to be from Kansas. Results revealed contrasting beliefs: Kansans associated Kansas speech with unaccentedness, while non-Kansans associated Kansas speech with southern-accented voices. Factor analysis of social trait ratings indicated that voices perceived as "midwestern" and "nice" predicted higher Kansas-likelihood ratings, particularly for Kansans, whereas non-Kansans linked Kansas speech to "southern" characteristics. Acoustic analysis showed that Kansans were more attuned to local features such as TRAP-retraction, while non-Kansans relied on stereotypically southern vowel features when judging Kansas likelihood. Both groups, however, demonstrated accurate geographic knowledge of Kansas. Findings highlight the role of experience in perceptions of regional speech, particularly for varieties lacking salient stereotypes.

1 Introduction

Perceptual dialectology research is part of a broader study of *language regard*, which uses the perspectives of nonlinguists to understand the beliefs, attitudes, perceptions, and ideologies people hold about language and the people who use it. While methods in perceptual dialectology differ, one of the most well-known approaches is the "draw-a-map" task, where researchers provide participants with a blank map of a geographic area and ask them to indicate where and how people "speak differently" (e.g., Evans, 2011; Jeon & Cukor-Avila, 2015; Preston, 1982, 1986, 1996). Other tasks ask participants to rank different regions on characteristics like "correctness" or "pleasantness" (Palliwoda & Schröder, 2016; Preston, 1999) or to identify a talker's region of origin based on their speech (e..g, Plichta & Preston, 2005) (see Cramer & Montgomery, 2016; Preston, 2010, for an overview of perceptual dialectology methods). What all of these approaches have in common is that they attempt to link lay participants' understanding of linguistic information with geographic information.

Preston (2018) notes that studies of language regard are sometimes met with criticisms like "'Who cares what people think and feel? We're (socio)linguists and want to know what they do'" (p. 4). We follow Preston's response to such criticisms: "'thinking' and 'feeling' are not only modes of 'doing' but are also inextricably entwined with the better-recognized 'doings' of language production and perception" (p. 4). Indeed, decades of work in language regard has demonstrated that there is much to be gained from examining non-linguists' perceptions of the relationship between linguistic and geographic information. Evans, Benson, and Stanford (2018) argue that "lay perceptions, beliefs, and attitudes to different varieties of language is a crucial component of the linguistic description and analysis of language variation and change" (p. xxi). Language regard data can provide insights into the social meanings and salience of linguistic features, the mechanisms of person and accent perception, and the relationship between linguistic and social knowledge. It can even give researchers clues to variation in a community that they may not have recognized otherwise (e.g., Plichta, 2004) and "provide fodder for opposition to linguistic prejudice of any sort (and ways to counteract it)" (Preston, 2018, p. 6).

Despite substantial work on language regard in the US, one area researchers know little about is the state of Kansas. Not only has there been a lack of perceptual dialectology research on Kansas, but even in perceptual dialectology "draw-a-map" tasks asking participants to mark linguistic facts on a blank US map, Kansas is often left off of these drawings as not particularly linguistically notable. Figure 1 shows a computationally generalized map of 147 hand drawn maps from Preston (1996) showing which geographic regions in the US respondents most frequently outline as "speaking different" when given a blank US map. These regions are ranked in order of degree of agreement across respondents. While most areas of the US are sectioned off as part of one or multiple regions, noted for their linguistic distinctiveness, the majority of Kansas is notably left off of this map as not belonging to any of these regions. The eastern part of Kansas that is sectioned off into the "Midwest" is ranked as 10/14,

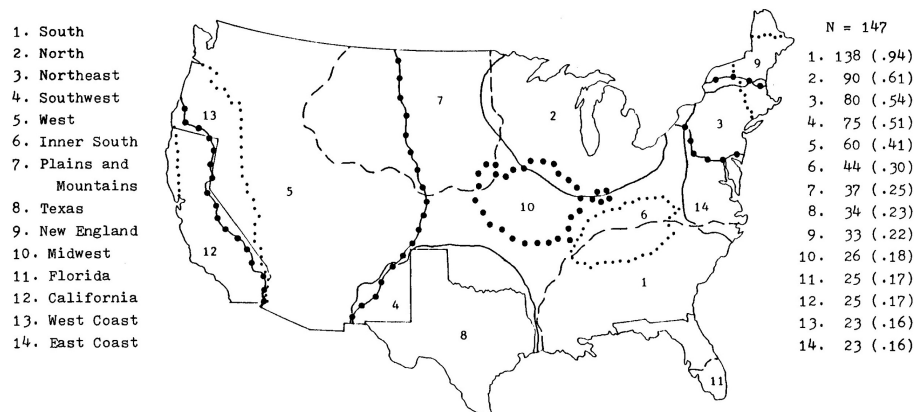indicating lower agreement across participants.

1. South		N = 147

Figure legend (left list):
1. South
2. North
3. Northeast
4. Southwest
5. West
6. Inner South
7. Plains and Mountains
8. Texas
9. New England
10. Midwest
11. Florida
12. California
13. West Coast
14. East Coast

Right list:
N = 147
1. 138 (.94)
2. 90 (.61)
3. 80 (.54)
4. 75 (.51)
5. 60 (.41)
6. 44 (.30)
7. 37 (.25)
8. 34 (.23)
9. 33 (.22)
10. 26 (.18)
11. 25 (.17)
12. 25 (.17)
13. 23 (.16)
14. 23 (.16)

Figure 1: A computationally generalized map of US dialect areas represented in at least fifteen percent of 147 hand drawn maps (at a fifty percent level of agreement) provided by southeastern Michigan respondents (Preston, 1996, p. 305)

Ideologies denoting Kansas as not linguistically notable are also upheld by Kansans themselves. One participant in our lab explained Kansas speech this way: "We're Midwestern, so I don't perceive us as having an accent...The Midwestern accent is just kind of the neutral accent, right. The way people talk, it's very flat. It's not valley girl, and it's not hard southern drawl either. It's just kind of middle." (Participant L07). Similar statements asserting the "unaccentedness" or "neutrality" of Kansas speech are prevalent in sociolinguistic interviews we have conducted with Kansans. As Villarreal and Kohn (2021) note, "Located in the Great Plains region of the United States, Kansas is known more for its agricultural economy and Midwest values than for its distinctive speech styles" (p. 46)

Since asking participants about regional US dialects in general has not shed much light on perceptions of Kansas speech, the goal of the present study is to ask specifically about Kansas speech to understand whether lay perceptions of Kansas speech exist, what they are, and how they compare to what is known about actual speech production in Kansas.

1.1 Kansas Speech

Linguistic work describing the properties of Kansas speech is also somewhat limited, despite Kansas' unique position at the intersection of several US dialect boundaries. Kansas is generally considered part of the Midland dialect region, sharing features with most of Missouri, southern Illinois and Indiana, and south-central Ohio. Most existing work on nearby speech focuses on Kansas City (the largest nearby metropolitan area, on the Kansas-Missouri border), which the

Atlas of North American English (Labov, Ash, & Boberg, 2006) cites as an example of a prototypical "Midland" vowel system. However, the influence of neighboring dialects—southern varieties in Oklahoma and southern Missouri, northern varieties in the St. Louis Corridor, and western varieties on its western border—complicates this picture. Kansas participates in the Low Back Merger Shift (LBMS) (Dodsworth & Kohn, 2021), a chain shift affecting much of the US (Becker, 2019), where the merger of the LOT and THOUGHT vowels is hypothesized to have triggered a lowering and backing of the front lax vowels in the vowel space (though see Strelluf, 2019, for arguments against the low back merger as the triggering event for the LBMS). TRAP-retraction is perhaps the most well-studied aspect of this shift in terms of social meaning. Despite its prevalence in Kansas, listeners have been shown to associate this feature more readily with California speech, as well as general prestige and professionalism (D'Onofrio, 2015, 2018; Villarreal & Kohn, 2021). Work on Kansas City shows evidence of widespread PIN-PEN merger (Strelluf, 2018) which is typically associated with southern US speech, though it has been reported more widely across Kansas (Austen, 2020; Labov et al., 2006). Its prevalence in Kansas is notable in that it is not broadly observed in the Midland dialect region, though it has been noted in other non-southern communities, such as among more rural-oriented speakers in Redding, California (Geenberg, 2014), as well as among Black speakers throughout the US (Austen, 2020). Other documented features of Kansas City speech include pre-/l/ mergers, resulting in various patterns of merging of the vowels in POOL, PULL, POLE, and DULL and fronting of GOAT, GOOSE and FOOT (Strelluf, 2019). While there are clearly regional linguistic features that constitute Kansas speech, little is known about listener's awareness of these features, except for Villarreal and Kohn's (2021) observation that Kansans do not seem to associate TRAP-retraction with Kansas speech. It is therefore unclear whether Kansans view their own speech as "normal" and "unaccented" because they correctly identify features of Kansas speech but deem them as not noteworthy, or because they are not aware that they use such features. It is further unknown how non-Kansans perceive Kansas speech.

1.2   Ingroup vs. Outgroup language regard

Experience with a given variety has been shown to play an important role in language regard and sociolinguistic perception more generally. Preston's (1999) classic study shows that Michiganders have high linguistic security and view their own speech as the most correct, while non-Michiganders do not have the same perceptions of Michigan speech. Similarly, Alabamans rated their own speech as the most pleasant, an attitude that was not shared by Michiganders. Relatedly, Niedzielski (1999) found that Michigan listeners did not perceive Northern Cities Shifted Vowels as shifted when they were told a talker was from Michigan, even though the Michigan listeners did produce NCS vowels themselves. Rather than linguistic security leading Michiganders to perceive their own NCS vowels as "standard," Michiganders simply did not perceive vowels to be Northern Cities shifted when they believed the talker they were

listening to was from Michigan.

In general, the language of a given geographic area is often perceived by outgroup members as exhibiting little variation, consistent with the "myth of linguistic homogeneity" (Jeon, 2013) and the "Outgroup Homogeneity Effect" (Park & Rothbart, 2019). Relatedly, research has found that outgroup linguistic perceptions tend to rely more heavily on stereotypes than ingroup perceptions, which may be more veridical and allow for more heterogeneity (Drager & Kirtley, 2016; Wade, Embick, & Tamminga, 2023). For instance, Drager and Kirtley (2016) observed that listeners without military experience judged southern-accented speech in a matched guise task as sounding more "military", likely due to stereotyped portrayals of military speech as sounding southern in the media, while those with military experience did not make such associations. Similarly, Wade et al. (2023) found that the amount of experience a listener has with the southern dialect influences when they converge. Non-southerners with little experience with southern speech converged toward a more southern-like /aɪ/ vowel after simply being told they were listening to a southerner—even if the speaker in fact was from Ohio. Southerners, on the other hand, only converged when they heard evidence of a southern dialect, regardless of what they were told about the talker (in this case, they were told the southern talker was from Michigan). In other words, participants with less experience relied on stereotypes like "anyone who is southern will use monophthongal /aɪ/" rather than actual experience. Participants with more experience relied on this experience and only converged when they heard a southern accent with other linguistic features consistent with monophthongal /aɪ/.

In the present study, we compare Kansans' and non-Kansans' perceptions about Kansas speech. Previous work has shown that listeners often perceive outgroup speech in light of salient sociolinguistic stereotypes, but such stereotypes are not readily available for Kansas speech. The current study will therefore shed light on how ingroup and outgroup beliefs about a less socially salient and stereotyped variety vary. While previous studies have shown that less experienced listeners generally perform less well in dialect discrimination and identification tasks (Clopper & Pisoni, 2004, 2007; Evans & Iverson, 2007), it is less well understood how ingroup and outgroup listeners evaluate accents differently, particularly for accents that are viewed as unremarkable or even nonexistent by ingroup speakers. While work is limited on stereotypes of Kansas speech in particular, we predict that out-group stereotypes about Kansas speech will center around salient perceptions of Kansas as "rural." Previous work has found that rural communities in the US are often described as talking "country" and commonly associated with southern dialect features (Hall-Lew & Stephens, 2012), even in non-southern communities (Geenberg, 2014; Podesva, D'Onofrio, Van Hofwegen, & Kim, 2015).

2   Methods

2.1   Participants

Sixty-four participants from across the US completed the study. Roughly half (n=35) were from Kansas and half (n=29) were from various regions in the US outside of Kansas. All of the non-Kansan listeners were recruited from Prolific and paid $10 for completing the task. Most of the Kansan listeners were also recruited from Prolific, except for 11 participants who were recruited locally and participated in the experiment as part of a larger lab visit that involved sociolinguistic interviews and other experimental tasks. Participants ranged in age from 18-80 years (mean = 39.48, sd = 12.52). Self-reported racial/ethnic identifications are as follows: 50 White, 6 Black or African American, 2 Asian, 2 Black and American Indian, 1 Hispanic, 1 White and Black, 1 White and Middle Eastern, and one did not report.
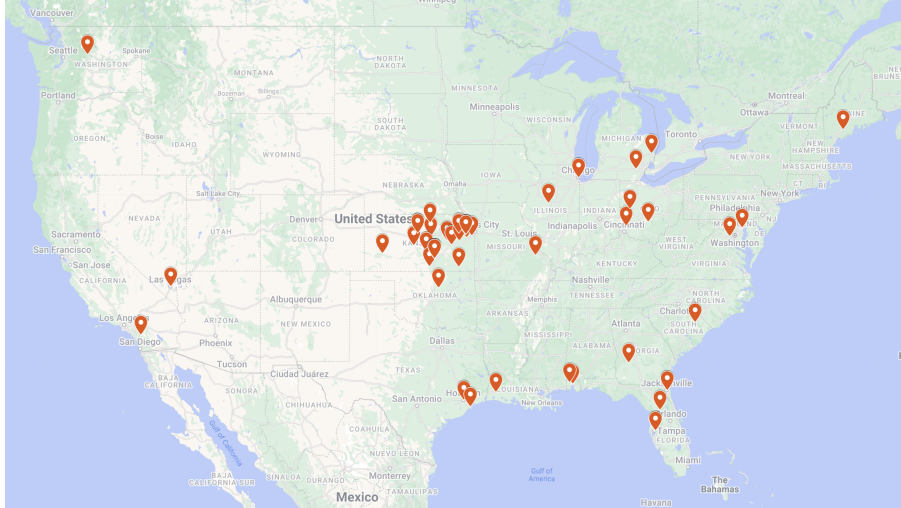

Figure 2: Locations where each participant grew up (spent the majority of their time aged 5-18). Most participants are currently residing in the same location in which they grew up.

2.2   Procedure

The experiment was run in PCIbex (Zehr & Schwarz, 2018) over participants' web browsers. After providing informed consent, participants completed a demographic questionnaire for which they reported their residential history, age, gender, race/ethnicity, education level, and fluent languages.

Participants then rated 31 talkers from the Speech Accent Archive (Weinberger, 2015) reading the "Please Call Stella" passage. Talkers came from various dialect regions in the US and were randomly chosen, though seven voices

were chosen for representing local speech as they came from Kansas or Kansas City.

Participants listened to all 31 voices in a randomized order and rated each on two 6-point Likert scales. The first scale asked participants to rate how likely to be from Kansas the talker was, with the options of *Definitely not from Kansas* (0), *Probably not from Kansas* (1), *Possibly from Kansas (but less likely)* (2), *Possibly from Kansas (but more likely)* (3), *Likely from Kansas* (4), and *Definitely from Kansas* (5). The second scale asked participants to rate how "accented" they believed the talker to be, with the options of *What accent?* (0), *Barely noticeable* (1), *Somewhat noticeable* (2), *Quite Noticeable* (3), *Extremely Noticeable* (4), and *The accent is all I hear* (5).

Participants then had the option of checking any number of the following 20 checkboxes to describe the talker: *Rural/Country, Big City, Suburban, Southern, Northern, Midwestern, Friendly, Unkind, Polite, Rude, Educated, Uneducated, Wealthy, Lower Class, New York, Minnesota, Ohio, Kansas, Georgia,* and *Texas.* Finally, participants responded to the following question in an open-form text box: "Did the pronunciation of any specific words stand out to you? List them here."

After completing the listening task, participants' knowledge of Kansas's geographic location within the US was tested. Participants were instructed to click and drag an outline of Kansas to its correct geographic location on a blank US map. Their mouse position and final mouse click was tracked with the mouse tracking function in PCIbex. Raw x/y placement was normalized to account for different screen sizes, but to ensure comparability, participants were also asked on the following screen to place the same outline of Kansas as carefully as possible within the outline of Kansas indicated on a lined and labeled US map. The difference in Kansas placement between map 1 and map 2 was taken as an indicator of accuracy in identifying the location of Kansas on a US map. Only 51 participants had mouse tracking data for both maps and are included in this analysis.

On the final screen of the experiment, participants were asked to provide open-ended responses for the question: "What do you think makes somebody sound like they are from Kansas?"

Data is available on OSF at:
https://osf.io/wa4gc.
All data analysis and data visualization was conducted in R (R Core Team, 2015). Individual analyses are described in further detail as they are presented below.

3   Results

3.1   Accentedness and Kansas Likelihood Ratings

The relationship between Accentedness ratings and Kansas Likelihood ratings for each voice is shown in Figure 3. Overall, participants were reluctant to

report strong Kansas Likelihood for any talkers, with average values for all voices falling below 3. It is likely that, while participants recognized that some voices *could* be from Kansas, they were seldom confident enough to suggest that any voices were "Likely" (4) or "Definitely" (5) from Kansas. While Kansans were comfortable stating that some voices were "Definitely not from Kansas" (0), non-Kansans tended to have more neutral Kansas likelihood ratings between 1 and 3. Accentedness ratings were spread more widely across the Likert scale for both groups.

Our first question was whether Kansans and non-Kansans differed in the relationship between perceived accentedness and perceived likelihood of being from Kansas. As shown in Figure 3, Kansan listeners exhibit a strong negative correlation between Accentedness and Kansas Likelihood ratings (Pearson's r = -0.9, $p < 0.001$), suggesting that voices rated as most likely to be from Kansas were also rated as less accented. Non-Kansan listeners display the opposite pattern, rating voices they heard as more accented as *more* likely to be from Kansas (r = 0.6, $p = 0.001$).
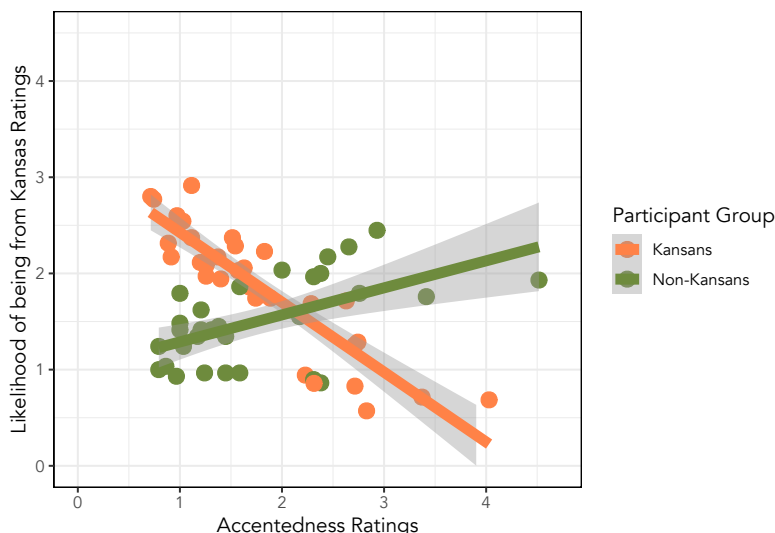

Figure 3: Talkers' Kansas Likelihood and Accentedness ratings are negatively correlated for Kansans and positively correlated for non-Kansans. Points represent mean ratings for each talker audio clip, grouped by participant dialect background.

Why might Kansans and non-Kansans exhibit such opposing judgments on the relationship between a talker's accentedness and their likelihood of being from Kansas? Examining agreement between listener groups on measures of Accentedness and Kansas likelihood will shed light on whether the two groups disagreed on which voices sounded accented, which voices sounded Kansan, or both. One possibility is that participants rated voices *most similar to their*

own as least accented, leading to a negative correlation for Kansans but a positive correlation for non-Kansans (assuming both groups correctly identify voices with features of Kansas speech). However, as Figure 4 shows, this does not appear to be the case. Kansans' and non-Kansans' accentedness ratings were highly correlated with one another (r = 0.9, $p < 0.001$), suggesting general agreement in perceptions of accentedness across talkers. The disagreement between groups, then, stems primarily from each group's interpretation of what accentedness *means* for a talker's likelihood of being from Kansas. That is, despite general agreement on which voices sounded the most accented, Kansans' and non-Kansans' Kansas Likelihood ratings exhibited no correlation (r = -0.1, $p = 0.5$). What type of "accentedness" non-Kansans take as indicative of Kansas speech will be examined in the following section.
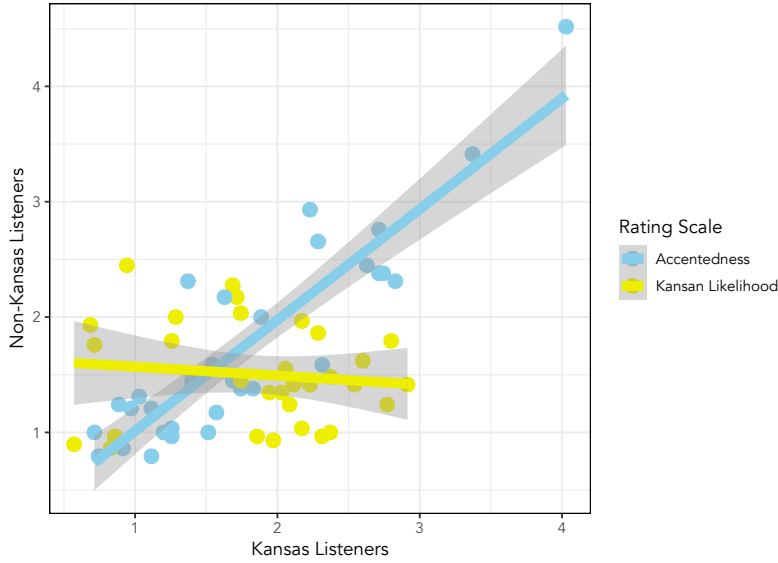

Figure 4: Accentedness ratings are highly correlated between Kansan and Non-Kansan listeners (blue line), while Kansas Likelihood ratings are not (yellow line). Points represented mean ratings for each talker audio clip.

3.2 Social Characteristics of Perceived "Kansans"

Here, we examine the perceptual dialectology of Kansas by assessing which characteristics listeners tended to assign to voices they perceived as most Kansan (regardless of whether these voices were actually from Kansas or at all representative of Kansas speech). Matched guise tasks or other similar paradigms where listeners would hear actual features of Kansas speech and evaluate the talker on various social dimensions can tell us about how veridical features of Kansas speech are evaluated and how strongly these are associated with Kansas

speech (e.g., Villarreal & Kohn, 2021). While such paradigms would tell us about perceptions of *actual* Kansas speech, they would not reveal much about folk perceptions of what Kansas speech sounds like. Of central interest to our investigation is folk perceptions of Kansas speech and the social characteristics associated with it. In this section, we analyze the social characteristics assigned to voices rated as more or less Kansan to understand what they have in common.

We first conducted a factor analysis on the social descriptors presented as checkboxes for each talker. First, boxes that were checked were coded as (1) and unchecked boxes were coded as (0). We then created a correlation matrix from these values, and generated a scree plot using the `nFactors` package (Raiche & Magis, 2022) in R. Visual inspection of this plot indicated that the optimal number of factors to be used in the factor analysis was five. We then ran a factor analysis on the checkbox data using the `factanal()` function from the built-in stats package in R.

We named each factor based on the subsets of the 20 checkboxes that had their highest loadings onto each factor, with the exact loadings of each factor provided on OSF.

south: `southern, rural, Texas, Georgia, uneducated, lower class`

urban: `big city, New York, educated, wealthy`

midwest: `midwestern, Kansas, Ohio, suburban`

nice: `friendly, polite, (not) rude, kind`

north: `northern, Minnesota`

We then used these factors as predictors in a mixed effects ordinal regression model predicting Kansas-likelihood, run using the `ordinal` package (Christensen, 2023) in R. The model included each of the five factors and the listener's locale (Kansan vs. non-Kansan) as fixed effects, the interactions between each factor and Kansan status, and random intercepts for listener and talker. The output of the model, with Kansas listener locale as the reference level, is shown in Table 1.

The significant positive coefficients for MIDWEST and NICE indicate that Kansas-likelihood correlates with these two factors, although the polarity and marginal significance of their interactions with locale suggest that this correlation may be somewhat attenuated for non-Kansan listeners. Indeed, with non-Kansans as the reference level, NICE is no longer a significant predictor of Kansas likelihood ($\beta = 0.03, p = 0.749$); MIDWEST, however, still significantly predicts Kansas likelihood ratings for non-Kansans ($\beta = 1.164, p < 0.001$). The significant negative coefficient for NORTH shows that listeners perceive Kansas as distinct from the northern plains, including Minnesota, and this effect holds for non-Kansans ($\beta = -0.269, p = 0.009$).

The main difference between Kansan and non-Kansan listeners can be seen in the SOUTH and URBAN factors. The negative coefficients for these factors indicate that Kansan listeners perceive Kansas speech to be neither southern

	Estimate	SE	z	p	
locale-NonKansan	-0.391	0.210	-1.865	.0622	
SOUTH	-0.454	0.081	-5.594	<.0001	***
URBAN	-0.266	0.087	-3.060	.0022	**
MIDWEST	1.384	0.082	16.818	<.0001	***
NICE	0.269	0.092	2.920	.0035	**
NORTH	-0.377	0.079	-4.803	<.0001	***
NonKansan:SOUTH	1.009	0.112	8.968	<.0001	***
NonKansan:URBAN	-0.379	0.132	-2.859	.0043	**
NonKansan:MIDWEST	-0.220	0.133	-1.661	.0966	
NonKansan:NICE	-0.237	0.133	-1.787	.0740	
NonKansan:NORTH	0.108	0.128	0.849	.3958	

Table 1: Output of mixed effects ordinal regression model predicting Kansas likelihood, with listener locale of Kansas as the reference level.

nor urban, but the significant interactions with listener locale show that non-Kansan listeners perceive Kansas speech to be *even less* urban (i.e. more rural), and significantly *more* southern.

3.3   Properties of Perceived "Kansas" Speech

Next we turn to an investigation of the dialect backgrounds of the model talkers chosen as most Kansan and an exploratory acoustic analysis of their vowels to better understand how talker accent characteristics influenced Kansas likelihood ratings. Figure 5 illustrates by-talker Kansas Likelihood (bars) and Accentedness (points) ratings for Kansan and non-Kansan listeners. Non-Kansans tend to choose voices from the southern dialect region as most representative of Kansas speech: their top two choices for Kansas Likelihood are both from Alabama, and talkers from Georgia and Tennessee also rank highly on Kansas Likelihood. It is not just "accentedness," then, that makes non-Kansans believe a talker is from Kansas, but southern-accentedness in particular[1]. Indeed, two talkers were rated as least likely to be from Kansas yet had higher than average Accentedness ratings, and they were from Queens, New York and Austin, Minnesota.

Among Kansans, top choices for Kansas Likelihood were from New Orleans, followed by Kansas City, Missouri; Portland, Oregon; Kansas City, Kansas; Monterey, California; Wichita, Kansas; Fullerton, Kansas; then Kansas City, Missouri. In just their top 8 choices for Kansas Likelihood, it is clear that Kansans are better than non-Kansans at identifying actual Kansas (or Kansas City) speech.

What did these other voices have in common that made Kansans think that

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[1]Note that, in post-hoc analyses, we found that the subset of non-Kansans who grew up in the South similarly rated voices perceived as most "Kansan" to also be most Southern-sounding.

they were also likely to be from Kansas? Because vowel productions from model
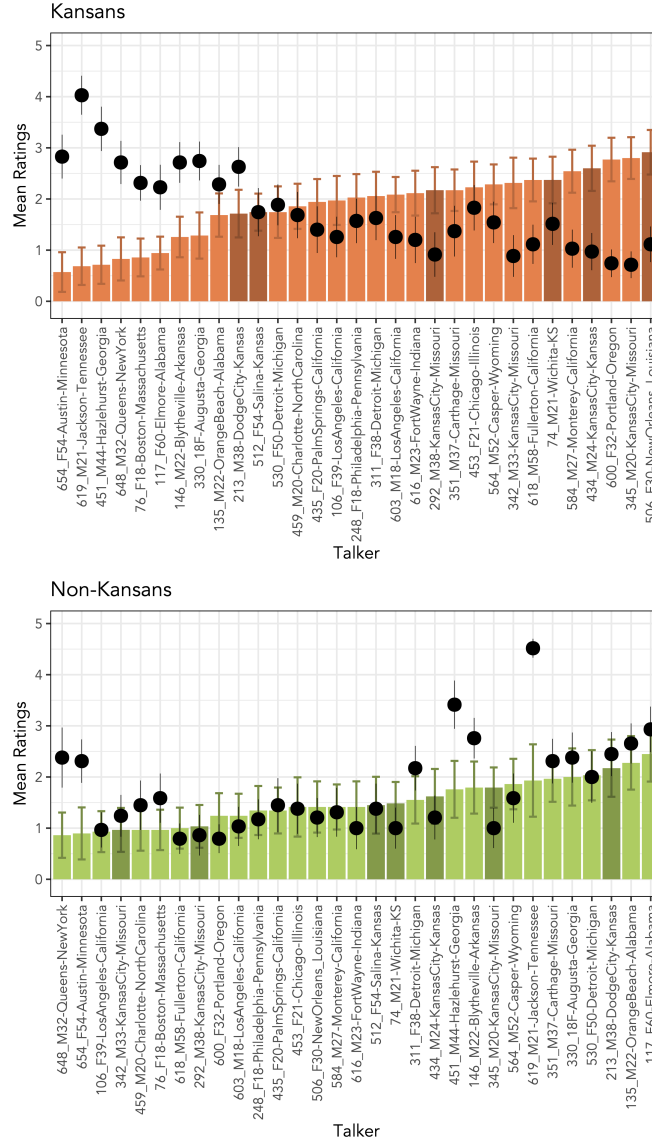

Figure 5: Kansans' (top) and non-Kansans' (bottom) Accentedness and Kansas Likelihood ratings by talker. Bars indicate mean Kansas Likelihood ratings, with 95% confidence intervals over all responses. Points indicate mean Accentedness ratings, with 95% confidence intervals over all responses. Talkers from Kansas/Kansas City are indicated with darker bars.

talkers were quite limited in the short excerpt used here (some vowels of interest had only one token), we conducted only an exploratory investigation into how vowel productions correlated with Kansas Likelihood ratings, shown in the visualization in Figures 6 and 7. Each of the 31 sound files were forced aligned to the "Please Call Stella" transcription, and vowel measurements were extracted using new-FAVE (Fruehwald, 2025), then hand corrected. Vowel measurements were Lobanov normalized to allow for general comparisons across talkers. Figure 6 plots the relationship between talkers' front vowel realizations along the front diagonal of the vowel space (normalized F2-F1), using the default point measurements from new-FAVE (Fruehwald, 2025), alongside participants' Kansas likelihood ratings for each voice. The FACE, FLEECE, and DRESS vowels suggest that non-Kansan listeners utilize southern-shifted vowel features to identify Kansans. FACE and FLEECE are produced with vowel nuclei that are retracted along the front diagonal of the vowel space in southern-shifted speech, and Figure 6 shows that Kansans tend to interpret higher (less southern) front-diagonal measures for FACE and FLEECE as more Kansan, while non-Kansans interpret lower (more southern) measures as more Kansan. A similar pattern is shown for the DRESS vowel, which exhibits a higher front-diagonal in southern-shifted speech. Here, non-Kansans interpret a higher front-diagonal measure (more southern) for DRESS as more likely to be from Kansas, while Kansans show the opposite pattern. KIT deviates from this pattern: both groups interpret a lower front-diagonal measure (less southern) as more likely to be from Kansas. Finally, the TRAP vowel, which has been shown to be retracting in Kansas speech as part of the LBMS, also appears to be a useful indicator of Kansas likelihood ratings. Kansans associate retracted TRAP (lower front diagonal) with higher
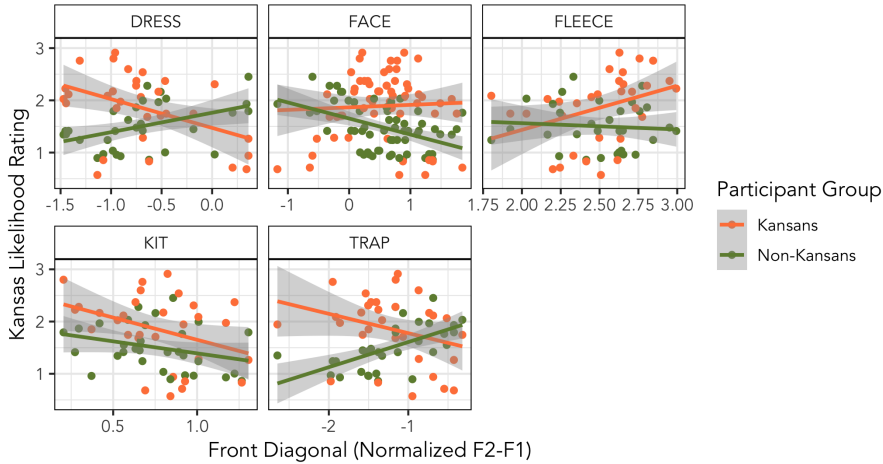

Figure 6: Correlations between talkers' front vowel diagonal measurements (normalized F2-F1 at new-FAVE default time points) and their mean Kansas Likelihood ratings for Kansans and non-Kansans.
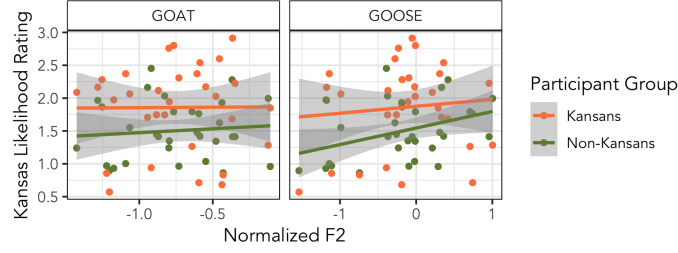
Figure 7: Correlations between talkers' back vowel fronting measurements (normalized F2 at new-FAVE default time points) and their mean Kansas Likelihood ratings for Kansans and non-Kansans.
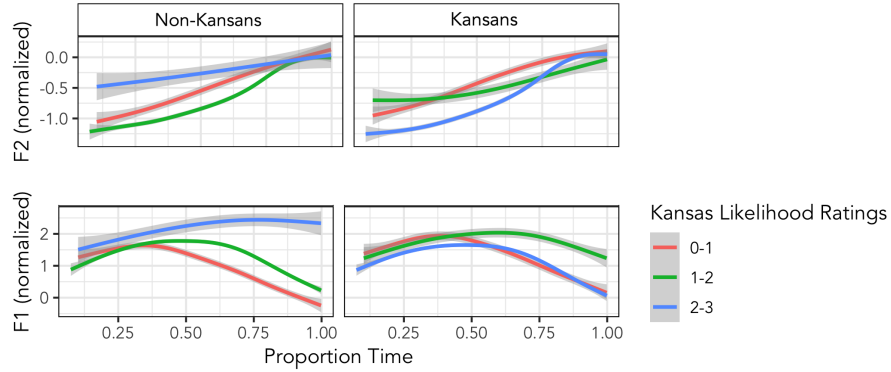

Figure 8: Trajectories for model talkers' /aɪ/ vowels (for the word *five*) for F1 (bottom) and F2 (top) separated by average Kansas Likelihood ratings (colored lines) and listener dialect background.

Kansas likelihood ratings, indicating knowledge that retracted TRAP is expected in Kansas speech, while non-Kansans show the opposite pattern. Figure 7 examines back-vowel fronting, which has been shown to occur in both Kansas and southern US speech. While productions of GOAT do not tend to pattern with Kansas likelihood ratings, GOOSE-fronting does appear to indicate somewhat greater Kansas Likelihood for both groups. Finally, we examined /aɪ/ monophthongization via normalized F1 and F2 trajectories throughout the vowel in the word "five," which was the only /aɪ/ vowel present in the Speech Accent Archive excerpt. Figure 8 shows that non-Kansans rate more monophthongal productions of /aɪ/ as most likely to be from Kansas, while diphthongal productions with greater F1 and F2 movement are rated as less likely to be from Kansas. Kansans, on the other hand, rate more diphthongal productions as being most likely to be from Kansas and generally show less differentiation between /aɪ/ production and Kansas likelihood ratings. The exploratory acoustic analysis

generally confirms that non-Kansans chose southern voices as most representative of Kansas speech—and adds additional nuance to our understanding of what Kansans perceive to sound most Kansan.

3.4 Geographic Awareness

The above analysis has shown that, while Kansans tend to view Kansas speech as largely unaccented, non-Kansans tend to associate Kansas speech with strong southern accents. To better understand why this might be, we analyzed mouse-tracking data from a geographic awareness task to determine (1) whether non-Kansans placed Kansas geographically further south than its veridical geographic location, (2) whether non-Kansans placed Kansas geographically further south than Kansans, and (3) whether geographic placement (specifically north-south placement on the y-axis) predicted Kansas likelihood ratings for voices categorized by participants as "southern."

Kansans and non-Kansans were both quite accurate and did not differ much from one another in their Kansas placement. Mean normalized x-placement (x-value of Kansas placement/window width) is 0.486 (sd 0.043) for non-Kansans and 0.464 (sd 0.077) for Kansans. Normalized y-placement is 0.521 (sd 0.083) for non-Kansans and 0.507 (sd 0.065) for Kansans. None of these small differences between groups are statistically significant ($p > .05$).
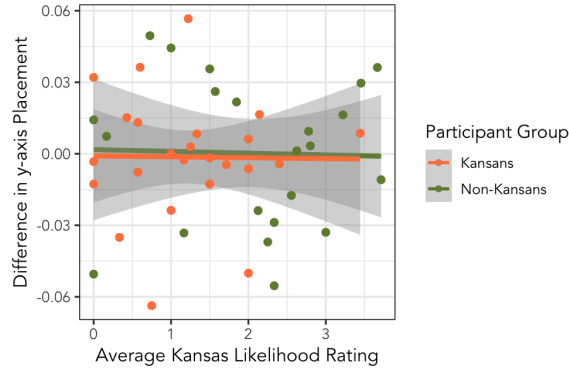

Figure 9: Correlation between average Kansas Likelihood ratings for voices checked as "southern" and difference in y-axis placement of Kansas. Difference values larger (smaller) than 0 indicate that the participant placed Kansas further south (north) than the actual location on the map.

To examine whether participants who judged southern-accented talkers as more Kansan also placed Kansas geographically further in the south, we plotted by-participant Kansas Likelihood ratings for all voices checked as "southern" alongside their north-south accuracy in Kansas placement. This is seen in Figure 9, which plots the relationship between Kansas Likelihood ratings and y-axis accuracy, measured as difference in placement of Kansas north-south between

map 1 (where no lines guided participants' placement) and map 2 (where participants carefully placed Kansas within its accurate location, clearly outlined on the map). A positive value indicates that the participant placed Kansas further south than its actual location, while negative values indicate that the participant placed Kansas further North. First, it is clear that Kansans and non-Kansans did not differ in their y-axis accuracy overall, and trend lines show values hovering around 0, indicating generally accurate y-axis placement.

It also does not appear to be the case that locating Kansas as geographically further south in the US has any bearing on how strongly someone associates southernness with Kansas Likelihood. There is no correlation observed between Kansas Likelihood ratings for voices deemed as "southern" and accurate y-axis placement of Kansas ($p > .05$).

4   Discussion

The goal of this paper was to better understand lay perceptions of Kansas speech and how these may differ between Kansans and non-Kansans. Participants listened to a range of US dialects from the Speech Accent Archive, rated each on how accented they sounded and how likely to be from Kansas they were, and indicated which characteristics (e.g., educated, rural, polite, etc.) they associated with each voice. We observed a number of key findings. First, Kansans and non-Kansans had opposing ideas about the relationship between accentedness and Kansas likelihood, which were negatively correlated for Kansans but positively correlated for non-Kansans. While both groups generally agreed on the accentedness of each talker, they disagreed on what that meant for Kansas Likelihood. Second, non-Kansans didn't perceive all highly accented talkers as Kansan—only *southern* accent talkers. Kansans, on the other hand, did not associate Kansas speech with the south, but did more accurately identify true Kansans—as well as talkers with TRAP-retraction—as likely to be from Kansas. Finally, the difference between Kansans and non-Kansans cannot be attributed to differences in beliefs about Kansas' geographic location within the US, as both groups reliably placed Kansas within its accurate location on a US map. We discuss the broader implications of these findings below.

4.1   The (lack of) identifiability of Kansas speech

We observed that participants had a much easier time saying who is *not* from Kansas than who *is* from Kansas. Ratings generally fell below three (*Possibly from Kansas (but more likely)*) on the Kansas likelihood scale, and participants were generally reluctant to say that any talker was *Likely from Kansas* or *Definitely from Kansas*. While it is somewhat surprising that Kansans themselves also had a hard time identifying fellow Kansans with certainty, they were generally more accurate than non-Kansans at identifying fellow Kansans. Kansans' uncertainty is, however, in line with observations that Kansans largely view Kansas speech as unaccented: if a place does not have an identifiable accent, it

becomes hard to confidently say that someone is from there.

Our observation that TRAP-retraction *does* appear to be a useful cue to Kansas speech for Kansans contrasts with Villarreal and Kohn's 2021 observation that Kansans associated TRAP-retraction with California speech and overall professionalism, but not Kansas speech. We expect that it is still likely that our participants associate TRAP-retraction more strongly with California speech, or even that they draw parallels between California speech and Kansas speech as both representative of some unaccented "standard." However, by asking about which voices sound most likely to be from Kansas, specifically, we were able to uncover associations with Kansas speech that may be overshadowed in other tasks asking more generally about regional associations for a given linguistic feature.

This uncertainty around what constitutes Kansas speech, for both Kansans and non-Kansans, is likely part of the reason why previous work examining US regional dialects more broadly has not had much to say about Kansas speech. However, when asked specifically about Kansas, we were able to uncover beliefs about accentedness broadly, associations with southern accentedness specifically, attitudes related to the pleasantness of Kansas speech, and some acoustic features associated with Kansas speech. These findings highlight the benefit of work targeting lay perception of specific areas, which can uncover beliefs and attitudes about language that would otherwise be overshadowed by more salient associations. Notably, while Kansans and non-Kansans agreed that Kansans sound *midwestern* and *rural*, they did not agree on much else, indicating a role for group identity and linguistic experience in perceptions of Kansas speech. We discuss the role of these factors in language regard in further detail below.

4.2 Ingroup and outgroup beliefs

While there was general agreement about which talkers sounded most "accented," where the two groups really differed was in their perceptions of what Kansas speech is (or could reasonably be). Kansan listeners chose the voices they rated as least accented as being most likely to be from Kansas, aligning with Kansans' ideologies of their own speech as "unaccented" or "neutral." They were also more accurate in identifying other Kansans, as well as reliably picking out other non-Kansan voices with similar acoustic features (like TRAP-retraction), as likely to be from Kansas.

We interpret Kansans' strong negative correlation between accentedness ratings and Kansas likelihood ratings as a type of *linguistic security*, though one that is different from the type of linguistic security that Niedzielski (1999) observed in Michigan. Niedzielski suggested that Michiganders simply did not hear (or did not remember hearing) Northern-Cities-shifted features from a talker they believed to be from Michigan, recognizing that NCS features are in some way marked as "accented," which contradicted beliefs about their own speech as "unaccented." Kansans in our study, on the other hand, don't *not* hear Kansas features; they were quite accurate in identifying Kansans, and they identified accents with similar features like TRAP-retraction as similarly Kansan. They

just interpret these vowel productions as being "unaccented" or "standard." One reason for this may be that the Low Back Merger Shift is so geographically widespread, more so than the Northern Cities Shift. As such, Kansan listeners may hear LBMS speech in a wider range of contexts, giving rise to beliefs about its pan-regionality and therefore neutrality/standardness.

However, it is worth noting that there are two Kansas talkers that Kansans did not reliably identify as Kansans—from Salina and Dodge City—both of which received higher accentedness ratings than the other talkers from Kansas/ Kansas City. In other words, Kansans judge the "least accented" talkers as most Kansan, but that doesn't mean they perceive all actual Kansas speech as "unaccented." The tendency for Kansans to believe that truly representative Kansas speech is unaccented leads some Kansas voices that don't fit this description to be rated as unlikely to be from Kansas—a form of erasure (Gal & Irvine, 1995) which may reinforce stereotypes among Kansans that all Kansans speak alike, or that eastern Kansas is most representative of Kansas speech. In this sense, Kansans' *linguistic security* may also serve to erase speech perceived as "accented" as not representative of Kansas.

Non-Kansans, on the other hand, did not share the belief that Kansas speech is unaccented. Non-Kansans chose the most southern-accented talkers as most representative of Kansas speech. While Kansans do tend to exhibit PIN-PEN merger, a feature associated with the US south, Kansas has not been shown to widely exhibit other features consistent with southern US speech, and non-Kansans were generally not as accurate as Kansans at identifying Kansas speech—so where do these beliefs come from? The answer does not lie in misconceptions about Kansas' geography, as both Kansans and non-Kansans placed Kansas reliably within its accurate location on a blank US map. Rather, we suggest that non-Kansans, for lack of salient representations of Kansas speech, rely on what they do know about Kansas speech—its rurality—and build their linguistic expectations from this anchor. "Country" is a common descriptor used for rural areas in perceptual dialectology draw-a-map tasks (Preston, 1996), and Hall-Lew and Stephens (2012) argue that "Country Talk" is a speech register that has ideological associations with both rurality and non-standardness. Notably, the label "country" has been shown to draw on features of southern US speech, despite not necessarily being regionally restricted to the US south (Hall-Lew & Stephens, 2012). We suggest here that non-Kansans' salient representations of Kansas as "rural" lead to expectations for features of "Country Talk," in line with their identification of US southern-shifted talkers as most likely to be from Kansas. We speculate that non-Kansans—who lack experience with veridical Kansas speech—may more readily draw from associations with "Country Talk" due to imprecise representations of actual Kansas speech and lack of salient counterexamples.

The ingroup–outgroup differences observed here are generally in line with findings showing that ingroup members tend to perceive their own speech more accurately, and with more heterogeneity, while outgroup members tend to rely more on broader social stereotypes (e.g., Drager & Kirtley, 2016; Wade et al., 2023). Indeed, Kansans are generally more accurate at identifying fellow

Kansans. While both groups associate Kansas voices with rurality, non-Kansans equate rurality with southern features (drawing on stereotypes equating "rural" with "southern"), in line with Gordon's 2019 observation that rurality is associated with stability and homogeneity. Kansans, on the other hand, recognize Kansas as rural while simultaneously recognizing the heterogeneity of rurality, allowing for rural speech to include pan-regional features not stereotypically associated with rurality. Kansans' and non-Kansans' differing perceptions are consistent with theorizing on stereotyping and intergroup relations in social psychology, such as the Outgroup Homogeneity Effect (Park & Rothbart, 2019), which suggests that people perceive outgroup members as being more homogeneous than ingroup members, who are mentally represented with more detail and nuance.

4.3   Status, Solidarity and Kansas Speech

The final ingroup–outgroup distinction we observe is in relation to the characteristics associated with (perceived) Kansas speech. It is well established in the literature on language attitudes that evaluations of speech often fall into two main categories that trade off with one another — *status* (also sometimes referred to as prestige, competence, or correctness) and *solidarity* (also equated with warmth or pleasantness) (Preston, 1996, 2018). We examined some of these characteristics, along with others, in participants' checkbox responses to various personal characteristics. Factor analysis revealed five key dimensions that we used to group responses. Kansas Likelihood ratings correlated positively with the factor MIDWEST for both groups and negatively with the factors NORTH and URBAN for both groups. Kansans' Kansas likelihood ratings positively correlated with the factor NICE and negatively correlated with the factor SOUTH, while non-Kansans exhibited positive correlations between Kansas Likelihood and SOUTH (but no correlation with NICE). Status characteristics like *educated* and *wealthy* were shown to map onto the same factor as urban associations like *big city* and *New York*, which in and of itself is an interesting observation, contrasting with observations that NYC English is one of the few areas outside of the US south consistently picked out as "incorrect." Here, we observe that the URBAN factor, containing both big-city associations and prestige associations, negatively correlates with Kansas likelihood for both groups, despite anecdotal reports that Kansans tend to perceive their own speech as neutral and unaccented. Regarding solidarity measures, the factor NICE captures characteristics such as friendly, polite, and kind. Notably, only Kansans interpret voices rated as Kansan to be particularly NICE. Finally, both groups agree that voices rated as Kansan sound MIDWEST, which is noteworthy because non-Kansans tended to choose southern voices, rather than midwestern ones, as most representative of Kansas speech.

5   Conclusion

In conclusion, this study reveals how perceptions of Kansas speech are shaped by listener identity, experience, and broader sociolinguistic ideologies. While both groups generally agreed on which voices sounded more or less accented, they diverged in interpreting what this accentedness meant for Kansas identity: Kansans viewed less accented voices as more likely to be from Kansas, consistent with their belief in Kansas speech as "neutral" or "unaccented," whereas non-Kansans associated Kansas speech with features of southern accents, likely drawing on stereotypes linking rurality with southernness. Kansans demonstrated greater accuracy in identifying actual Kansas voices and attended to veridical features of Kansas speech such as TRAP-retraction, while non-Kansans favored voices with overt southern features. These differences are not due to misconceptions about Kansas's geographic location, but rather to the availability (or lack thereof) of salient representations of Kansas speech.

These findings underscore the role of ingroup versus outgroup perspectives in shaping dialect judgments, especially for varieties lacking strong social salience or widely held stereotypes. They also highlight how perceptions of speech are shaped not only by linguistic features but by broader social and ideological constructs—such as assumptions about rurality or regional identity. Importantly, this study suggests that targeting less stereotyped regions like Kansas in perceptual dialectology can reveal nuanced beliefs and attitudes that might otherwise remain hidden when focusing only on more socially marked varieties.

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