# Evidence for the reproduction of social class in brief speech

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Edited by Hazel Rose Markus, Stanford University, Stanford, CA, and approved September 22, 2019 (received for review January 10, 2019)

**Economic inequality is at its highest point on record and is linked to poorer health and well-being across countries. The forces that perpetuate inequality continue to be studied, and here we examine how a person's position within the economic hierarchy, their social class, is accurately perceived and reproduced by mundane patterns embedded in brief speech. Studies 1 through 4 examined the extent that people accurately perceive social class based on brief speech patterns. We find that brief speech spoken out of context is sufficient to allow respondents to discern the social class of speakers at levels above chance accuracy, that adherence to both digital and subjective standards for English is associated with higher perceived and actual social class of speakers, and that pronunciation cues in speech communicate social class over and above speech content. In study 5, we find that people with prior hiring experience use speech patterns in preinterview conversations to judge the fit, competence, starting salary, and signing bonus of prospective job candidates in ways that bias the process in favor of applicants of higher social class. Overall, this research provides evidence for the stratification of common speech and its role in both shaping perceiver judgments and perpetuating inequality during the briefest interactions.**

socioeconomic status | economic inequality | social psychology | group processes | person perception

The American Dream is a popular narrative in the United States (1, 2). Works of fiction romanticize the idea that people determine their future success through effort, and popular media sensationalizes stories of individuals beating the odds through hard work. These fundamental meritocratic narratives contribute to the willful ignorance that Americans exhibit regarding the relative lack of actual economic mobility in society (3–5). Despite our collective optimism, social class, defined as one's overall societal status and measured by indices of income, educational attainment, and occupation status, is remarkably stable across time and generation.

This research examines how social class is reproduced through subtle cues expressed in brief speech. Research on thin slicing suggests that people tend to, intentionally or otherwise, pursue interactions that assist both targets and perceivers in making sense of the behaviors of the people they interact with (6). In this sense-making process, accurate perception of people's societal status occurs during brief perceptions of dynamic behavior and can help perceivers make decisions about resource sharing, cooperation, and the general economic needs of interaction partners (6, 7). Given historic economic inequality, accurate perception of social class cues, even if that accuracy is only minimally better than random chance, may be especially critical in brief interactions where early impressions crystallize (8).

Although social class cues are communicated across a broad variety of behaviors (9–11), speech patterns are among the most powerful means of social class perception (12). Speech is significantly socialized at home, in schools, and in society (e.g., formal and informal elocution instruction). These socialization processes lead some forms of speech to be associated with more desirable social characteristics than others (12–14) and give off cues about a person's social class background.

In this fashion, perceivers can use culturally socialized speech patterns to make inferences about societal status by comparing these patterns to some ideal standard that is communicated by educational and cultural norms (12, 13, 15). Critically, we expect adherence to speech standards to elicit accurate judgments of high social class, whereas deviations from those standards will elicit accurate judgments of lower social class. Moreover, given widespread beliefs in meritocracy in American society (3–5, 16), we expect that these inferences of social class will be accompanied by attributions of specific skill-based competence and fit for a particular job among higher-social-class speakers and lower job fit and competence among lower-social-class speakers. We argue that class cues are used as a proxy for merit, and we predict that these patterns will bias hiring decisions against lower-social-class job seekers who are pursuing personal economic advancement (17).

In our analysis of social class cues, we make a distinction between spoken and written language. Although both spoken and written language carry content and meaning of words that have the potential to communicate social class (e.g., a casual remark about where you went to college), verbal speech has additional channels where speech standards are communicated. Beyond the meaning of words and phrases, verbal speech includes linguistic data—tone, rhythm, and, importantly, variation in pronunciation—that allows a perceiver to judge speech against normative standards and to do so during the earliest moments of person perception. In essence, although all modes of behavior carry social class cues (12), speech has the potential to more immediately deliver those cues through the expression and evaluation of, in particular, the pronunciation of specific words. This expectation is derived from research indicating that what people

## Significance

**Social class mobility narratives pervade public consciousness in the United States, and yet patterns of actual mobility remain relatively constrained. This work examines how the tendency to accurately perceive the social class position of targets, by virtue of listening to their brief speech, can constrain economic mobility and perpetuate inequality. We find that Americans can perceive the social class of targets based on exposure to brief speech patterns, that word pronunciation facilitates this perceptual process, and that these cues bias hiring decisions in favor of those higher versus lower in social class. The findings suggest that social interaction patterns related to the perception of brief speech are potentially causal in the maintenance of economic inequality.**

Author contributions: M.W.K., B.T., and J.W.P. designed research; M.W.K., B.T., J.W.P., and F.G. performed research; M.W.K. and B.T. analyzed data; and M.W.K., B.T., J.W.P., and F.G. wrote the paper.

The authors declare no competing interest.

This article is a PNAS Direct Submission.



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This article contains supporting information online at www.pnas.org/lookup/suppl/doi:10.1073/pnas.1900500116/-/DCSupplemental.

First published October 21, 2019.

say is more highly controlled than how they speak (18), and thus, cues of social class are likely to leak out more immediately from how speech deviates from some standard than through speech content. However, content should communicate social class over sufficient time as more information about a person's background is expressed organically over the course of an interaction (12, 13) or solicited by a specific line of questioning during a job interview (19).

Based on this analysis of social class cue perception and class associations with speech, we make 3 predictions: 1) A few moments of brief speech will be sufficient to elicit accurate perceptions of a speaker's social class (studies 1 to 5); 2) adherence to digital and ideal English standards will account for above-chance accuracy in class perception (studies 2 and 3), even when accounting for the content of speech (study 4); and 3) based on perceptions of brief speech, people with hiring experience will make biased hiring judgments in favor of already higher-social-class individuals (study 5). In the studies we benchmark accuracy against random chance variation in social class perceptions. This means that any minimal tendency of perceivers to track the social class of speakers is considered accurate. Notably, this criteria for accuracy falls well short of error-free perceptions of social class.

## Results

**Detecting Social Class in Brief Speech.** We tested our 3 hypotheses across 5 studies using a variety of methods and stimuli. In study 1, we used a signal detection paradigm to assess the extent that brief speech would be sufficient to elicit accurate perceptions of a speaker's social class (20). A total of 229 perceivers were asked to listen to the speech of 27 unique speakers whose utterances were collected as part of a larger sample of 189 speakers through the International Dialects of English Archive (IDEA). These 27 speakers varied in terms of age, race, gender, and social class, which we measured in the present study in terms of high school or college degree attainment. Our sample of perceivers listened to 7 words spoken by each of the speakers presented consecutively and randomly without any other accompanying speech and answered "Yes" or "No" to 4 questions: "Is this person a college graduate/woman/young/white?" Participants answered these 4 questions in a randomized order, and we calculated the proportion of correct responses for each question, with the young designation as above or below the median sample age of 35, and averaged the proportions across our entire sample.

Perceivers exhibited above-chance (50%) accuracy in perceiving all 4 categories based on brief speech cues (Fig. 1). Consistent with our first hypothesis, perceivers accurately judged the social class of speakers (55.49%) based on brief speech spoken out of context $T(227) = 7.33$, $P < 0.001$, $D = 0.97$. Although all category judgments were accurate, social class judgments were significantly less accurate relative to speaker race (64.05%) $T(227) = -8.63$, $P < 0.001$, age (66.28%) $T(227) = -10.92$, $P < 0.001$, and gender judgments (92.37%) $T(227) = -38.42$, $P < 0.001$. This lower accuracy of social class perception is perhaps due to the relatively concealable nature of social class, given that norms in the United States dictate concealing social class (9). Perhaps perceivers are more accustomed to forming impressions of social class through explicitly asking about background and interests as in other related research (17, 19).

The signal detection paradigm allows us to determine whether perceivers of differing social class were more accurate at perceiving high school- or college-educated speakers (20). In this exploratory analysis we calculated correlations between speaker social class indices and the tendency to be more accurate for college- versus high school-educated speakers. Consistent with prior research (13, 19), we observed a significant correlation with perceiver education $R(227) = 0.161$, $P = 0.015$, such that college-educated participants were better able to correctly discern the education of college-educated speakers (*SI Appendix*).

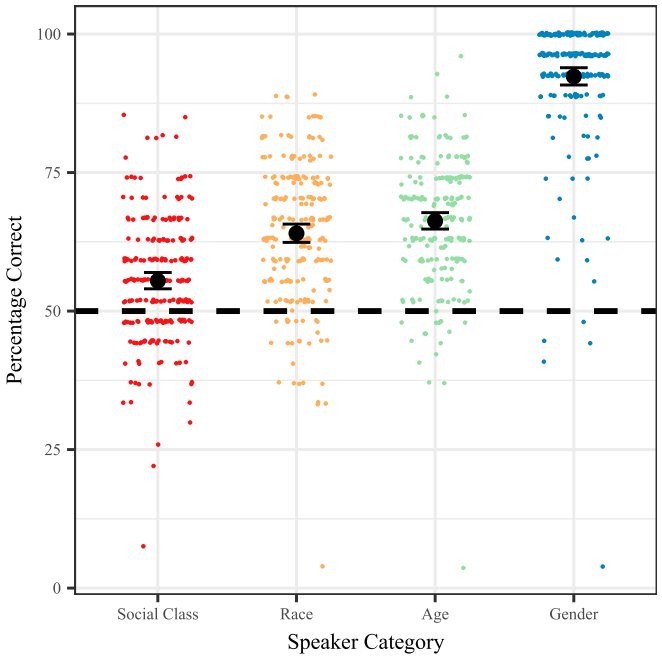


**Fig. 1.** The average percentage of correct responses of perceivers judging the social class, race, age, and gender of speakers based on hearing brief speech spoken out of context, where higher scores indicate greater accuracy. Each individual dot represents a single perceiver jittered around the mean percentage across the sample. Error bars indicate 95% confidence intervals surrounding the mean. The dotted line depicts chance accuracy.

**Speech Pronunciation Patterns as Cues of Social Class.** Study 1 was limited because it asked perceivers to infer educational attainment, a correlate of social class most closely tied to speech patterns, and as such, additional data are needed to better understand how and whether cues of social class are communicated through brief speech. Studies 2 and 3 were designed to better understand whether pronunciation cues of speech elicit signals of social class. In study 2, we used trained coders to assess how much the 246 speakers from the IDEA sample deviated from standard English promoted by online search and retail websites like Google and Amazon. Speech deviations were coded at the phoneme level, and these codes were aggregated at the speaker level. In a linear regression analysis controlling for speaker age, gender, race, and vocal pitch, we examined associations between social class and deviations from these digital standards. We accounted for pitch—measured in Hertz as the rate of vibrations producing sound—because it has been used as a cue for social dominance in prior research (21). Consistent with our hypothesis, we found that higher-social-class speakers, measured by a composite of coded occupation status and educational attainment, deviated less from these digital standards $\beta = 0.28$, $T(186) = 3.99$, $P < 0.001$. Next, we created an average perceived social class rating using a separate sample of 568 perceivers (10) who listened to the utterances of the same sample of speakers and estimated their social class on a 10-rung ladder representing ascending levels of income, education, and occupation status (22). This parallel regression analysis using the same control variables was again supportive of our second hypothesis—perceiving speakers as higher in social class was also associated with fewer deviations from these digital standards $\beta = 0.28$, $T(211) = 4.20$, $P < 0.001$. No other effects in either model were significant, and the associations held when measuring speaker social class by either education or occupation (*SI Appendix*).

Supplementing the results from study 2, in study 3 a sample of 200 perceivers were asked to think of their own subjective

standards for ideal speech and then to rate the speech of 5 men or 5 women from the IDEA sample on these subjective standards. Half of these speakers were lower in social class and half were higher in social class in terms of mean speaker education and occupation status—the 2 indices of social class available in the IDEA sample. Perceivers judged the same utterances of these speakers, used in the prior studies, in terms of similarity to subjective ideal speech on an 11-point scale (0 = not at all similar to ideal English, 10 = exactly like ideal English). Our 2 (speaker gender) × 2 (speaker social class) mixed ANOVA revealed no effect of gender $F(1,198) = 1.91$, $P = 0.168$, no interaction $F(1,198) = 0.45$, $P = 0.502$, and consistent with our second hypothesis, a significant effect of social class $F(1,198) = 613.40$, $P < 0.001$ (Fig. 2). As predicted, despite not having information about the actual social class of speakers, higher-social-class speakers were judged by perceivers as speaking more consistent with subjective standards for ideal speech than relatively lower-social-class speakers. Overall, the results of studies 2 and 3 provide evidence in support of the prediction that deviations from speech norms, defined by digital standards or subjective judgments, are associated with accurate judgments of social class speech patterns.

In study 4 we employed an experimental paradigm to differentiate the capacity of spoken versus written language for creating social class signals in brief speech. Part of our second hypothesis predicts that how people speak will communicate social class over and above what people say. To test this hypothesis, study 4 used a between-subjects design where 302 participants listened to or read a transcript of 90 s of a self-description generated by 35 speakers from IDEA. The speech or transcript was presented in 15-s increments, and participants estimated the social class of speakers by ranking the speaker at each increment on the same 10-rung ladder representing ascending levels of social class as in study 2. We computed an average correlation to assess the association between the speaker's actual social class and perceiver estimates of the speaker's social class. The computed average correlation across all ratings revealed a significant effect as a function of stimuli domain $T(282.51) = 3.69$, $P < 0.001$, $D = 0.44$, such that a positive association between speaker social class and perceiver-rated social class emerged in the speech condition that was larger than the transcript condition. The average correlation across all time points revealed a significant positive association between speaker social class and perceiver-judged social class in the speech condition $R = 0.21$, $T(148) = 2.61$, $P = 0.010$. In contrast, a negative association emerged in the transcript condition $R = -0.22$, $T(148) = -2.64$, $P = 0.009$ such that higher perceived social class was associated with lower actual social class. The negative association in the transcript condition is unexpected but could be a function of people more carefully controlling what they say versus how they speak (18). One expectation from this perspective is that what people say would start to reveal information about social class after enough about a person's background was expressed over the course of an interaction. The significant linear improvement in accuracy in the transcript condition is suggestive of this possibility $F(1,138) = 5.96$, $P = 0.017$.

These results indicate that linguistic data in speech (e.g., pronunciation, tone, rhythm) provide for accurate inferences of the social class of speakers over and above the written content of the speech. We also found more evidence for the rapid onset of above-chance accuracy in social class perception, as a significant association between perceived social class and speaker social class emerged in the speech condition as early as 30 s into the stimuli presentation $R = 0.22$, $T(144) = 2.66$, $P = 0.009$.

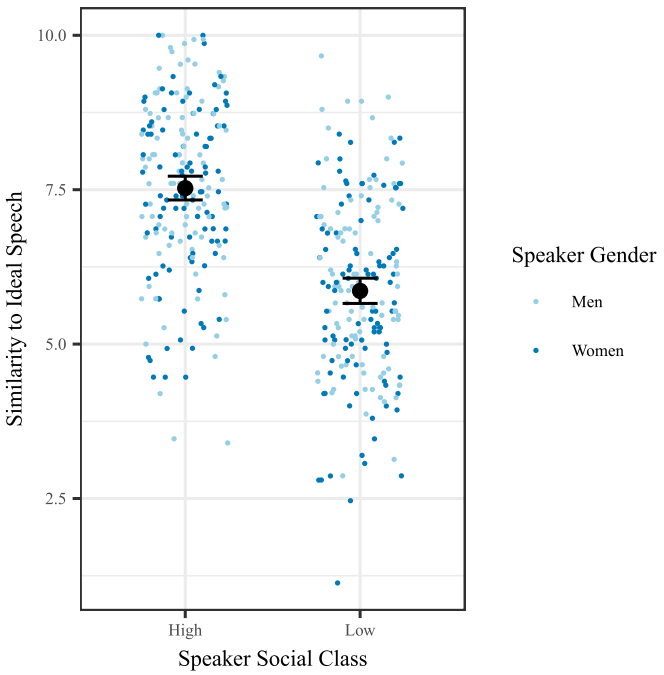


**Fig. 2.** Perceiver judgments of speaker utterance similarity to ideal speech, with higher scores indicating greater similarity as a function of the social class of the speaker. Error bars indicate 95% confidence intervals surrounding the mean. Individual dots indicate the mean of each perceiver in the sample coded by speaker gender, which did not influence perceptions of similarity to ideal speech.

**Reproduction of Social Class in Hiring Decisions.** We conducted study 5 to examine our third hypothesis that accurate perceptions of social class in brief speech bias hiring decisions and therefore reproduce inequality. In the study we exposed a sample of 274 perceivers with past hiring experience to 20 prospective job candidates recruited from the broader New Haven, Connecticut, community who varied in terms of social class. Prior to conducting an actual job interview, these job candidates had answered a preinterview question "How would you describe yourself?" in an impromptu recorded discussion just before the formal interview. The perceivers with hiring experience listened to or read a transcript of these brief recordings, devoid of the actual job interview responses or a resume, and were asked to make successive judgments of the candidate's professional qualities, starting salary, signing bonus, and their perceived social class on the same 10-rung ladder used in studies 2 and 4.

The experiment was designed as a 2 (speaker social class) × 2 (speech or text) within-subjects study. A repeated measures ANOVA on perceptions of social class revealed a main effect of communication domain $F(1,273) = 67.61$, $P < 0.001$, a main effect of social class $F(1,273) = 435.13$, $P < 0.001$, and a significant interaction $F(1,273) = 16.43$, $P < 0.001$ that replicated the pattern from study 4—higher-social-class applicants were judged as higher in social class than lower-social-class applicants by our sample of perceivers with hiring experience. This was true in both conditions but was especially true when the perceivers listened to the speech of the applicants ($M_{High} = 5.50$, $SD_{High} = 1.23$; $M_{Low} = 4.55$, $SD_{Low} = 1.17$) versus read a transcript of what was said ($M_{High} = 4.97$, $SD_{High} = 1.23$; $M_{Low} = 4.36$, $SD_{Low} = 1.29$).

Because the class-signaling effect was particularly strong for speech we focus our remaining analyses on judgments of the speech of applicants made by perceivers with hiring experience (*SI Appendix*). Despite having no information on their actual qualifications, perceivers with hiring experience judged higher-social-class applicants as more likely to be competent for the job $T(273) = 11.32$, $P < 0.001$, $D = 0.69$, a better fit for the job $T(273) = 10.9$, $P < 0.001$, $D = 0.66$, as more similar to the perceivers with hiring experience $T(273) = 11.43$, $P < 0.001$, $D = 0.69$, and as more likely to be hired for the job $T(273) = 10.16$,

$P < 0.001$, D = 0.62 than relatively lower-social-class applicants. Notably, the effect of fit and similarity is consistent with prior work, indicating that a feeling of excitement or familiarity could also explain class bias in hiring decisions (23). Additionally, given that the sample in this study consisted of people with hiring experience who tend to be higher in social class, these findings about fit and similarity suggest that cultural matching may be a second viable explanation of these results (13, 19).

We also asked the perceivers with hiring experience to indicate a starting salary and signing bonus for the applicants. Again, perceivers offered higher-social-class applicants a higher starting salary T(273) = 9.34, $P < 0.001$, D = 0.57 and a larger signing bonus T(273) = 7.97, $P < 0.001$, D = 0.48 than relatively lower-social-class applicants (Fig. 3). Salary and bonus judgments of applicants before a job interview were consistent with our third hypothesis in that brief speech cues of social class biased salary and signing bonus decisions in favor of higher-social-class applicants.

## Discussion

Economic and social inequality, particularly when accompanied by beliefs in economic mobility that are unsupported by reality, are a fundamental challenge to any free society (2). In this research, we show one means by which social class can be impermeable and inequality perpetuated—through the subtle and stereotype confirmatory inferences that perceivers make about the brief speech of strangers. Across 5 studies, these brief speech patterns elicited above-chance accuracy in perceptions of social class. And although these perceptions of social class only elicited minimal accuracy relative to random chance, it was enough in study 5 to produce a reproduction of economic inequality through biased hiring practices that unfairly advantage higher-social-class people to the detriment of their relatively economically disadvantaged counterparts.

The focus of this research on social class rather than on other overlapping social categories where speech perceptions elicit above-chance accuracy is notable and intentional. In our study, social class was relatively more concealable in speech than were these other social categories, and yet the potential concealment of social class may lend it to naturally bias the kinds of hiring decisions that we document. Specifically, managers may inadvertently consider class signals to be evidence of job-specific competence and fit, consistent with our results from study 5, such that hiring managers may intentionally seek out these cues in applicants in ways that would be illegal if racial or gender cues were utilized in a similar fashion (24). Thus, class-relevant cues may be used as a means to perpetuate racial inequality, given the overlap between social class and race in America (24). Of course, the reverse is also a possibility, and future research that examines how cues of social class perpetuate these inequalities independent of and in tandem with racial stereotypes is an important topic of future inquiry (25). Likewise, future research must clarify the mechanisms at work in the process of social class perception, and specifically, whether inferences of competence and fit are informed by social class cues as we have argued, or instead, inform those social class inferences.

Exploratory analyses indicate the potential for cultural matching to influence social class perception and bias in hiring decisions (13, 19) and the need for future research on this topic. In study 1 we found that more highly educated participants were more

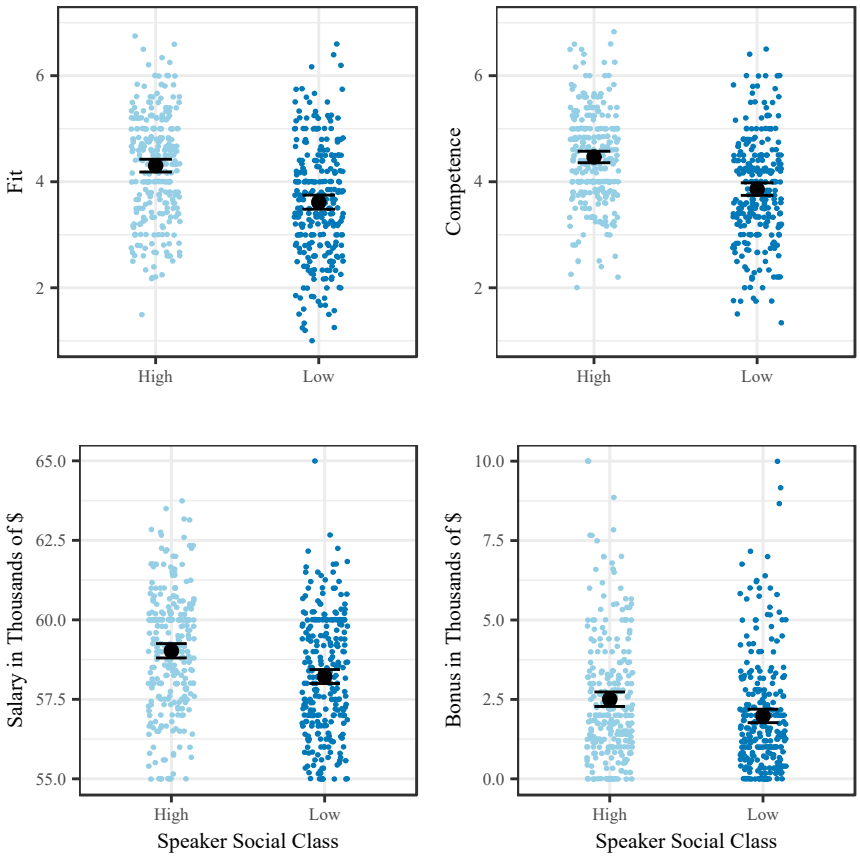


**Fig. 3.** Average judgments of high- and low-social-class applicants for fit for the job (*Top Left*), competence for the job (*Top Right*), starting salary (*Bottom Left*), and signing bonus (*Bottom Right*) made by perceivers with hiring experience. Error bars indicate 95% confidence intervals surrounding the mean judgment of applicants. Individual dots represent mean judgments for each individual perceiver as a function of applicant social class.

accurate in determining the social class of college- versus high school-educated speakers (*SI Appendix*). Similarly, study 5 found higher- versus lower-social-class applicants were judged as a better fit for the job by our sample of relatively higher-social-class perceivers with hiring experience. In terms of bias, in studies 2, 4, and 5 there was some evidence of self-referencing in social class judgments: Perceiver judgments of social class were positively correlated with their own social class (*SI Appendix*). Future studies should also examine how potential conflicts in social class indicators (e.g., low income, high educational attainment) shape accuracy in social class perception, as well as how these perceptions unfold over time. Given the cultural origins of models of social class (26), future studies that examine potential conflicts could determine what aspects of social class contribute most to this socialization process.

It is notable that such a basic and fundamental process of social perception through speech, leveraged automatically to form initial impressions of others, can simultaneously work to reproduce inequality in society. In terms of policy, the studies highlight the persistent need for organizational oversight to combat these biases in hiring decisions (17, 19). As firms look to create more equitable hiring practices, constraining the ways in which informal interview settings can perpetuate inequalities by standardizing or avoiding the use of interviews is a domain of future inquiry (27), although these policy proposals would not eliminate the ways that bias enters into hiring practices at other stages of the process (28).

One alternative approach highlighted by the challenges identified in this work is the proactive identification of lower-status identities, based in class or race, as a deliberate tool for promoting diversity in job candidates (29). In this fashion, hiring managers could flag candidates who appear, during initial screening interviews, to come from lower socioeconomic backgrounds and actively recruit and promote the hiring of these candidates. However, if this procedure were to be effective, the direct linkage between judgments of social class and specific judgments of fit or competence must be undone in the minds of managers and in everyday people more broadly. It is these unchecked associations between fit, competence, and social class that present a significant obstacle to class mobility. Research that tests these associations by, for instance, evaluating the long-term impact of hiring practices that explicitly value lower-status identities promises to reveal pathways to equity and opportunity.

## Materials and Methods

All studies were approved by the institutional review board at Yale University, and participants, all current US residents, consented to participate in the studies. Each study employed a speaker and a perceiver sample. All materials and data for analyses can be found at the Open Science Framework (https://osf.io/tmsbq/). Across studies we attempted to maximize our statistical power by employing repeated measures designs when possible. For between-subjects experiments we set a sample size goal of 100 people per condition to detect the average effect in social psychology, a D = 0.40, with 80% statistical power (30). Across all samples we define social class as socioeconomic position in society, and so we measure that position based on a composite of available indicators of social class measured in each dataset that is standardized using *z* scores and then averaged (31). For perceptions of social class in studies 2 through 5, we asked participants to estimate participant socioeconomic position on a 10-rung ladder of subjective socioeconomic status (22). Because study 1 relies on a signal detection paradigm we focus on educational attainment because it can be split into a binary outcome of high school versus college graduation.

**Study 1.** The speaker sample ($n$ = 246) for study 1 was collected by the International Dialects of English Archive (IDEA). IDEA is a nonprofit interested in cataloging different dialects throughout North America. For the speakers at IDEA, 2 recordings were created along with demographic details about the speakers. The recordings included 1 narrative describing the personal characteristics of the speaker and some of their life history. The second recording is a reading of 1 of 7 stories used in educational contexts (e.g., "Comma gets a cure"). As part of a prior research project we found 7 words that are common to all speakers in the IDEA sample across the stories and narratives (i.e., "And," "From," "Thought," "Beautiful," "Imagine," "Yellow," and "The") (10). We used these common words in study 1 as stimuli for perceivers. In prior research we also coded the occupational prestige of the speakers using common occupation codes (32). Of the speaker sample, 189 reported their educational attainment and were included as speaker stimuli in our study.

The perceiver sample of study 1 included 229 participants recruited through Amazon Mechanical Turk for a 20-min survey. After indicating their consent, perceivers were informed that they will be listening to a series of audio clips of isolated words spoken by an individual and that they would be asked to estimate the speaker's race, gender, age, and educational attainment. Perceivers were then given a subset of 27 randomly selected speakers from our IDEA sample and asked to listen to the 7 words. Each word was presented as isolated speech without additional context. We then used a signal detection paradigm and asked perceivers 4 questions about the speaker's age, gender, race, and social class as described in the main text. The survey ended with perceivers completing demographic items including age, gender, educational attainment, income, and subjective socioeconomic status ladder (24). To calculate a metric of accuracy we determined the number of times a perceiver indicated the correct answer for each of the 4 category questions and computed a percentage of correct responses across all of the stimuli for a total percentage of correct responses as in prior research (11).

**Study 2.** In study 2 the speaker sample was the same IDEA sample as in study 1. Speakers were included in our study 2 analysis of phoneme pronunciation associations to speaker social class if they had completed demographic measures of social class calculated as a composite of occupational prestige and educational attainment ($n$ = 189). Speakers were included in our analysis of phoneme pronunciation associations with perceived social class if they had an estimated social class calculated based on perceiver sample ratings ($n$ = 213) (10). Results do not change from those reported if we confine our sample to only those speakers who reported both occupation and educational attainment.

For the purpose of study 2, a sample of 3 trained coders set out to determine if speech pronunciation patterns in the 3 multisyllable words would be similar to digital standards of speech set by technology firms. To that end, coders were given a broad overview of the basic linguistic concepts of phonemes (i.e., the smallest unit of sound in speech) and syllables (i.e., a unit of human speech interpreted as a single sound) in a meeting led by the study first author. Coders were then asked to listen to the digital standard for speech for the 3 multisyllable words "Beautiful," "Imagine," and "Yellow" with a focus on how the specific phonemes are produced. In the meeting, the first author discussed the phonemes with the research team and answered questions about judging the sample sounds as consistent (or not) with these digital standards. After going through 10 trial cases as a group, the coders then independently listened to the corresponding words spoken by our speaker sample. For each syllable unit, coders rated whether the speech deviated from this digital standard "0" or adhered to this standard "1." Coders showed significant internal consistency as indicated by a significant intraclass correlation of coded speech pronunciation across all 3 words $R_{ICC(2)} = 0.32$, $P < 0.001$. We then computed correlations between our overall index of similarity to the digital standard, speaker social class, and perceived social class. Examples of digital speech standards as well as speakers with high versus low consistency with these standards can be found online (https://tinyurl.com/y4cjlwpo). The study 2 perceiver sample consisted of 568 participants recruited through Qualtrics panels who listened to the 7 words presented in study 1 and rated speakers on subjective socioeconomic status (22).

**Study 3.** In study 3, our speaker sample consisted of 5 men and 5 women from the IDEA sample chosen because they were among the highest and lowest in social class on self-report indices. For occupation codes, our higher-social-class speakers had occupations that included university professors and lawyers with at least a college degree. For our lower-social-class speakers their occupation codes were consistent with service workers and none had graduated with a 4-year college degree.

Our perceiver sample consisted of 200 participants recruited from Mechanical Turk, who were asked to make general ratings of speech style. The perceivers listened to the 3 multisyllable words (i.e., "Yellow," "Imagine," and "Beautiful") of 5 of the speakers using a 2 (speaker social class) × 2 (speaker gender) mixed design where speaker gender was the between-subjects factor and speaker social class was the within-subjects factor.

Perceivers were instructed to think about their own subjective ideal for proper American English pronunciation and to judge how similar words spoken by strangers are to this ideal. To avoid biasing participant ratings by cuing social class, we gave participants no additional instructions. Participants then listened to each individual word spoken by the sample of 5 speakers in random order and judged how similar this speech was to "ideal speech" using an 11-point scale (0 = not at all similar to ideal speech, 10 = exactly like ideal speech).

**Study 4.** The speaker sample for study 4 again consisted of 50 speakers from the IDEA sample, except in this study, 90 s of narrative recordings were presented to a panel of perceivers in 15-s increments. Our main criteria for inclusion in the speaker sample was having a narrative recording of at least 90 s. Within these narratives, speakers would discuss their family history, the place they live currently, and sometimes they would talk about how they think about their own dialect in the context of the IDEA recording. Although it was rare given American taboos about mentioning social class (9), we excluded speakers who explicitly mentioned aspects of their social class (e.g., occupation title).

The perceiver sample consisted of 302 participants recruited from Mechanical Turk. These perceivers were exposed to 5 random speakers from the subset of 50. The study was designed as a between-subjects experiment with communication method as the experimental manipulation where perceivers in the speech condition listen to speech in 15-s increments or the text condition where perceivers read equivalent text. Perceivers estimated the social class of the speaker using the same 10-rung ladder measure as in study 2.

We used profile correlations, which are average correlations between perceiver ratings of social class and actual speaker social class at each of the 15-s time intervals and then a composite average correlation across all speakers and time intervals (33), to indicate accuracy. For this metric, a correlation of zero indicates no association between perceiver and speaker social class, whereas a significant positive correlation between these indices is indicative of above-chance accuracy in perceiving social class.

**Study 5.** Our speaker sample consisted of 20 job candidates recruited from a community sample of the surrounding New Haven County of Connecticut in the United States. These job applicants had come to the behavioral laboratory at Yale University to take part in a study examining best practices for job interview performance. Job candidates had arrived at the laboratory to work on their job interview skills in the context of a laboratory manager position described as requiring a broad range of skills that involved some technical ability, social aptitude, and a willingness to learn new things. The 20 prospective job candidates were chosen from a larger pool of 110 applicants because they represented the widest disparity between high and low social class.

Prior to our actual video-recorded job interviews conducted by a panel of research associates where candidates described their specific skills that would assist them in the job, our job candidates were asked the question "How would you describe yourself?" This was intended as a simulation for some of the small talk that occurs prior to an actual job interview between a candidate and a hiring manager. Importantly, we removed all explicit mentions of social class (e.g., current occupation, educational attainment). On average, the stimuli were brief, although duration did not vary by social class (*SI Appendix*).

Our perceiver sample for study 5 consisted of people with hiring experience recruited through Prolific Academic (34). Participants were recruited from the United States, and we insured that perceivers had significant hiring experience through 2 screener questions, which left us with a total perceiver sample of $n = 274$. Perceivers with hiring experience listened to speech or read equivalent transcripts of the job applicants and made candidate impressions without any information about the actual qualifications of candidates or their demographic information. The impressions (i.e., "How competent is this person?," "How much would you want to hire this person?," "How much do you think this person would fit in with your organization?," "How similar is this person to you?") were made using a scale from 1 (not at all) to 7 (very much). Although we present analyses for each dimension separately in the main text, we aggregate in the *SI Appendix* given the high internal consistency of these impressions, $\alpha = 0.967$, M = 3.53, SD = 0.81.

To determine if our sample of people with hiring experience was also cognizant of the social class of speakers we asked these respondents to estimate the perceived social class of the speakers based on the presented speech or text as in the prior studies (22). Participants rated subjective social class from 1 (bottom rung) to 10 (top rung), (M = 4.84, SD = 1.08).

We also asked perceivers with hiring experience to make a decision about the starting salary and signing bonus for each candidate based on a starting salary of $60,000. Participants responded on a scale from $55,000 to $65,000 for salary (M = $58,270, SD = $1,680) and a scale from $0 to $10,000 for bonus, (M = $2,010, SD = $1,680).

**ACKNOWLEDGMENTS.** We thank members of the Connecticut Social Interaction Laboratory and especially Monique Baca for work contributing to the development of this research. The research was funded by the Yale School of Management at Yale University and completed as part of the summer internship in organizational behavior at Yale University.

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