

e social perception of intervocalic /k/ voicing in Chilean Spanish

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In this study, we investigate what social meaning is attributed to a nascent change in progress in Chilean Spanish, examining whether intervocalic voicing of the phonologically voiceless stop /k/ affects listener judgments along several perceptual scales. Eight brief excerpts of spontaneous speech were digitally manipulated to vary only in voicing in tokens of /k/, and thirty listeners responded via an online experiment. We found that listeners are not sensitive to voicing along three of the measured scales and are not sensitive to voicing at all in female speech. We also determined that listeners are only sensitive to intervocalic voicing when assigning values of Chilean identity to male speakers, and that this effect is mitigated by headphone use. Some of listeners' insensitivity matches previous production data in this dialect, while we expected some sensitivity along other measures but found none. We posit that this mismatch is due to the salience of the variable: because listeners may be unfamiliar with intervocalic voicing of /k/, they have not yet indexed voicing of intervocalic /k/ with particular speaker features, aligning with Campbell-Kibler (2009).

1. Introduction

Chile represents a fascinating linguistic laboratory to explore social perceptions, as Chilean Spanish has been described as showing relatively high geographic uniformity with respect to pronunciation (e.g., Lipski, 1994). Sadowsky and Aninao (forthcoming) state that this is a result of a hyper-centralization of political, cultural, economic and social influence and power in the capital city of Santiago. However, while Chile lacks in geographical variation, it shows considerable levels of sociolinguistic complexity. Numerous studies have shown that this variety of Spanish is stratified along the lines of a number of sociolinguistic factors, such as age, gender, and socioeconomic status (e.g., Figueroa, Salamanca, & Ñanculeo, 2013; Rogers, 2016; Rogers & Mirisis, 2018; Sadowsky, 2012, 2015; Soto-Barba,

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Previous research has shown that even small phonetic differences across stimuli are enough to exert an influence on how listeners perceive social characteristics of the speaker. Listeners have been shown to be sensitive to perceptions of speaker sex (Lass, Almerino, Jordan, & Walsh, 1980; Traunmüller, Eriksson, & Ménard, 2003), ethnicity (Purnell, Idsardi, & Baugh, 1999; Tomás, Lass, & Lass, 2010), social class (Labov, 1966, 2006; Walker, 2007), education levels (Campbell-Kibler, 2005), region of origin (Bezooijen & Gooskens, 1999; Boomershine, 2006; Clopper & Pisoni, 2004; Labov & Ash, 1997; Preston, 1989; Schmidt, 2013; Wolfram, Hazen, & Schilling-Estes, 1999), age (Drager, 2011) and sexual orientation (Mack, 2011; Munson, McDonald, DeBoe, & White, 2006). We therefore aim to determine whether a small phonetic difference of voicing of /k/ in intervocalic position is detectable by listeners, and if so, how this phonetic di

to remain the same across both guises in order to ensure that only the voicing of the segments differed between guises. We acknowledge that use of spontaneous (sociolinguistic interview) speech for a Matched-Guise Task is slightly atypical. However, similarly to Campbell-Kibler (2007), we chose to sacrifice some control over the utterance content itself (which was then entered into the statistical models as a random effect) for the ability to utilize more naturalistic utterances that

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video format created via *iMovie* (2018). Videos were uploaded to YouTube via the “Unlisted” setting to ensure that no one but the authors and participants would be able to access the clips.

Following Walker et al. (2014) and Chappell (2016), listeners were asked to pay attention to each recording and evaluate the speaker according to a set of social characteristics previously used in other perception studies (Chappell, 2016; Walker et al., 2014). Listeners were asked to move a slider bar according to their perception of the speaker along 8 scales: social class (*de clase baja/de clase alta* ‘high/low class/), education (*menos educad@/muy educad@*, ‘less/more educated’), surety of oneself (*segur@/insegur@ de sí mism@*, ‘secure/insecure of him/herself’), pleasantness (*antipátic@/simpátic@*, ‘unkind/kind’), masculinity or feminin-

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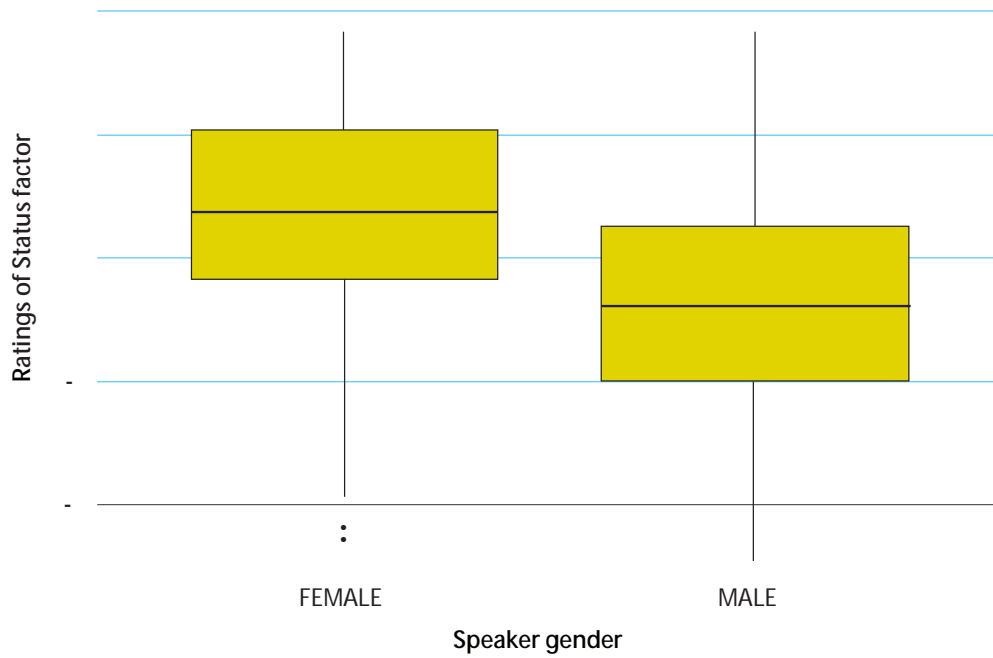


Figure 1. Listeners' ratings of status factor according to sex of the stimuli speaker. No other interaction terms or main effects were significant in this model.

Niceness

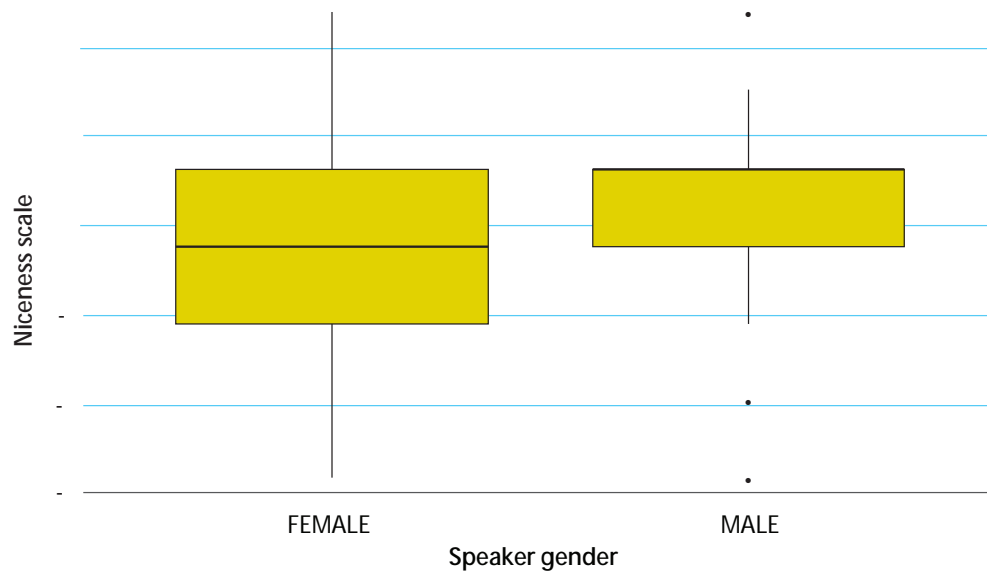


Figure 2. The effect of speaker gender on ratings of niceness

Chilean identity

We now turn to the third scale of evaluation, or evaluation of Chilean identity. No differences were found among ratings of female speakers for this variable, so in Table 6 below, we have subset the data to represent responses only to male stimuli speakers.

Table 6. Best fit mixed-effects model taking Chilean identity as dependent variable (responses to male stimuli speakers only)

Fixed effect	Coefficient	Standard error	t-value	p-value
Intercept	-.09	.14	-.61	.55
Stimuli voicing				
Voiceless	Ref	–	–	–
Voiced	.26	.10	-2.55	<.05
Headphones				
No	Ref	–	–	–
Yes	.46	.18	2.56	<.05
Random Effects	Variance Component	Degrees of Freedom	χ^2	p-value
Participant	.17	1	20.16	<.001

For the first time, we see a main effect for stimuli voicing. Specifically, voiced tokens spoken by male speakers are rated as more Chilean than voiceless tokens, as shown in Figure 3.

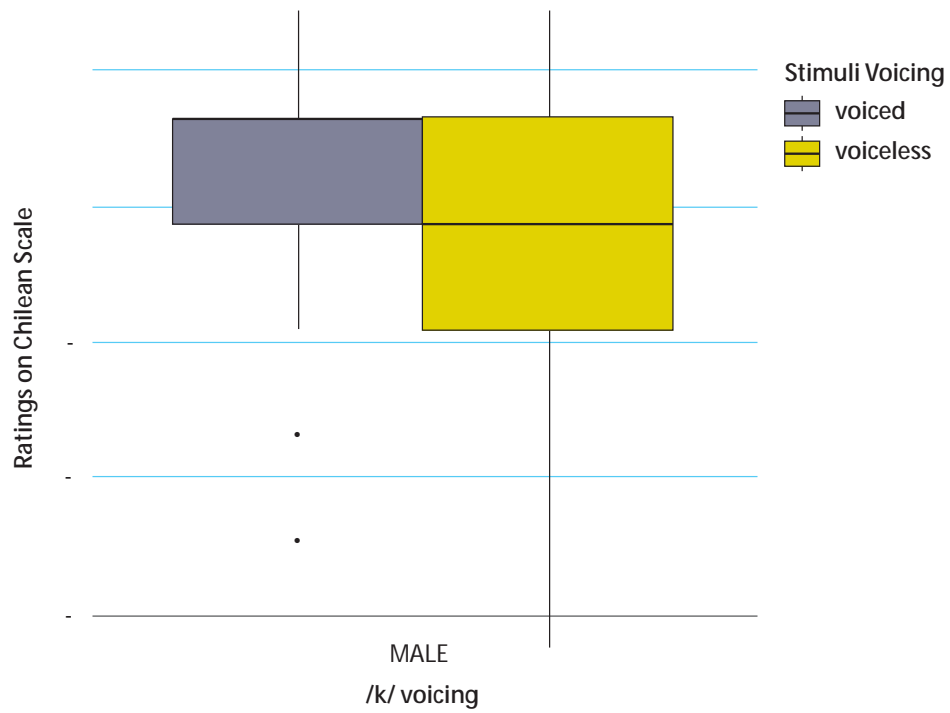


Figure 3.

Table 7. Best fit mixed-effects model taking perceived age as dependent variable

Fixed effect	Coefficient	Standard error
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age or gender, but for local identity. Specifically, males were rated as more Chilean (more local) when they produced a voiced /k/.² On the other hand, in spite of the tendency for young, female speakers to voice /k/ more than other groups (Rogers, 2017; Rogers & Mirisis, 2018), voicing was not a factor in the listeners' perception of female speakers' Chilean identity, status, age, or niceness.

In order to explore these mismatched findings, we return to the assumption of the close connection between speech production and perception described in Section

salient for listeners in the present experiment, there appears to be a looser connection between social perceptions and production.

In making this claim, we acknowledge some potential limitations. First, a higher number of participants could increase the power of the statistical tests conducted in this analysis and allow for a more nuanced evaluation of the dataset, for example, to uncover a potential relationship between listener age and sensitivity to /k/ voicing. Additionally, it is possible that there are slight differences

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- Herrera, J. (1989). Sonorización de oclusivas sordas en Tenerife. In J. Dorta & J. Herrer (Eds.), *Tres estudios de Fonética* (pp. 111–121). La Laguna: Universidad de La Laguna.
- Hualde, J. I., Simonet, M., & Nadeu, M. (2011). Consonant lenition and phonological recategorization. *Laboratory Phonology 2*, 301–329. <https://doi.org/10.1017/S0022268311000111>
- Hualde, J. I. (2005). *The sounds of Spanish*. Cambridge: Cambridge University Press.
- iMovie. (2018). Video editing software, vers. 10.1.8. Apple Inc. 2018. Mac OS X 10.13.6.
- Janson, T., & Schulman, R. (1983). Non-distinctive features and their use. *Journal of Linguistics* 19(02), 321–336. <https://doi.org/10.1017/S002226830000555>
- Johnson, K. (2005). Speaker normalization in speech perception. In D. B. Pisoni & R. E. Remez (Eds.), *The handbook of speech perception* (pp. 363–389). Oxford: Blackwell. <https://doi.org/10.1002/9780470757024.ch15>. <https://doi.org/10.1017/S0022268305000111>
- Kerswill, P., & Williams, A. (2002). “Salience” as an explanatory factor in language change: Evidence from dialect levelling in urban England. In M. Jones & E. Esch (Eds.), *Language change: The interplay of internal, external, and extra-linguistic factors* (pp. 81–101). Berlin: Mouton de Gruyter. <https://doi.org/10.1017/S0022268302000111>
- Klatt, D. H. (1976). Linguistic uses of segmental duration in English: Acoustic and perceptual. *Journal of the Acoustical Society of America* 60(1), 127–141. <https://doi.org/10.1121/1.344000>

- Sadowsky, S. (2012). Sociolinguistic stratification and phonetic description of the vowel allophones of Chilean Spanish (Unpublished doctoral dissertation). Universidad de Concepción, Chile.
- Sadowsky, S. (2015). Variación sociofonética de las consonantes del castellano chileno. *Sociolinguistic Studies* 9(1), 71–92.
- Sadowsky, S., & Aninao, M. J. (Forthcoming). Spanish in Santiago Chile: Globalization, internal migration and ethnicity. In A. Lynch (Ed.), *Spanish in the global city*. New York, NY: Routledge.
- Schmidt, L. (2013). Regional variation in the perception of sociophonetic variants of Spanish /s/. In A. M. Carvalho & S. M. Beaudrie (Eds.), *Selected proceedings of the 6th Workshop on Spanish Sociolinguistics* (pp. 189–202). Somerville, MA: Cascadilla Proceedings Project.
- Schmidt, L., & Willis, E. (2011). Systematic investigation of voicing assimilation of Spanish

- Wickham, H., Francois, R., Henry, L., & Müller, K. (2017). *dplyr: A grammar of data manipulation* (Version R package version 0.7.4). Retrieved from <<https://CRAN.R-project.org/package=dplyr>>
- Wolfram, W., Hazen, K., & Schilling-Estes, N. (1999). Dialect change and maintenance on the Outer Banks.