Journal of Phonetics 52 (2015) 13–25

Contents lists available at ScienceDirect

Journal of Phonetics

journal homepage: www.elsevier.com/locate/phonetics

Research Article

Judgments of self-identified gay and heterosexual male speakers: Which phonemes are most salient in determining sexual orientation?

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ARTICLE INFO

Article history:
Received 1 March 2013
Received in revised form
18 December 2014
Accepted 9 April 2015

Keywords:
Indexical characteristics
Sexual orientation
Gay and heterosexual male speech
Vowels and consonants
Sociophonetics

ABSTRACT

While numerous studies have demonstrated that a male speaker's sexual orientation can be identified from relatively long passages of speech, few studies have evaluated whether listeners can determine sexual orientation when presented with word-length stimuli. If listeners are able to distinguish between self-identified gay and heterosexual male speakers of American English, it is unclear whether they form their judgments based on a phoneme, such as a vowel or consonant, or multiple phonemes, such as a vowel and a consonant. In this study, we first found that listeners can distinguish between self-identified gay and heterosexual speakers of American English upon hearing word-length stimuli. We extended these results in a separate experiment to demonstrate that listeners primarily rely on vowels, and to some extent consonants, when forming their judgments. Listeners were able to differentiate between the two groups of speakers for each of the vowels and three of the seven consonants presented. In a follow-up experiment we found evidence that listeners' judgments improved if they were presented with multiple phonemes, such as a vowel and /s/. These results provide important information about how different phonemes can provide discriminant information about a male speaker's sexual orientation.

1. Introduction

It has been established that upon hearing a spoken utterance, listeners are able to identify many of the speaker's personal, or indexical, characteristics. For example, listeners are able to distinguish between male and female speakers of American English (Bachorowski & Owren, 1999) and British English (Whiteside, 1998). A similar result was also found for speakers of American English who were African-American and European-American (Thomas, Lass, & Carpenter, 2010; Thomas & Reaser, 2004; Walton & Orlikoff, 1994).

Additionally, listeners are able to identify more subtle indexical characteristics, such as sexual orientation. Numerous perceptual studies have discovered that listeners can accurately identify the self-stated sexual orientation of male speakers who speak American English (Gaudio, 1994; Linville, 1998; Munson, McDonald, DeBoe, & White, 2006), male speakers who speak Canadian English (Smyth, Jacobs, & Rogers, 2003), and female speakers who speak American English (Moonwomon-Baird, 1997). Specifically these early perceptual studies (Gaudio, 1994; Linville, 1998; Smyth et al., 2003) discovered that listeners distinguished between gay and heterosexual male speakers after hearing a relatively long speech segment that ranged in length from 15 to 90 s. A more recent investigation (Munson et al., 2006) demonstrated a similar result with spoken utterances that had a shorter duration of three monosyllabic words. This finding suggests that sexual orientation can be identified with a relatively small amount of acoustic information. It is unclear whether listeners are able to make this identification with even less acoustic information.

The first purpose of the current study was to determine whether listeners can distinguish between self-identified heterosexual male talkers of American English and self-identified gay male talkers of American English when presented with word-length stimuli. We expected that our findings would align with previous studies (Munson et al., 2006). The second purpose was to investigate which acoustic cues, such as vowels or consonants, listeners rely on when forming their judgments. Furthermore, this study investigated whether listeners rely on a single phoneme or multiple phonemes when differentiating between gay and heterosexual male speakers.

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0095-4470/$ - see front matter © 2015 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.wocn.2015.04.001

1.1. Vowels

Experimental evidence indicates that gay and heterosexual male talkers of both American English (Munson et al., 2006; Pierrehumbert, Bent, Munson, Bradlow, & Bailey, 2004) and Canadian English (Rendell, Vasey, & McKenzie, 2008) tend to produce certain vowels differently. These three investigations found production differences with /æ/, as in *gas*, whereas results for other vowels were inconsistent. Pierrehumbert et al. (2004) found that gay and heterosexual men produced /ɑ/, as in *box*, and /i/, as in *feet*, differently, while Rendall et al. (2008) found differences among /iː/, /ʌ/, as in *but*, /oʊ/, as in *boat*, /uː/, as in *boot*, and /ə/, as in *the*. Munson et al. (2006) found differences for /ɛ/, as in *bell*. Furthermore, it is hypothesized that listeners rely on these production differences when identifying a speaker's sexual orientation. Munson et al. (2006) discovered that listeners were better at differentiating between gay and heterosexual male speakers when they heard a series of words that contained low front vowels compared with a series of words that included back vowels. Moreover, the researchers posited that the *F*1 frequency of low front vowels and the *F*2 frequency of back vowels influenced listeners' judgments. Listeners' sexual orientation judgments may be influenced by a wide-range of vowels.

1.2. Consonants

Theorists have argued that while much of the work in the field of sociophonetics has focused on vowels, additional attention should be directed to consonants (Hay & Drager, 2007; Thomas, 2002). With respect to sexual orientation, numerous researchers have concluded that self-identified gay and heterosexual male speakers of American English tend to produce /s/ differently. The stereotypical gay male voice exhibits longer /s/ durations (Crist, 1997) and the spectra of /s/ produced by gay men is more negatively skewed compared with that of heterosexual men (Munson et al., 2006). It is presumed that listeners may also rely on these acoustic differences when determining the sexual orientation of male speakers. For example, listeners' identification of gay speakers is strongly predicted by higher peak /s/ frequency values and longer /s/ durations (Linville, 1998), and /s/ skewness has been shown to influence sexual orientation judgments (Munson et al., 2006). It has also been demonstrated that speakers are perceived as gay when utterances included non-canonical variants of /s/, such as a frontally misarticulated token of /s/ (Mack & Munson, 2012). While these investigations provide evidence that gay and heterosexual male speakers produce /s/ differently and listeners are relying on these acoustic differences when distinguishing between these speakers, it remains unclear whether listeners are relying on other consonants when forming their judgments.

1.3. Multiple acoustic cues

While listeners may rely on individual phonemes to identify a speaker's indexical characteristics (Linville, 1998; Mack & Munson, 2012; Munson et al., 2006), it has also been argued (Campbell-Kibler, 2007, 2011; Thomas, 2002; Thomas et al., 2010) that listeners tend to rely on several acoustic cues, such as segmental quality and prosody, and not a single cue, when determining a speaker's indexical characteristics. With respect to sexual orientation, Campbell-Kibler (2007, 2011) asserted that features such as pitch, differences in production of /s/ and /z/, and the English variable (ING) helped listeners distinguish between gay and heterosexual male talkers of American English. The *–ing* variant enhances the perceived strength of a gay-sounding accent (Campbell-Kibler, 2007), and utterances that contain fronted /s/ and /z/ tokens, compared with mid and backed tokens, increase the perception of gayness (Campbell-Kibler, 2011). Finally, a complex picture emerges when listeners describe speech containing fronted and backed tokens of /s/ along with *–ing*. When presented with utterances including backed /s/ tokens, listeners rate male speakers as unintelligent, masculine, and heterosexual. When presented with utterances including fronted /s/ tokens and the *–ing* variant, listeners rate male speakers as more intelligent, effeminate, and gay (Campbell-Kibler, 2011). It is likely that listeners are basing their sexual orientation judgments on several acoustic cues.

1.4. Research questions

The first research question we investigated in the present study was whether listeners can differentiate between self-identified gay and heterosexual male talkers of American English when presented with word-length stimuli. We addressed this question in Experiment 1. The second research question was to identify which acoustic cues listeners rely on when identifying the sexual orientation of the male speakers. Experiment 2 investigated whether listeners could rely on a single phoneme, such as a vowel or consonant, when forming their judgments, while Experiment 3 addressed whether listeners relied on multiple phonemes when forming their judgments.

2. Experiment 1

Our purpose in Experiment 1 was to determine whether listeners can distinguish between self-identified gay and heterosexual male speakers of American English upon hearing word-length stimuli. To accomplish this objective, speech samples were collected from gay and heterosexual male speakers. Next, participants indicated whether the speaker sounded gay or heterosexual upon hearing word-length stimuli. We hypothesized that listeners would be able to make this determination based on findings from previous studies (Munson et al., 2006).