LISTENER-IDENTIFIED PHONETIC CORRELATES OF GAY-, LESBIAN- AND STRAIGHT-SOUNDING SPEECH

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This dissertation is dedicated to my beloved sister Federica Piccolo, whose economic and emotional support made it possible for me to travel and enjoy my life as a researcher.

I love you.
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ABSTRACT

The sociophonetic study of language, gender, and sexuality seems to have so far followed two main approaches. The first approach theorizes a series of phonetic features uniquely characterizing the speech of gays and lesbians, and has determined (e.g., Pierrehumbert et al. 2004) some of these features. This line of research tends to neglect individuals who do not sound like what their sexualities 'demand'.

The second approach focuses precisely on this possibility. Proponents of this approach, mainly Smyth et al. (2003), created a scale of sexuality identifications (for men) based on listener judgments, noting that gay-/lesbian-sounding does not necessarily identify with gay/lesbian.

My dissertation follows this approach, and comprises three interconnected studies: a perception study, a production study and an interview study. For my perception study, I built two scales (one per gender), of the speech of 24 speakers, equally divided into gay/lesbian and straight, on the basis of 20 listeners' judgments. The listeners rated all speakers' voices on a scale from 1 ('sounds definitely homosexual') to 7 ('sounds definitely heterosexual'). The results show that speakers of either sexuality were believed to be gay/lesbian.
For my production study, I hypothesized that gay-sounding speech may be hyperarticulated, and that lesbian-sounding speech might be hypoarticulated. Accordingly, I observed phonetic features associated with the hypoarticulation/hyperarticulation dimension, including diphthong distance and frequency of stop release. I further considered individual monophthongs' articulation. Through statistical tools, I determined the behavior of these features for each speaker sounding group. Results included the following: the hypotheses connected to hyperarticulation and hypoarticulation were not substantiated. Gay-sounding speech was characterized by fronting of high vowels and lowering of low vowels. Lesbian-sounding speech showed a backed /a/ and a short diphthong distance for /ou/.

Finally, for my interview study, I interviewed my speakers in an effort to find out why a person might choose to sound differently from (or similarly to) what is expected of her/his sexuality. Among the results, gay-sounding males who self-identify as straight were clueless about their sounding gay. The female speakers in general saw themselves in term of sounding feminine or masculine, rather than straight or lesbian.
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CHAPTER 1

INTRODUCTION

According to popular culture, there are social and personal traits that uniquely identify gay men. TV shows such as Queer Eye for the Straight Guy portray gay men as fashion experts who come to the rescue of desperate straight men in sore need of revolutionizing their wardrobes. Lesbians appear to be a little more difficult to recognize. The TV drama The L Word plays around with the lack of strong characterization of lesbians by portraying them in numerous ways: feminine, masculine or ambiguous, strong and weak, crazy and 'normal'. From a linguistic point of view, much research on gays and lesbians (such as Hayes 1981a and 1981b, Moonwomon 1995, Leap 1996 and Queen 1997) seems to have assumed the existence of a gay and/or lesbian speech community, and tried to document its discursive practices. In sociophonetics, most research on speech and sexuality (such as Gaudio 1994, Moonwomon-Baird 1997, Pierrehumbert

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1 Within the gay and lesbian community, there is controversy about terms such as 'gay', 'lesbian', 'homosexual' and 'queer' (the current whole-encompassing word that theoretically could substitute for all of these labels -- and even more). It is not the purpose of this dissertation to contribute to (much less to resolve) this controversy. I personally avoid the usage of 'straight', as it implies that whoever is not heterosexual is either literally crooked or bent. However, in my study I employ exclusively 'gay', 'lesbian' and 'straight'. I also refrain from using 'gay' to mean both gay men and lesbians. Rather, I refer to these groups collectively as 'gay/lesbian'. This is a choice that I make simply for the sake of consistency and style, hoping it will be agreeable enough to not offend anyone who identifies with any of these labels.
et al. 2004 and Munson et al. 2006) has also taken the approach that gay men possess a specific and recognizable speech which sets them apart from straight men, and that the speech of lesbians is different from that of straight women. This research has found some phonetic traits (mostly, aspects of articulation of back and low vowels) apparently connected with gay and lesbian speech, although with contradicting results. For example, Pierrehumbert et al. (2004) claimed that gay men presented an expanded vowel space in comparison to straight men, whereas Munson et al. (2006) stated that vowel space did not vary in relation to the sexuality of a speaker. The exponents of this research generally seem to assume the existence of a correspondence between an individual’s identity and her/his speech: if a wo/man is lesbian/gay, her/his speech must reflect her/his sexuality. This argument is further reflected by the rationale that a number of these studies use to justify their results. Specifically, both Pierrehumbert et al. (2004) and Munson et al. (2006) maintained that gay men and lesbians selectively utilize phonetic features belonging to the opposite sex. These features would suggest positive qualities commonly associated with the opposite sex, but without hinting at the possibility that gay men and lesbians belong to the opposite sex. As an example, gay men would use an expanded vowel space to ‘convey social engagement and emotional
expressiveness', but would omit traits such as a high $F_0$ 'that would convey diminutivity or subservience' (Pierrehumbert et al. 2004: 1908). Lesbians would instead adopt a less-clear speech to sound taller (Munson et al. 2006), meaning that less-clear speech relates to the speech of men, who tend to be taller than women.

I believe this research is weakly premised. The correspondence between a person's identity and her/his speech has been challenged by both sociolinguistic and sociophonetic literature. Sociolinguists (among others, Cameron 1997 and 2005, Kulick 2000, and Bing and Bergvall 1997) have shown that sounding gay does not make an individual gay. In the sociophonetic field, it was primarily Jacobs et al. (2000) and Smyth et al. (2003) who provided evidence showing that listeners can judge some of the voices of gay men as sounding straight. The argument that gay/lesbian individuals use specific cues belonging to the opposite sex's speech also looks questionable. It is obvious that these researchers seem to assume that 'opposite sex' equals 'straight individuals of the opposite sex', and that a gay man might use only certain phonetic traits of straight women, and also that a lesbian might choose specific phonetic features of straight men. Otherwise, it would surely be difficult for these researchers to justify gay men and lesbians speaking differently from straight men and women, and the very rationale of their
study would fall apart. These researchers further assume that it is gay men and lesbians who imitate features belonging to straight persons, without considering that the opposite could also be the case. For example, some straight men might adopt cues from gay men which convey positive stereotypical traits, such as sensitivity, without suggesting that they themselves are gay.

The present dissertation follows the approach of Jacobs et al. (2000), Rogers and Smyth (2003) and Smyth et al. (2003) and argues that studying the way individuals speak through predetermined categories such as ‘gay’ or ‘lesbian’ does not allow any explanation for ‘deviant’ cases (e.g., straight men who sound gay). This is a major obstacle, as it prevents us from accounting for language variation across speakers. The central purpose of my study is to investigate potential phonetic features relating to the perceived sexuality of a person (my participants, judged as sounding gay/lesbian, might actually be straight, and vice versa) – namely, the monophthongs appearing at the corners of the vowel space, certain diphthongs, and stop release. (Previous research considered pitch properties, selected monophthongs, some fricatives and phonation.) Secondarily, it attempts to uncover motives (conscious or unconscious) behind a person’s speech, that is, why a person might use a speech that aligns with or distances itself from
what is expected of that person’s sexuality. When selecting the features being consi-
dered in my study, I hypothesize that the speech of gay-sounding men may be hyperarti-
culated, while the speech of lesbian-sounding women may be hypoarticulated. My
hypotheses derive from observing that Pierrehumbert et al. (2004) found an expanded
vowel space for the gay men studied (perhaps indicating hyperarticulation). Even
though Pierrehumbert et al. follow a research assumption (as explained above) to which
I do not subscribe, their results can still be of use in my study. In fact, on average,
Pierrehumbert et al.’s gay men and lesbians were judged by listeners as sounding,
respectively, gay and lesbian. Although averages can often obscure relevant information
about individual speakers, I shall take this specific finding to formulate my hypotheses.

The hyperarticulation/hypoarticulation dimension of speech involves several pho-
netic features. Among these, I have selected vowel space dispersion and stop release vs.
lack of release. We would expect that hyperarticulation may be linked to a wide disper-
sion and a high number of released stops. Conversely, a small vowel space dispersion
and few released stops would indicate hypoarticulation. I also observed individual
monophthong and diphthong articulation. Finally, I studied vowel duration (as an
duration and gender (i.e., their male speakers’ vowels were shorter than their female speakers’) to perceived sexuality, it could be hypothesized that the gay-sounding men in my study produce longer vowels than the straight-sounding men, and the lesbian-sounding women articulate shorter vowels that the straight-sounding women.

Through my interviews with the speakers, I was able to record motivations behind an individual’s ‘choice’ for sounding gay/lesbian or straight. Because this is a sociophonetic dissertation, rather than purely sociolinguistic, my analysis of the interviews has primarily the simple, but fundamental, function of tying my phonetic study results (i.e., the phonetic features related to sounding gay/lesbian or straight) to strongly-based, rather than speculative, reasons for a person sounding gay/lesbian or straight. By ‘strongly-based’ I mean derived from the actual viewpoints of actual speakers. Previous research to date (e.g., Pierrehumbert et al. 2004 and Munson et al. 2006) has almost completely neglected the value of speakers’ interviews for making sense of phonetic results, preferring instead to rely on a ‘big picture’.

To date, my dissertation is the first to search for phonetic cues associated with perceived sexuality for both genders – previous work (such as Smyth et al. 2003) considered only the voices of men. Additionally, mine may be the only study to actively take
into account the gender and sexuality of listeners in their judgments of the sexuality of speakers. It investigates constructs (e.g., 'rude/polite' and 'educated/uneducated') as possible traits characterizing listeners' perceptions of gay-/lesbian- and straight-sounding voices. Further, it engages in the interview process with the speakers themselves in order to more deeply explore the reasons an individual sounds (willingly or not, and at varying levels) straight or gay/lesbian. It is also the only study to address the way perceived sexuality is conveyed in Hawai'i English – and how it is received. As I show in the remainder of my dissertation, attitudes toward sounding 'local' markedly contribute to perceived sexuality judgments (e.g., most listeners were not from Hawai'i and claimed that, in general, Hawai'i English speakers sound gay to them; they offered the explanation that these speakers have long and distinct vowels, which suggests hyperarticulation). This along with other observations relating to Hawai'i provide an even more thorough look at perceived sexuality in the United States of America. To my knowledge, sociophonetic research has seriously overlooked the invaluable contribution that is represented by linking dialect to attitudes toward sounding gay, lesbian or straight. Finally, my dissertation actively relates phonetic results to the interviews with the speakers.
This dissertation is structured as follows. In Chapter Two I review the main literature on the representation of sexuality in speech, and then detail why it is preferable to study the speech of individuals in relation to their perceived, rather than their self-declared, sexuality. There, I introduce the queer concepts of ‘performativity’ (Butler, 1990) and ‘heteronormativity’ (Wagner 1991), which are at the core of this dissertation. Performativity allows for the possibility that individuals may sound other than what their gender and sexuality would ‘demand’. Heteronormativity is a societal constraint that sees heterosexuality as the only positive and desirable form of sexuality, to the point of being the norm. As such, anyone who does not conform to heteronormativity faces the possibility of social consequences.

Chapter Three is dedicated to methodology. In the search for phonetic traits related to perceived sexuality, I began by recording a total of 24 Hawai‘i-English speakers’ voices, equally divided between gays and lesbians, and straight men and women. Naturally-occurring speech is of value when doing experimental analysis of speech. However, as the features I considered were individual sounds, such as vowels (and it is impossible to compare like sounds if they occur in different phonetic environments), it would have been difficult to obtain enough data from casual speech. Therefore, I asked
my speakers to read an entertaining text which contained these features in phonetically-balanced environments. This allowed me to collect the data I needed. I played the speakers' voices to a total of 40 listeners. Half of the listeners rated the voices on a scale ranging from 1 ('sounds definitely homosexual') to 7 ('sounds definitely heterosexual'). The other half judged the voices using differing parameters, such as 'rude (1)/polite (7)' and 'educated (1)/uneducated (7)'. Next, adhering to the concept of performativity, I selected those speakers who were consistently rated by the listeners as sounding gay/lesbian or straight (i.e., they were indisputably recognized by the listeners as performing a gay/lesbian or straight persona), and then analyzed their speech, focusing on the features introduced above. Finally, I interviewed my speakers in an attempt to understand how individuals position themselves around heteronormativity, by sounding like or unlike what is expected for their sexuality, and to what extent they do so.

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<sup>2</sup> Aside from the labeling of speakers (e.g., Het_M_3), this is the only time I used 'homosexual' and 'heterosexual' in my study. As the forms I provided to the listeners for giving their perceived sexuality judgments required referring to either female or male speakers, I chose 'homosexual' and 'heterosexual' because I thought it sounded neutral enough. But after more consideration, I realized this might have appeared biased to some. There might have been gay and lesbian listeners who connected the term 'homosexual' to the stigma that being homosexual was equated with clinical dementia. However, I had no complaints from listeners about these labels. Hopefully, they were more interested in the topic of my dissertation than in the terms used.
In Chapter Four, I report on and discuss the results. First, I present the listeners' judgments on sexuality, and then introduce the speakers selected for the analysis. Next, I describe my findings about the listeners' ratings on the parameters 'rude/polite', 'educated/uncultured' and so on. Next, I examine through statistical tools such as analysis of variance (ANOVA) the behavior of the specific phonetic features shown previously for each speaker sounding group. My results indicate that the gay/lesbian- sounding groups differ from the straight-sounding groups mostly in terms of back vowel articulation.

I devote Chapter Five to the discussion of my interviews with the speakers, in an attempt to comprehend why some individuals might reproduce heteronormativity and others might instead defy it. My analysis is informed by Bucholtz and Hall's (2004) tactics of intersubjectivity, or descriptions of how individuals position themselves in relation to others, yet are, at the same time, positioned by others. In my study, I take into account the extent to which heteronormativity is upheld or challenged and how aware speakers are about the way they sound. For example, a gay-sounding man may resist heteronormativity only to a small extent by sounding just slightly gay, and may be more or less conscious about the way he sounds. Then, also, there is the dialect issue. For
some individuals, being native speakers of Hawai'i English can carry with it the desire not to sound 'too' local, which was the case for the straight-sounding men, who claimed an interest in speaking 'proper' English. But the speaking of Standard English can also sound stereotypically gay. These (among other) factors contribute a multiplicity of perspectives to the interviews.

Finally, Chapter Six is dedicated to the discussion of the results and to the conclusion of my dissertation. I relate the speakers' interviews to the phonetic features found for each sounding group to understand why some individuals sound gay/lesbian and others sound straight. I explain that back vowels' articulation (particularly /u/) has been shown to convey social identity (Habick 1991). I suggest that back vowels are also used this way in the present study. As an example, the lesbian-sounding women may manipulate their back vowels to sound assertive – and thus are perceived as sounding masculine.
CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

In this literature review I initially discuss the two main approaches that I believe have, to date, been utilized in the sociophonetic study of gay/lesbian speech. They are based on two contrasting theories which I introduce and criticize (Sections 2.1.1 and 2.1.2). I then report on a few sociophonetic papers that align with the first approach (Section 2.2), and on the main study by Smyth et al. (2003), which is based upon the second approach (Section 2.3). Next, I summarize the reasons the second approach seems to be more valid, and present my conclusions (Section 2.4).

2.1.1. First approach – speech reflects identity

To my knowledge, sociophonetic research on gay/lesbian speech seems to have mostly followed two approaches. The first takes the perspective that gay men and lesbians can be identified, in part, by phonetic features of their speech. Among its proponents are Rachelle Waksler (2001), Rudolph Gaudio (1994), Benjamin Munson (2004,
2006), Janet Pierrehumbert (2004) and others (see Section 2.2 for a thorough account of these studies). The basis of this approach is the hypothetical existence of a set of phonetic features that characterize gay/lesbian speech. To support this position, some proponents have shown that listeners are frequently able to recognize these features without the aid of visual cues, although thus far it appears that gay men are much more easily identifiable than are lesbians. Followers of this approach have been moderately successful at finding phonetic components seemingly related to gay/lesbian individuals, although the results appear controversial. Pierrehumbert et al. (2004), for instance, have stated that the pronunciation of some vowels by gay men is different from that of straight men. Munson et al. (2006) have likewise reached the conclusion that vowel articulation apparently characterizes variation in speech between gay and straight men. However, the studies do not identify the same vowels or vowel formants for determining this discrepancy. Lesbian speech has proven to be even more challenging to define. Waksler (2001), for example, has claimed that no substantial dissimilarity is evident in pitch range between lesbians and straight women.

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3 Importantly, none of these studies explicitly refers to any theory of sociolinguistics. However, their perspective on the study of language, gender and sexuality seems strongly rooted in the fundamentals of the approach I describe in this section.
The value of the first approach lies in its potential for investigating stereotypes. For instance, gay men are generally said to speak with a high pitch, and Gaudio (1994) tests this stereotype. By its own nature, this approach does not directly address the possibility that some gay men and lesbians do not use gay/lesbian speech and some straight individuals do. Its focus is on the theory that sociolinguist Deborah Cameron (1997) calls the myth of Labovian (or quantitative) sociolinguistics. At the inception of sociolinguistics (during the 1960s), the influence in the linguistic field of syntactician Noam Chomsky’s theory of Universal Grammar was remarkably strong. According to Chomsky, ‘[l]inguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech community, who knows its language perfectly and is unaffected by such grammatically-irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance’ (Chomsky 1965:3). Chomsky and his colleagues sought to further establish linguistics as a scientific discipline, both to improve the field, and to help it earn academic prestige. It was therefore an essential part of his intent to abstract away from language variation, and to establish clear-cut theories to test in a systematic and replicable way. By the same token, if sociolinguistics
wanted to achieve scientific status and academic recognition, it presumably would have an advantage by following the suggestions proposed by Chomsky. Sociolinguist Peter Trudgill suggested in a 1978 paper the importance of pursuing what he called 'sociolinguistics proper' as follows: ‘All work in this category [...] is aimed ultimately at improving linguistic theory and at developing our understanding of the nature of language [...] very definitely not linguistics as a social science’ (Trudgill 1978:3). In other words, the focus should be put on the linguistic, rather than on the socio part of sociolinguistics. Scientific status, then, would be granted to the discipline, to the extent that sociolinguists investigated the use of language in social context by referring to issues related to ‘linguistic theory’ and ‘the nature of language’, to the exclusion of any focus upon the social component of language.

Notably, it was along these lines that sociolinguist William Labov questioned Chomsky’s reference to ‘an ideal speaker-hearer in a homogeneous speech community’, by reminding the field that language is heterogeneous, both at the level of speech community and of individual grammar. It is crucial to note that this heterogeneity is not random. In fact, as Labov demonstrated, language is characterized by ‘structured variability’ (Cameron 1997a:56). It is therefore possible to study language change in a sys-
tematic (i.e., scientific) way as follows. Language change and variation depend both on linguistic factors as well as precise and socially-conditioned nonlinguistic features. These nonlinguistic features are ‘demographic’ (e.g., such as class, gender, and ethnicity) and ‘contextual’ (e.g., level of formality and topic; Cameron 1997a:59). As an example, specific phonetic cues, such as an expanded vowel space, identify the speech of adult gay men from the Chicago hinterland (Pierrehumbert et al. 2004) in certain laboratory settings (i.e., while reading ‘phonetically-balanced’ sentences). This type of regularity is known as a ‘sociolinguistic pattern’. It was through sociolinguistic patterns that Labovian sociolinguistics explained the distribution of specific variables in the (heterogeneous) speech community. Since these patterns are regular, observable and predictable, sociolinguistics could aspire to call itself a science. Going back to our example, an adult gay man from the Chicago area would produce a more expanded vowel space in a specific laboratory setting, although he might use a less expanded vowel space in other contexts. This explanation relates to the thesis that language reflects social identity: as the identity of this gay man varies depending upon the context within which he finds himself, his language will vary accordingly. In a phonetics laboratory, while reading sentences into a microphone, this gay man will produce an expanded vowel space. Else-
where, perhaps in a more relaxed environment, his vowel space may be narrower. In this view, then, social identity (which is created by specific social/demographic variables) exists before language (which changes according to the social context variables), and language is predictably a reflection of social identity.

A better approach, as Cameron suggests, is to investigate why the correlation between the linguistic variable and the social context holds. Doing so necessarily means involving within the discussion the socio part of sociolinguistics, that is, to call for some social theory that can explain this correlation. Where else to look, but to social theories, when the linguistic side of sociolinguistics is insufficient? Some sociolinguistic research in language, gender and sexuality has taken up this suggestion and investigated the possibility that individuals conform to specific social norms because of peer group pressure. This line of research seems to assume that gay men and lesbians share a tightly-knit community with a specific language for gays and for lesbians (sometimes, with a single language for both). It further implies that all gay men and lesbians are competent speakers of their respective languages. Examples of names proposed for these languages include ‘Gayspeak’ (Hayes 1998b, and Cox and Fay 1994) and ‘lgb talk’ (Zwicky 1997). Hayes (1981b) in particular claimed that ‘Gayspeak’, or ‘the language used by
gay men', (Hayes 1981b: 45) is a secret code that serves the purposes of protecting gay
speakers from being outed (through the use of innuendos and the avoidance of gen-
dered pronouns when talking about one's partner), portraying different roles within the
gay subculture (primarily through camp) and appropriating negative terms such as ‘fag’
or ‘dyke’, mostly for political purposes. In my opinion, assuming the existence of com-
munities without concretely defining the communities themselves is problematic, as it
may suggest that individuals follow norms without any exception or resistance. Further,
is it true that a gay/lesbian community exists in the first place? How are the individuals
belonging to this community defined – who counts as a gay man or as a lesbian? Is it
correct to assume that all gay men and lesbians partake in these languages (e.g., Gays-
peak), with no exception or resistance? Where do the norms followed by gay/lesbian
language originate from? What is more, do the variables belonging to the speech of gay
men and lesbians exclusively characterize their speech (Kulick 2000)? Finally, Cameron
asks, ‘is it not the case that the way [an individual] use[s] language is partly constitu-
tive of [his/her] social identity?’ (1997a:60). The theory according to which language
simply reflects identity cannot answer these questions (although it can test stereotypes).
The gay/lesbian community is assumed to exist without investigation, because a clear
definition of its members (i.e., gays and lesbians) is not provided. It is implied that all gay men and lesbians are competent speakers of their language, but no proof can be offered. In addition, there is no evidence that the variables which supposedly identify gay/lesbian speech exist exclusively in their language. The possibility that gays and lesbians might resist the norms imposed by the community on their language is also neglected. Finally, in answering to Cameron’s question (i.e., is it incorrect to claim that a person’s use of language constitutes part of this person’s identity?), the way gay men and lesbians utilize their language constitutes (at least in part) their social identity. As a matter of fact, in Darsey’s (1981) terms: ‘[A] study that uses gays as a source of data does not necessarily say much about gays’ (1981:59). Or, in Don Kulick’s (2000) words: ‘The fact that gays do X does not make X gay’ (2000:259). An argument can therefore be made that identity does not simply exist before language, but it is constructed (in part) through it. Thus, gay/lesbian identities do not exist before language. Rather, they are constructed (in part) through language.

Cameron states that ‘speakers inherit a certain system and can only choose from the options it makes available’ (Cameron 1997a:62). Therefore, although groups tend to impose certain norms, individual speakers are social agents who have some freedom of
choice. According to Cameron, to suggest that speakers have this element of choice would complement the Labovian methodology, and would allow a real explanation for language variation. This idea would clarify how individuals choose to reproduce or challenge linguistic norms, how these norms relate to individuals’ social identities, and how the same norms are put forth by institutions through social practices. In this light, then, language is seen as a social practice on its own, rather than a passive reflection of identity. To summarize, individuals are social actors who (with a degree of agency) decide what linguistic practices to utilize or reject or simply change, and they can do so on the basis of what is available to them.

I believe that this is the optimal path to take. Considering the agency of individuals allows for the explanation of the speech of gay/lesbian persons who do not sound gay or lesbian. Of course, it also accounts for the possibility that straight people do not sound straight, but instead sound gay or lesbian (or neither). Further, it releases researchers from the assumption that a gay/lesbian community exists, thus permitting them to actively investigate whether this community is actually present, who defines it and how it is defined. Finally, it leads researchers toward investigating whether or not the linguistic patterns they find for specific gay/lesbian individuals and groups are uni-
quely applied by these individuals or groups, thus looking for wider patterns and expanding our knowledge in the sociolinguistic field.

In conclusion: as argued in this section, the theory 'language reflects identity', upon which the first approach to the sociophonetic study of language, gender and sexuality is based, appears problematic, or, at least, incomplete. Although it allows for testing commonly-held stereotypes (such as that gay men speak with a high pitch), and for finding general patterns in relation to sexual identities, it does not account for language variation within individual speakers (e.g., a gay man might sound gay only in particular situations) and within groups of speakers (e.g., some straight people might sound gay/lesbian). It assumes the existence of groups (e.g., the gay/lesbian community) without defining them. Finally, it appears to take into insufficient account speaker's agency, that is, speakers having control over the way they sound.

2.1.2. Second approach – speech as performativity

The second approach focuses on the possibility that individuals can sound gay/lesbian or straight regardless of sexuality. Proponents of this methodology (in the sociophonetic field) are Ron Smyth and his colleagues (2000, 2003). Smyth et al. (2003, among other studies) recorded the voices of self-identified gay and straight men, but
categorized their data on the basis of perceived sexuality. Instead of studying the speech of men on the basis of their self-declared sexuality, Smyth et al. organized their data on the basis of listeners' judgments about whether a speaker's voice sounded gay or straight. Through this methodology, speakers of either sexuality were accordingly judged.

This approach challenges the 'language reflects identity' approach by refusing to assume the existence of a gay/lesbian tightly-knit speech community (or, for that matter, any tightly-knit speech community) whose speakers are empirically undefined, are fully competent in their language and passively enact their identities through this language. Extensive sociolinguistic research, both on language, gender and sexuality, and on other issues (e.g., Barrett 1995, 1997, 1999; Bergvall 1999; Cameron 1997b; Hall, 1995, 2005; Hall and O'Donovan 1997; Bucholtz and Hall 2004; Eckert and McConnell-Ginet 1992), has shown that individuals are social actors who choose with some freedom what to sound like and how to define themselves (their choice is limited by social factors and in particular by how others perceive them). Most (but not all) of this research focuses on queer theorist Judith Butler's (1990) general notion of 'performativity', which was interpreted by Deborah Cameron in the linguistics field as follows:
“Feminine” and “masculine” are not what we are, nor traits we HAVE, but effects we produce by way of particular things we DO’ (Cameron 1997b:49). The benefit of this shift in paradigm to speakers’ agency (albeit limited) is crucial to this discussion. An approach based upon agency of speakers naturally accounts for gay/lesbian individuals who do not sound gay/lesbian and for straight people who do not sound straight.

Queer linguistics provides the fundamental tools for this type of approach. Individuals perform gender (but also sexuality) through their language (and other social practices). As such, individuals are social actors, rather than passive enactors of their own identity. Furthermore, individuals’ performances need to be recognizable by their audiences to be understood. This recognition is rooted in the concept of ‘heteronormativity’ (first introduced in queer theory by Michael Warner in 1991), that is, the idea that heterosexuality is taken as the default, self-evident, natural and the only positive form of sexuality – simply, it is the norm. Importantly, no one really notices when people use heteronormative language. Rather, it is non-heteronormative language that calls for attention. It is precisely the fact that people notice non-heteronormative language that makes it non-heteronormative (i.e., marked). When individuals perform according to what is prescribed for their gender and sexuality (i.e., when they follow
heteronormativity), their performances are recognized as legitimate. However, when they perform in a manner that deviates from the norm (i.e., when they defy heteronormativity), their performances are considered illegitimate (or simply noticed). Therefore, speakers co-construct their performances with their audiences. It should be pointed out that gays and lesbians might choose to defy or accept heteronormativity for several reasons. A gay man, for example, might speak heteronormatively to avoid being harassed or to maintain his privacy.

As an illustration of how these concepts (i.e., performativity, the freedom of speakers as social actors, the importance of audience in the co-construction of performance and heteronormativity) work, I now report on one of the most influential studies in the field of language, gender and sexuality. This is the article *Indexing Polyphonic Identity in the Speech of African-American Drag Queens* by Rusty Barrett (1999). Drag queens are gay men who impersonate women in gay bars. They wish to perform an exact interpretation of women, to the extent that an outsider would think they are biologically female. Drag queens see themselves as gay men, not as women. In other words, their interest is in *performing* the female gender, rather than claiming it. A very important step in becoming a successful drag queen is mastering specific linguistic strategies,
such as an often-exaggeratedly feminine voice (which, for instance, Barrett observes, involves speaking with a very high pitch).

As Barrett notices, African-American (AfAm) gay men (including drag queens, as they are gay men, as explained above) are often pressured to identify themselves either as AfAm, or as white gay men. These pressures are a demonstration of the importance of other people in the co-construction of individuals’ performances. According to Barrett’s study, the pressures come from a combination of the racism present in most of the white gay community, and the homophobia found in most of the AfAm community. In fact, Barrett explains, African-American Vernacular English (AAVE) is stereotypically seen as the ultimate language of heteronormativity and homophobia. Therefore, if an AfAm gay man speaks Standard English, he is often perceived as doubly betraying the AfAm community, in that he identifies himself as gay and speaks the language associated with gayness (i.e., he defies heteronormativity). However, the AfAm drag queens interviewed by Barrett use Standard English in their performances neither to betray the AfAm community nor to embrace the white gay community, but to highlight issues involving racism. Their form of Standard English includes an accurate selection of some features (such as hedging and the use of empty adjectives) which are stereotypically
associated with ‘women's language’ (WL), a kind of language that was investigated by Robin Lakoff (1975). AfAm drag queens use these features to perform the identity of a white, middle-class, heterosexual woman. Although some of these features are also commonly associated with gay men, AfAm drag queens are able to filter them in a way that uniquely identifies them as a distinct group from other AfAm gay men. The use of these features helps AfAm drag queens to both reproduce stereotypical white femininity (while raising the awareness of racial issues), and to construct the AfAm drag queens' identity which ‘appropriates and reworks the symbols of “ideal” femininity’ (Barrett, 1999:323). At the same time, though, AfAm drag queens, just as drag queens in general, do not wish to claim a feminine identity, but want simply to perform it. Therefore, they switch from WL Standard English to AAVE whenever they accentuate the point.

This example of AfAm drag queens performing a variety of personas strikingly relates to the possibility that in my study I might find individuals whose speech may not conform (and be recognized as not conforming) to what is 'prescribed' for their gender and sexuality. More importantly, utilizing the concepts of performativity and heteronormativity allows me to account for these individuals' performances. Furthermore, the

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4 It is because of this continuous switch from one language to the other that the author uses the term ‘polyphony’ in relation to AA drag queens.
fact that Barrett interpreted his speakers' language by interviewing them is important. If we believe that language merely reflects society, then we do not need the help of individuals to investigate why they speak a certain way. The answer lies within the data itself, and it can be interpreted through the observation of social context and variables. However, if we wish to account for 'deviant' cases, then I believe we need to engage them, and, to me, this effort is best pursued through speaker interviews. Finally, it is also reasonable to consider listeners' attitudes toward individuals' speech. As already pointed out, an individual's performance can be accepted or not by others, in varying degrees. Thus, to interview listeners about their attitudes and ideas about what a gay/lesbian/straight person sounds like is also an extremely helpful tool which has been largely neglected.

In conclusion, the approach that views speech as performativity seems preferable to the one that sees language as a reflection of society. It is more fine-tuned, because it directly addresses the possibility that individuals choose (more or less consciously) to speak in a specific way, depending on the kind of persona they wish to present. Among other advantages, it has at its core the importance of the audience in the co-construc-
tion of one's performance. Smyth et al. (2003) follows this second approach. I address both this approach and that study more thoroughly below.

2.2. Studies on gay/lesbian speech based on the first approach

In this section, I describe a number of studies on gay/lesbian speech based on the first approach and explain their strengths and weaknesses. I begin by looking at research on lesbian speech, then at articles or papers on gay men's speech, and conclude with studies focused on both lesbian and gay speech.

2.2.1. Studies on lesbian speech

Moonwomon-Baird was the first scholar to do research on lesbian speech. It appears she took the 'language reflects society' stance by assuming that a uniform lesbian community exists, and that women belonging to this community speak a language that is unrecognized.

Moonwomon-Baird's work, written in the 1980s, is summarized in the paper Toward a Study of Lesbian Speech, published in 1997. There, she tested both the stereotype that depicts lesbians' pitch range as narrower than straight women's and her own hypothesis
that lesbian speech is seldom used and infrequently recognized. According to Moonwomon-Baird, this speech is barely acknowledged and utilized because it goes unnoticed by both general and lesbian populations. In her first study, she tested this hypothesis by stating that listeners might judge an unusual-sounding voice (which she dubbed ‘unladylike speech’, 1997:206) as belonging to a lesbian, if they had the option to do so. Twenty-one listeners (all students from U.C. Berkeley whose average age was 23) were instructed to judge 12 women’s (6 lesbians and 6 straight women) voices as belonging to either a straight woman or to a lesbian. The recorded speech samples played back to the listeners were 30 seconds in length, and were taken from longer stretches of naturally-occurring speech (although the speakers were recorded in a lab). The speakers were Caucasian and varied in ages and educational backgrounds. They were members of the middle or working class, and grew up in various regions of the United States. All were native speakers of American English.

Moonwomon-Baird measured the listeners’ responses in percentages. The tendency was for the listeners to hear the speakers as ‘young, straight, middle-class, West-Coaster’ (Moonwomon-Baird 1997:206). Even though the listeners had a set of answers from

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5 Unfortunately, she does not provide evidence for the pitch stereotype. Perhaps, being a lesbian, she heard a narrower pitch range in her own and other lesbians' speech.
which to choose regarding the speakers' voices, including 'heterosexual' and 'lesbian', they resisted identifying a voice as belonging to a lesbian. To be more precise, rarely did they classify a single voice as such, even when that voice sounded stereotypically lesbian, as for example when it had a harsh and low pitch ('lesbian' was picked only 23.8% of the time). More than a third of the comments made by each listener, at the end of the experiment, corroborated this result. These listeners claimed that it was difficult to make a decision about the sexuality of the speakers, as they had no idea what a lesbian is supposed to sound like. No other choice (aside from 'Jewish/non-Jewish') seemed as challenging for them to make. Moonwoman-Baird, consequently, suggested that the category 'lesbian' was difficult to hear. A valuable contribution in her research is that she documented how listeners did not have a clue as to what lesbians are supposed to sound like.

The main implications of this finding point toward the expectations of the listeners regarding lesbian speakers and to the lesbian speakers themselves. If lesbians' speech is similar to straight women's speech, the existence of stereotypical ideas about the way lesbians speak appears questionable. Possibly, these conforming patterns – insofar as

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5 Again, it is unclear where these stereotypes originate.
they exist – relate to the simplistic perception that lesbians imitate men’s speech – and that gay men sound like women\(^7\) (Pierrehumbert et al. 2004 and Munson et al. 2006 test both these hypotheses). However, Arnold Zwicky (1997) suggests in *Two Lavender Issues for Linguists* that lesbians share a virtually indistinguishable speech with straight women because lesbians tend to suffer very little discrimination from straight women. Therefore, lesbians do not feel the need to separate themselves from straight women. Conversely, gay men are often extensively discriminated against by straight men. In reaction, gay men lean toward establishing an entirely separate culture with a distinct speech. Zwicky’s explanation aligns itself with Moonwomon-Baird’s claims that lesbians are unable to hear and identify each other because their speech is not characterized by specific phonetic features, and that lesbians who want to recognize each other need to rely upon topics and issues relevant to the lesbian community. However, as already explained in Sections 2.1.1 and 2.2.2, it appears unjustified to assume without investigation that such a community exists. Instead, I believe that we need to determine whether or not this community exists by defining it and then establishing who belongs

\(^7\) When referring to ‘men’ and ‘women’ in general, it is understood that I mean ‘straight’ men and women. By doing so, I purposefully (for simplicity’s sake) follow heteronormativity. This concept closely reflects our tendency to assume that individuals are straight in the absence of a clear indication that they are not.
to it, as posited earlier. Therefore, in my opinion, it would have been more revealing if Moonwomon-Baird had provided information on how she would define the lesbian community to which her speakers belonged.

The second implication of Moonwomon-Baird’s result is that, even if we hypothesize the existence of certain phonetic cues determining lesbian speech (although Moonwomon-Baird found none, as I show later, other research has been successful; see, for instance, Pierrehumbert et al. 2004), listeners appear to be unable to recognize them. It is then plausible to argue, as both Zwicky and Moonwomon-Baird do, that 1) lesbians sound virtually the same as straight women, thus the inability of the listeners to identify lesbians; or that 2) lesbians do sound different from straight women, but most of the listeners of this study were not attuned to lesbian speech; or that 3) regardless of the listeners’ skills, most of the listeners simply did not want (consciously or unconsciously) to associate a female voice as belonging to a lesbian. As ‘lesbian’ is a term that still carries the hallmark of heavy baggage in American society, it is possible that most listeners chose not to identify a voice as belonging to a lesbian. In my opinion,

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a To be more precise, part of this observation could easily relate to heteronormativity. Most listeners might have heard the majority of speakers as sounding straight because of heteronormativity. As a consequence, they might have chosen (more or less consciously) to
nion, more information on the sexuality of the listeners would have allowed for investigating these options. With only the information that the listeners were in their mid 20s, it is difficult to understand whether her hypotheses were tested. It is possible that lesbians may not hear themselves, as Moonwomon-Baird claims, but unless we test this hypothesis on self-identified lesbian listeners, how can we come to a valid conclusion about it?

In the same paper, Moonwomon-Baird's second study compared the voices of two pairs of women (two straight women and two lesbians) having separate conversations. She selected approximately 2 ½ minutes from each conversation and analyzed 'direction of pitch, steepness of rises and falls, height of peaks, utterance position of peaks, low points and glides' (1997:210). She also considered the way their conversations were handled and made comparisons both within and between the pairs. Her results showed that both pairs of women used the stereotypical phonetic features associated with their respective sexuality. Thus, the straight women used higher pitch levels and showed a

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avoid categorizing the speakers' voices as belonging to lesbians, because the term 'lesbian' unmistakably deviates from the norm dictated by heteronormativity.

9 It is unclear to me how she proposed these stereotypical features. At this point, Moonwomon-Baird could have used features identified by the listeners. However, the listeners were unable to indicate any. So, she could well have argued for the non-existence of these features, rather than stating that they are not recognized.
greater intonation than the lesbians. However, contrary to the common assumption that women's speech has non-falling contours, all four participants produced precisely falling contours for all sentences. Furthermore, all four speakers revealed individual differences in their intonation use. Moonwoman-Baird believed these findings to be crucial, as they indicate that it is less important to question whether an individual selects a particular type of speech on the basis of sexuality, gender or other possible categories than it is to understand what the individual is trying to convey by selecting this kind of speech. Moonwoman-Baird claimed that 'the patternings for the speech of women in [her] sample suggest[ed] not only that the individuals differ as to strategies but that some differences between the pairs may have to do with different communicative expectations about discursive elements such as turn negotiations. Different expectations about turn-taking may reflect different role assumptions' (1997:211). The idea generated from this, then, is that investigating the expectations for speakers in various situations would be revealing about the roles that a person assumes. This prompted her to call for a wide study involving conversation pairs of lesbians and straight women focusing on how various intonational patterns can be used to handle conversations in assorted ways.
Although this suggestion moves toward performativity, Moonwomon-Baird did not pursue it.

She prefaced her 1997 paper by re-introducing the idea that lesbians form a homogeneous community. Specifically, Moonwomon-Baird noted that, ten years after conducting these studies, she had given up on the assumption that lesbians’ speech has specific and defined phonetic characteristics. Thus, she believed that lesbians as a speech community are definitely unheard, even by other lesbians (i.e., not recognized as lesbians by each other on the basis of the way they sound). She also claimed that they can be heard, at least by each other, not by means of certain phonetic cues, but by ‘implication, inference, and presupposition that reveal a [lesbian] speaker’s stance within the territories of various societal discourses’ (1997:203). Thus, she concluded, lesbians can hear other lesbians when talking about the shared knowledge of many extradiscoursal matters regarding both gender and social-sexuality, such as lesbian motherhood, gay civil rights and body piercing. This seems contradictory, as Moonwomon-Baird did find a difference in pitch between her lesbian speakers and her straight speakers (although with very few speakers and without any statistical analysis), and, to my knowledge, no other study was conducted on lesbian speech during those ten years which separated
her study and its second publication. She also did not consider that she may have missed other phonetic cues indexing lesbian speech.

To conclude, Moonwoman-Baird’s research is merited with being the first to investigate what the phonetic features of lesbian speech might be – possibly, a narrow pitch range. It also documents the weighty finding that the listeners had little idea as to what lesbians sound like. I find Moonwoman-Baird’s argument that lesbian speech is unrecognizable on the basis of phonetic features to be inconsistent (and in contradiction to her own study). However, I believe that employing listeners’ judgments is an extremely valuable tool, provided that more relevant information and a better control are sought for the listeners.

Waksler (2001) is the second study to investigate lesbian speech. Like Moonwoman-Baird, Waksler does not inform us about the lesbian speech community because she does not provide a definition for her speakers. Waksler’s research did not find any phonetic features characterizing lesbian speech, but introduced a more stringent methodology than Moonwoman-Baird’s.

Waksler recognized the importance of Moonwoman-Baird’s research for being the first work on lesbian speech to be carried out in a laboratory setting. However, she criti-
cized her study on conversation pairs, first, for not giving exact measurements of pitch in Hz or semitones; second, for failing to control for participant age or conversational topic; and last for having used too few participants. The purpose of Waksler's experiment was to replicate Moonwoman-Baird's research on the pitch differences between straight women and lesbians. However, Waksler's work presented a few methodological differences. She was interested in correlations between speech and sexualities of speakers (rather than only on differences between sexuality groups). She included 24 participants, all living in the San Francisco Bay area, ranging in age between 20 and 49 years. Twelve of them were straight women, and 12, lesbians. Waksler's analysis did not employ conversations, but used the participants' spontaneous telling of the same story, that is, a specific scene from *The Wizard of Oz*. By giving the participants a topic they could recall without restrictions and without reading, she suggested, the participants would be able to speak in their most natural way, which is preferable. Simultaneously, the women's production was controlled for content, so that each participant's production would be comparable to the others'.

The results, given in semitones, showed no statistically-significant differences between the pitch ranges of straight women and lesbians. Among the various readings
of these results, Waksler provided one explanation that resonated with Moonwomon-Baird's. She claimed that ' [...] a difference between lesbian and [straight] women's speech will only be found in contexts in which community identification or solidarity is desired, and the experimental setting did not elicit [sic] such identification or solidarity' (2001:74).

Waksler's study employs more speakers than Moonwomon-Baird's and has both the advantages of offering results in exact measurements and controlling for the content of speakers' data. In fact, it can be debated that employing one topic produces comparable data for different speakers. However, unfortunately Waksler does not use listeners for testing whether lesbians' speech is recognizably different from straight women's. Moreover, to account for her finding, Waksler offers the same explanation given by Moonwomon-Baird, that is, that certain topics which are relevant to lesbians might possibly differentiate lesbians' speech from straight women's speech. As already stated, this explanation is based on the conjecture that identity and situation/context entirely determine speech. It apparently also assumes that all individuals belonging to a group (such as the undefined group of lesbians) necessarily act in the same manner even in multiple contexts. We cannot be certain that all lesbians' speech would be similar (and different
from that of all straight women) if lesbians were engaged in topics that uniquely interest lesbians themselves. Even more importantly, how can we determine that an environment or topic which brings forth solidarity among lesbians will unmistakably elicit lesbian speech from all lesbians? It is possible that some lesbians might not feel solidarity in particular contexts, even though they are expected to.

2.2.2. Studies on gay speech

In a 1994 paper, Rudolph Gaudio tested the validity of conventional opinion about gay men speaking with a higher pitch than straight men. In contrast to Moonwomon-Baird (1997) and Waksler (2001), Gaudio provided an additional piece of information for defining gayness. He claimed that the speakers were 'friends of friends of the researcher', that they 'were not selected on the basis of being typically “gay” or “straight”, and were told only that they were participating in a study of gay men's language' (Gaudio 1994:43). Gaudio did not explain what he meant by ‘typically “gay” or “straight”’, so it is unclear what exactly he referred to. It is likely that he perceived these men as not looking or perhaps even sounding gay. It may be that he was alluding to the possibility of their having been chosen randomly and coincidentally not looking ‘typically’ gay or straight. But he definitely did include them in the gay speech commu-
nity, with his explanation that they would take part 'in a study of gay men's language'.

Although Gaudio found that listeners were able to correctly identify the sexuality of the speakers, he was unable to correlate his chosen phonetic feature, that is, pitch, with gay men's speech. Importantly, the listeners' perceptions were revealing in terms of perceived sexuality, as readings by the speakers elicited varying degrees of perceived sexuality, as explained below.

Gaudio recorded the voices of 4 (openly) gay men and 4 'nongay' men (as he called them). These men were graduate students ranging in age between 21 and 31 years, and native speakers of American English. They all came from different areas of the United States, and were Caucasian (except for one African-American). They were recorded while reading two short passages, one taken from an accounting text, and the other, from a gay character's dramatic monologue taken out of the play Torch Song Trilogy, by Harvey Fierstein (1983).

Gaudio then selected two 15-second samples from each speaker and used these samples for both acoustic and perceptual analysis. The acoustic analysis involved three different techniques for measuring gross pitch variation. Firstly, Gaudio used C. D. Aronovitch's (1976) method, which calculated Fo range by comparing standard devia-
tion with statistical measures of variance. The resulting $F_0$ range was then correlated with the straight/gay scale from the perceptual study introduced below. Secondly, Gaudio used a process invented by Stephen Eady (1982) and again compared straight/gay ratings from the perceptual study and 'the average extent of changes in pitch (measured using the absolute value of the difference between successive $F_0$ values)' (1994:51). Finally, Gaudio applied another system developed by Eady (1982) whereby he studied changes in the pitch track curve moving from positive to negative slope (or vice versa), and then compared them to the aforementioned straight/gay scale.

For the perceptual analysis, Gaudio worked with 13 undergraduate students (10 women and 3 men). Of them, 7 women and 2 men were straight; one woman was bisexual; and one man was gay. Two women did not disclose their sexuality. These participants listened to the speech samples and judged the speakers' voices on the basis of the following four options:

- straight - gay
- effeminate - masculine
- reserved - emotional
- affected - ordinary
Each pair was judged on a rating scale that ranged from 1 ('extremely') to 4 ('neutral') to 7 ('extremely'). The listeners were able to judge the sexuality of the speakers with great accuracy. In fact, for both passages, all the speakers were judged correctly (i.e., they were properly indicated as straight within the ‘straight’ area and gay within the ‘gay’ area). Gaudio conducted a rank test which showed this result to have less than a 2% chance of occurring randomly. The listeners also rated the gay men as sounding ‘effeminate’ (for both passages, where statistically-significant results were found), ‘emotional’ (but just for the second reading, where the interaction between sexuality and the scale ‘reserved/emotional’ was statistically significant) and ‘affected’ (but only for the first reading, where, as above, the results were statistically significant). The nongay men, instead, were judged as sounding ‘masculine’ (for both readings), ‘reserved’ (for the second reading), and ‘ordinary’ (for the first reading).

Although the listeners were able to correctly identify the sexuality of the speakers (possibly, because the speakers’ sexuality ‘matched’ the way they sounded?), the acoustic analysis revealed that the gay men’s and the straight men’s pitch variability did not differ significantly. All three methodologies employed by Gaudio to measure and com-
pare gross pitch variability between gay male and nongay male speakers produced the same result.

Gaudio believed that using gross pitch measurements probably did not allow him to find what part/s of pitch, if any, might be responsible for the correct judgments made by the listeners. He suggested that since the first reading passage (i.e., the accounting text) showed higher correlation values for the three methodologies engaged to measure pitch changeability than the second reading passage (i.e., the dramatic monologue), then variability of prosody and topic might have played an important role in pitch. This role was overlooked. As a result, the study was unable to identify whether pitch is actually used by listeners to correctly judge the sexuality of a man. To summarize, Gaudio's listeners were able to accurately identify the speakers as gay or straight even though his gay speakers did not use a higher pitch than his straight speakers. If pitch played a part in this judgment, it surely was not related to the gross measurements performed by Gaudio. As a consequence, he concluded that variability of prosody and topic did interact with pitch to create the cue to which the listeners responded in their correct identification of gay and straight speakers.
I believe Gaudio is correct in using listeners' judgments of speakers' voices. However, I find that the interpretation he offers for his results is open to alternative positions. He deduces that the perfect matching of the listeners' ratings with the self-identified sexuality of the speakers provides evidence that some phonetic features (possibly related to pitch) enable listeners to distinguish gay men's speech from straight men's pitch. This reasoning does not account for the option that some gay men might sound straight and, vice versa, some straight men might sound gay. He did not have to consider this, as his listeners correctly identified the sexuality of all his speakers. It is thus likely that his speakers were all identifiable as gay or straight. As they were all 'open about their sexual orientation' (1994:43), they presumably produced some phonetic cues that made their sexuality recognizable. Finally, Gaudio's study is advantageous as it tests for attitudes toward sounding gay or straight. Although topic choice did not make a difference in the sexuality ratings (i.e., all gay men were correctly identified as gay and all straight men were correctly judged as straight), these ratings did show that gay(-sounding) men were perceived as emotional and affected depending on the reading (although they were judged as effeminate in both readings). Perhaps, Gaudio introduced a bias into his study, as he asked the listeners to rate the speakers on the basis of differ-
ent parameters which included 'gay – straight'. It is possible that the listeners were offered (or assumed) parallels between 'gay – straight' and the other parameters.

2.2.3. Studies on gay and lesbian speech

Pierrehumbert et al.'s (2004) study involved both women and men, and also seemed to assume the existence of a speech community of gays and lesbians without defining it. However, it explicitly stated that many (rather than all, as it might be implied by the studies reviewed above) gay and lesbian speakers can be identified (on average) through their speech. This research found some phonetic features (i.e., vowels and vowel-related cues) indexing gay and lesbian speech, and it did so using a larger number of speakers, who were identified accordingly to their sexuality. It could therefore be argued that there is evidence that gay and lesbian speech exists and (in part, contra Moonwomon-Baird 1997) is recognizable. However, in my opinion, this study is impeded by the fact that it works on averages. Thus, while it has the advantage of finding general patterns, it also sets up the inevitable risk of missing individual variation. In other words, it is likely that some speakers were not recognized according to their sexuality, and this study neglects them. Even more, it prevents us from learning whether such unrecognized speakers were included in the study (and it is possible that they
were, as the averages, shown below, were close enough to the neutral mark of sounding neither gay/lesbian nor straight). Finally, Pierrehumbert et al. used bisexual speakers who were conflated with lesbians because of their similar speech production.

As already mentioned, Pierrehumbert et al. employed a fairly large number of participants (i.e., 103). All were from the Chicago area, and were divided as follows: 26 straight men, 29 gay men, 16 straight women, 15 lesbians and 16 bisexual women. No other information about the speakers was specified. Since the bisexual women and lesbians showed no significant differences in initial data observations, they were studied as a single group, called LB, which is a point that deserves more consideration. This combination is aligned with the 'language reflects identity' theory. Pierrehumbert et al. did not ask their listeners whether or not they could hear bisexual-sounding women in their perception study (detailed below). It appears that, rather, they made a preliminary study of the production of the bisexual speakers, found no special difference between their speech and that of lesbians, and so created a mixed group of lesbians and bisexual women. It is likely (although we are offered no information) that these bisexual women showed no such difference on average. But then we are presented with risking the loss of important knowledge about individual variation. In addition, I believe it could have
been informative to have asked listeners for judgments on bisexual-sounding female voices, so as to investigate their perceptions of bisexuality.\(^{10}\)

All of the participants' voices were recorded as they read a 'standard set of phonetically balanced sentences' (2004:1906). The experiment was divided into two parts: an acoustic study on the monophthong production of the speakers and a perceptual study of the speakers' voices using 80 listeners.

Pierrehumbert et al. compared the monophthong production of each group as follows: for each speaker, acoustic measurements (given in Bark, a dimension that allows for the comparisons of perceptual distance among sounds) were taken of five vowels (/ɪ/, /e/, /æ/, /ɑ/, /u/). These vowels were selected on the basis of a previous study by Bailey (2003) as indicative of the range of acoustic cues that listeners might use in determining a speaker's sexuality. For all of the vowels: /ɑ/, in the word box; /i/, in feet; /e/, in makes; /u/, in blue; and /æ/, in back, the first three formants (i.e., F₁, F₂, F₃) and duration were measured. Then, the following was observed for each speaker: mean duration of the five vowels; average F₁ and F₂ values for the five vowels (to find the centroid of the vowels, or the center point of the averaged first two formants for all the

\(^{10}\) This is an intriguing possibility to pursue in my future research.
vowels); overall dispersion in the \( F_1/F_2 \) space (which, according to the researchers, would measure 'overall clarity and effort in speaking' 2004:1907); and some \( F_3 \) data which were then unreported, as they did not reflect any speech difference on the basis of sexuality. The results indicated that vowel production does differ depending upon the sexuality of the speaker. The group formed by lesbians and bisexual women showed significantly lower \( F_1 \) and \( F_2 \) averages for all vowels, but this effect was due mostly to /u/ and /a/ (which turned out to be less fronted in the speech of the lesbian and bisexual women than in the speech of the straight women). Gay men showed a higher degree of articulatory precision than straight men, resulting in an expanded vowel space. There was no interaction for sexuality in relation to vowel duration (although women, as a whole, produced longer vowels than men).

Pierrehumbert et al. tested the stereotype that gay men and lesbians imitate the opposite sex's speech and posited three reasons. The first is the hypothesis that gays and lesbians are biologically closer to the opposite sex than to their own sex. Thus, gay men and lesbians naturally sound like the opposite sex\(^{11}\). The second reason is the possible

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\(^{11}\) Pierrehumbert et al. quote Bailey (2003), who reported on a series of studies which discuss how sexuality is determined by hormonal exposure in utero. Gay/lesbian individuals theoretically receive hormones largely present in individuals of the opposite sex. This
existence of some 'innate biological factor that influences both sexual orientation and
the trajectory of language acquisition' (2004:1905). Accordingly, this hypothetical fac-
tor would affect some 'higher-level aspects of language production, such as attention to
adult models during acquisition' (2004:1906). Correspondingly, GLB (i.e., gay, lesbian
and bisexual) speakers would acquire and produce language differently from straight
speakers, because they would relate otherwise to some aspects of language acquisition.
The third reason is that gay, lesbian and bisexual speech might be learned entirely from
other GLB people as speakers involve themselves with members and groups within the
GLB community. Given the preceding three hypotheses, Pierrehumbert et al. interpreted
these results as follows: 'The notion that the LB women were using backness to convey
social identity rather than overall masculinity is supported by our finding that they did
not mimic the articulatory reduction that is typical of male speech' (2004:1908). Simi-
larly, '[...]' the gay men [...] have at most adopted aspects of female speech that convey
social engagement and emotional expressiveness, such as monophthong-space disper-
sion, and not those that would convey diminutivity or subservience, such as a higher f0
or overall higher-scaled formants' (2004:1908). In conclusion, then, Pierrehumbert and

explanation could predict that the speech patterns of gay and lesbian individuals are shifted
towards the opposite sex.

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her co-authors argued that biology does not play a direct role in GLB speech. Specific phonetic characteristics for the GLB group were found, but it was suggested that they are learned. Pierrehumbert et al. conjectured that these characteristics could be adopted by GLB speakers during their adolescence, at which time identification begins with other GLB individuals. But they also think it is possible that, during early language acquisition, some biological factor may predispose these young learners to selectively employ certain speech patterns of adult models belonging to the opposite sex.

These explanations are, in my opinion, tentative. Previous sociolinguistic research revolved around a binary model that saw men and women as differing in their language use. At first, these dissimilarities were thought to be a natural consequence of biology. Among others, Bing and Bergvall (1997), and Eckert and McConnell-Ginet (2003) provide accounts on binary thinking and how it was – and still is – promoted and enforced, particularly in medicine. For example, (in Western societies) intersexed individuals are arbitrarily given a sex at birth by doctors, at times under pressure from the newborns' parents. As females differ in biology from males, it was thought, so must their language differ. However, with the advent of feminism in the 1960s and 1970s, a claim was made for the distinction between 'sex' (which is based on biology) and 'gender' (which is the
social construction of sex). Gender was seen as a trait that each person acquires at a very young age. Examples of this line of research are Robin Lakoff’s (1975) *Language and Woman’s Place* and Deborah Tannen’s (1990) *You Just Don’t Understand*. Both studies claimed that men and women are socialized differently from early childhood on, which creates a separate language for each gender. The 1990s saw a paradigmatic shift.

The status of sex as biological, and therefore natural, came into question. The argument was that social biases about gender inevitably shape any ‘biological fact’ (Cameron 2005:484). Thus, sex must be constructed. However, volumes of research still focus on preconceived ideas about sex as strictly dichotomous. Specifically, much research continues to see two separate sexes, a female and a male, and conceptualizes only in binary terms as to what constitutes a male and what constitutes a female. Thus, it perpetuates the thought that gay men and lesbians must refer to abstract categories of male and female, as is reflected in the stereotype tested by Pierrehumbert et al. that gays and lesbians imitate the opposite sex’s speech. I will not discuss the three hypotheses examined by Pierrehumbert et al. for this stereotype. I believe that the short review I just presented on the evolution of (some) sociolinguistic thinking clarifies how to confute those hypotheses. However, I wish to critique the claim by Pierrehumbert et
that gays and lesbians selectively adopt phonetic features from the opposite sex. This explanation is heteronormative, because ‘opposite sex’ clearly implies ‘opposite sex’s straight individuals’. If Pierrehumbert et al. did not imply this, they would not be able to justify the assumption that gays and lesbians have a speech distinct from straight men and women, and their study would lose its basis. The heteronormativity of this position is also evident in that they do not consider that it is possible for straight individuals to imitate gay men’s or lesbians’ speech. Straight men might wish to sound amiable and use gay men’s expanded vowel space. Further, as already discussed throughout the chapter, neither a definition is given of the GLB group members from whom young GLB speakers would acquire GLB language, nor is it given of the opposite sex individuals from whom young GLB speakers would learn those specific phonetic features that uniquely identify the opposite sex’s specific language. Finally, there is no reference as to where these phonetic features belonging to the opposite sex come from.

The second part of Pierrehumbert et al.’s experiment, a perceptual study of the speakers’ voices, proceeded as follows. Eighty participants (about whom no information is given) listened to the speakers’ recordings and rated their voices ‘on a scale of 1 (‘sounds totally straight’) to 7 (‘sounds totally gay/lesbian’)’ (2004:1906). The listeners’
assessments were generally correct. On the basis of the scale values, gay men were judged to be gayer sounding than straight men, and lesbians and bisexual women were judged to be more lesbian sounding than straight women. Specifically, gay men averaged 4.6 points and straight men scored an average of 3.2 points. Lesbian and bisexual women, instead, averaged 4.3 points and straight women, 3.2 points. Pierrehumbert et al. concluded that there must be specific acoustic features that help listeners make a distinction between a gay/lesbian voice and a straight one. Specifically, they claimed that '[o]bjective acoustic differences must be present, at least on average, in the speech signal' (2004:1906) which would allow for the identification of speakers on the basis of sexuality.

The presentation offered by Pierrehumbert et al. on their rating scales appears of particular concern. In it, they state that their gay/lesbian speakers were rated as sounding more gay/lesbian than their straight speakers. To support this claim, they provide averages for each speaker group. But averages can often cloud, rather than clarify, matters\(^\text{12}\). Perhaps all these gay/lesbian speakers were recognizable as sounding

\(^{12}\) Pierrehumbert et al. (2004) claimed that, on average, their gay/lesbian speakers were rated as sounding more gay/lesbian than their straight speakers. As an example of how averages might hide fundamental details – and mislead one’s research – I report in this footnote on the averages obtained for each speaker group in the present dissertation. In my study, I employed a rating
gay/lesbian. Perhaps all of the straight speakers were also unambiguously identifiable as sounding straight. However, we cannot conclude this, as we do not have information about judgments on individual speakers. The possibility that at least some gay/lesbian individuals were not rated as sounding gay/lesbian is obscured by the use of averages for the gay/lesbian speakers’ groups. Similarly, we cannot determine whether any of the straight speakers were rated as sounding gay/lesbian. In other words, the method generalizes over language variation – especially, variation across speakers.

scale ranging from 1 to 7, where 1 corresponded to ‘sounds definitely homosexual’, 4 corresponded to ‘neutral’, and 7 corresponded to ‘sounds definitely heterosexual’. The rating scale was used by 20 listeners to judge the voices of 6 gay men, 6 straight men, 6 lesbians, and 6 straight women. The average for all of my gay male speakers was 3.31; for all of my straight male speakers, 4.01; for all of my lesbian speakers, 4.47; and for all of my straight female speakers, 4.03. These averages tell us that my gay male speakers were rated as sounding gayer, and that my straight male speakers were rated as sounding straighter – or, more accurately, as sounding more neutral. All of my female speakers were rated as sounding on the neutral/straight side, regardless of their self-declared sexuality – with my straight female speakers being judged as sounding less straight (almost neutral) than my lesbian speakers. If I had followed Pierrehumbert et al.’s theory, I would have concluded that speakers could not distinguish sexuality at all for women, and that their judgments with respect to men were weakly accurate. The details hidden by these averages reveal that some gay/lesbian individuals of both genders were judged as sounding gay/lesbian, but others were rated as sounding straight. Moreover, the opposite was also true: certain straight speakers were judged to sound straight, but other straight speakers were rated as sounding gay/lesbian. Of even more significance, some individuals, regardless of their sexuality, were not rated consistently as sounding either gay/lesbian or straight. I believe that these individual identifications are profoundly valuable and deserve full investigation.
To conclude, in my opinion Pierrehumbert et al. make important advances, in that they employ a large number of speakers and listeners, and investigate vowel articulation, rather than pitch, as a possible feature of gay/lesbian speech. In addition, they appear to be the first researchers to investigate both women’s and men’s speech. However, the study assumes a homogeneous speech community for gays and lesbians, without defining who counts as gay or a lesbian. The phonetic features found might indeed relate to gay- and lesbian-sounding speech, as the speakers were correctly identified by listeners according to the speakers’ sexuality. However, these identifications are based on averages which disallow us from discovering any deviant case – and accounting for it.

Munson et al. (2006) is another large study that appears to assume a homogeneous gay and lesbian speech community. Remarkably, Munson et al. do find deviant cases in their study, but simply state their existence without offering any justification.

Munson et al. conducted three interrelated experiments whose purpose was to investigate the acoustic and perceptual characteristics of lesbians, gay men, bisexual women and men, and straight women and men. The study was based on single words, chosen on the basis of each carrying specific phonetic segments. The elements were the vowels
The first experiment involved 44 participants who were divided into four groups as follows: 11 lesbian and bisexual women, 11 gay and bisexual men, 11 straight women, and 11 straight men. The participants were all speakers of the North Central dialect of American English investigated by Labov, Ash and Boberg (2006). They were recorded while reading a list of 38 words three times – each list appearing on a screen, one at a time. Sixteen of these words contained one of the specific vowels investigated, whereas the remaining 16 featured one of the two fricatives. Some tokens were discarded due to problems such as pronunciation errors.

Munson et al. measured the duration and the first two formant frequencies for each vowel. Vowel space dispersion was also analyzed. Further, the fundamental frequency and its range were calculated. Mean $F_0$ and $F_0$ range were also measured. Finally, the spectral tilt of the vowel /æ/ was found. This measure corresponds to the amplitude of

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13 It is not clear why the bisexual individuals were grouped with the gay/lesbian individuals. Pierrehumbert et al. did a preliminary analysis of their data which showed similar patterns for bisexual women and lesbians. Thus, they had a motivation for conveniently grouping together bisexual and lesbian women. This would possibly provide a justification for Munson et al. in doing the same for their female participants. However, Pierrehumbert et al. did not work with bisexual men. Therefore, no precedent for having bisexual and gay men in the same group exists. Munson et al. did not provide an explanation for their grouping of male bisexuals and gays together.
the first harmonic minus the amplitude of the second, and it relates to voice quality. Munson et al. chose to find this measure only for /æ/ because this vowel, being low, allows for a reliable study of the spectral tilt compared to higher vowels. High vowels' harmonics might be affected by the $F_1$ resonance in speakers with a high fundamental frequency, which is not the case with low vowels.

Fricatives were also observed. In particular, spectra of both /s/ and /ʃ/ were investigated through four measures (calculated through the whole frequency range, from 0 Hz to 11,250 Hz). Two measures were the first spectral moments of the fricatives. One was the skewness for /s/, or the third spectral moment for /s/. The last was a special measure created by Munson that refers to the precision with which /s/ is pronounced. This measure addresses the possible changes in precision of articulation linked to age. It also relates to within-speaker variability of fricatives' spectra.

The results of this first experiment showed that the lesbian and bisexual women pronounced /ɛ/ with a lower $F_1$, and /ou/ with a lower $F_2$ than straight women. The gay and bisexual men's speech, instead, was characterized by a higher $F_1$ for /ɛ/ and /æ/ than the straight men. Furthermore, gay men produced a more negatively-skewed /s/ than the straight men, indicating that the gay men articulated that fricative with more
energy than the straight men. No difference was established for vowel space dispersion along sexuality lines, which contradicts the finding by Pierrehumbert et al. (2004) and Smyth et al. (2003, described below). Women showed a higher $F_0$ than men, and also a wider $F_0$ range than men (sexuality had no effect on this parameter). Finally, vowel duration did not correlate with the sex or sexuality of the speakers. These results were interpreted as providing evidence that gay/lesbian and bisexual speakers do not try to imitate the opposite sex’s speech patterns, for if they did, their whole vowel articulation would lean in the direction of the opposite sex’s patterns. However, only particular vowels seemed to correspond to the opposite sex’s characteristic speech.

As above, we are offered the hypothesis that gay/lesbian (and, now, also bisexual) speakers imitate the opposite sex’s speech. I previously detailed what seems to me to be the problem with this viewpoint in my analysis of Pierrehumbert et al.’s study. I will briefly point out that it is a heteronormative suggestion that obscures the possibility that straight speakers might pick phonetic cues from gay/lesbian speakers to their own advantage.

In the second experiment, Munson et al. set out to investigate whether or not the phonetic characteristics found in the first experiment served as phonetic cues for listen-
ers in identifying the sexuality of the speakers. Forty listeners participated in this second experiment. They were all native speakers of English and ranged in age between 18 and 40 years. There was no control for the sexuality of the listeners, as it was assumed that they would follow the normal distribution of the general population. No other information about the listeners was provided. Each participant listened to 12 words from each speaker. The words were chosen thus: three contained front vowels and sibilant fricatives; three featured front vowels and no sibilant fricatives; three more had back-round vowels and sibilant fricatives; and, finally, three contained back-round vowels and no sibilant fricatives. The words were presented in groups (by their phonetic content) to the listeners in the following manner. One grouping of three words appeared on a screen as it was read by a speaker. After each stimulus was presented, the listeners were to rate each speaker's sexuality on a scale from 1 (for those individuals sounding certainly gay/lesbian) to 5 (for those who sounded unambiguously straight). Intermediate values counted for intermediate ratings. Speakers also judged these voices as belonging to a woman or to a man; determined the approximate physical height of each speaker (i.e., on, below or above average); and decided upon the perceived clarity of speech for each speaker on a scale ranging from 1 to 5. In designing this experiment,
care was taken to prevent listeners from rating the same speaker on more than one kind of parameter. In other words, a listener would judge a speaker on one parameter only. Munson et al. argued that this would prevent listeners from correlating one judgment with another for the same speaker, thus influencing one rating because of the presence of another rating.

The results showed that, for each stimulus, all speakers were reliably identified according to their sex. Further, for each stimulus, gay/lesbian individuals on average, regardless of sex, were judged as sounding more gay/lesbian than straight speakers. Additionally, high F₁s for low-front vowels were related to straight-sounding judgments for women and gay/lesbian/bisexual-sounding judgments for men. Similarly, high F₂s in back vowels resulted in more straight-sounding ratings for women and gay/bisexual-sounding ratings for men. Finally, sexuality ratings for men were also related to /s/ spectra (more skewed in gay-sounding than in straight-sounding men), and sexuality judgments of women were further correlated with overall vowel-space dispersion (with lesbian- and bisexual-sounding women featuring a smaller vowel dispersion than straight-sounding women, contra Pierrehumbert et al., 2004).
This experiment provided more evidence for the main conclusion arrived at by the first experiment, that is, that bisexual and gay/lesbian individuals do not pattern their speech directly after the opposite sex. In fact, the second experiment shows that listeners were not cued in their judgments by general indicators of femininity or masculinity.

This result is best described by the acoustic measurements of the speakers (i.e., the fundamental frequency mean and range, and the spectral tilt for /æ/) that, in regression analyses, were not correlated with average sexuality. Finally, Munson et al. point out that there exists an asymmetry between the sexuality predictors of women and those of men. The asymmetry can be seen in the finding that listeners might be more familiar with gay and bisexual men's speech. In fact, a point can be made that, when analyses included the speakers' self-identified sexuality, stimulus composition influenced ratings of male sexuality, but not those of female sexuality.

This experiment reveals deviant cases and, thus, is faced with the option to offer insight into them. However, it does not. Although gay/lesbian and bisexual speakers were rated as sounding more gay/lesbian than straight speakers, there was a noticeable tendency for all the speakers (particularly the female speakers) to be rated as sounding straight (see Munson et al. 2006, p. 221 for the charts showing these figures). I find it
problematic to claim that gay/lesbian speakers were judged as more gay/lesbian-sounding than straight speakers when, in fact, many individual speakers tended to be perceived as sounding straight. This point is worth consideration, as it both promises to reveal invaluable details on the speakers’ voices and it indicates the listeners’ expectations.

The goal of the third and final experiment was to find possible correlations between the previous experiment’s ratings of perceived sexuality and two other parameters: speech clarity and perceived height. The rationale for the choice of speech clarity can be found in the results of Smyth et al. (2003, described below) where speakers were rated as sounding gayer when performing a more formal task, such as reading, than a less formal task, such as giving a spontaneous speech. As reading often involves more hyperarticulation than spontaneous speech, this result might show that clarity of speech is associated with gay-sounding men. The choice of perceived height relates to the possibility that listeners might estimate speakers’ heights (related to the size of speakers’ vocal tracts). Further, the previous results found in Experiment 2 may translate into a difference between the height of gay/lesbian and bisexual people and that of straight people.

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14 Munson et al. reported that the sexuality judgments of some (the exact number is not stated) speakers varied depending on the stimulus. Munson et al. simply acknowledged this result, but did not explore it.
people. To explain these two points, the authors invite the reader to reflect upon the interaction of certain parameters that give one the sense of a smaller vocal tract. These parameters are $F_2$ raising for /ou/, resulting in fronting of the diphthong, and $F_1$ raising for /æ/, resulting in failing to raise the vowel. Taken together, they give the impression of a small vocal tract. These two parameters were directly associated with the speech of gay/bisexual-sounding men, which might indicate that listeners perceive gay/bisexual-sounding men as being short. This result is further confirmed by the fact that the two parameters were inverted for lesbian/bisexual-sounding women, in that, /ou/ was not fronted and /æ/ was not lowered. In other words, lesbian/bisexual-sounding women might have been perceived as being tall.

To test perceived height, the researchers employed the same participants for the second experiment. Vocal tract size relates, to some extent, to the acoustic characteristics of speech (as shown, among others, by Hillenbrand et al., 1995). However, it appears that listeners are seldom successful at correctly identifying the height of a speaker from speech signal alone. Furthermore, speakers can willfully control their vocal tract size by, for instance, lowering the larynx and protruding the lips (thus, lowering all low formants) to give the impression of a larger vocal tract – which, in
turn, suggests a taller, larger person. According to González (2004), the relationship between perceived height and acoustic speech characteristics, albeit weak, exists, and is valid for short samples of speech as well. Therefore, Munson et al. postulate that using single word groupings would be appropriate for testing perceived height. For the perceived clarity test, 10 additional listeners were recruited in the same way described for the second experiment. Again, there appeared to be no control for their sexuality, nor was there any control for gender, as the group was comprised of a mix of 7 women and 3 men. For the perceived height test, the same words used in the second experiment were utilized. Some of these stimuli were employed for the perceived clarity test. Specifically, for this test four words were selected, one from each word group. In the perceived height test, each listener was played a recounted group of three spoken words for each trial. The listeners were to rate the speakers’ perceived heights on a scale ranging from 1 (i.e., ‘taller than average’) to 5 (i.e., ‘shorter than average’). For each speaker, average perceived height was calculated. The results indicated that women were rated as sounding shorter than men. However, there was no significant interaction between perceived height and sexuality.
For the perceived speech clarity test, listeners were played the stimuli as follows. For each trial, paired comparisons were presented. Each consisted of two stimuli: the first containing four words pronounced by one speaker as they appeared spelled on a screen; the second containing the same words both displayed on the screen and produced by a different speaker. The listeners were asked to indicate which of the two speakers had the clearer pronunciation. Each pair of speakers were members of the same sex. The data for this test was analyzed through a set of matrices and ANOVAs which revealed that lesbian and bisexual women’s speech was judged to be less clear than that of straight women. Conversely, gay and bisexual men’s speech was rated as being clearer than straight men’s. Finally, the results from this experiment were compared with those from the second experiment to establish whether or not there existed any relationship between the phonetic features found in the second experiment and perceived height and/or perceived speech clarity. Through a series of multiple regressions, a correlation was found between perceived height and perceived speech clarity in women, but not in men. Further, women who were rated as sounding straight were also rated as being shorter than average. At the same time, women who were considered to sound less clear also tended to be judged as sounding bisexual/lesbian. For men, those
who were rated as sounding clearer were also mostly indicated as sounding gay/bisexual. Munson et al. further found that the phonetic cues that were related to sexuality and defined in the second experiment continued to be valid beyond perceived speech clarity and perceived height.

In conclusion, it is suggested that gay/lesbian/bisexual people only selectively adopt certain features that characterize the opposite sex. Gay and bisexual men might want to produce a generally-clear speech style, as suggested by the second and third experiment. However, Munson et al. complement this explanation by hypothesizing that gay/bisexual men are leading a vowel change that is currently evolving in Minnesota. This change shows /æ/, /ou/ and /u/ as inching progressively closer to other varieties of American English. Straight men seem to follow this change to a lesser extent, as they produce fewer vowels in that direction. It is more difficult to understand the dissimilarities between lesbian/bisexual women and straight women. The only hypothesis that Munson et al. devise is that the straight-sounding women might attempt to portray their being shorter than they are, as this might be associated with positive qualities commonly related to women (such as deferring to others and being nonthreatening). As a final explanation, then, it is offered that gay/lesbian/bisexual speakers selectively mod-
ify their speech for specific benefits (in the case of men, to speak more clearly; in the case of women, to sound taller).

Munson et al. appear to continue Pierrehumbert et al.'s (2004) research – Benjamin Munson was among the coauthors of Pierrehumbert et al.'s article. It is indeed valuable that Munson et al. investigated predictors of perceived sexuality by cross-checking listeners' judgments with specific phonetic features related to speakers. However, I believe this study suffers from the same theoretical problem that faced Pierrehumbert et al., that is, assuming gay/lesbian speech communities without defining them. Further, it grouped bisexual male speakers with gay speakers and bisexual female speakers with lesbian speakers without an explanation for doing so. The study was successful in discovering some phonetic features that supposedly mark the speech of gays and lesbians, but the listeners' identifications of gay and lesbian speakers were inconsistent on the basis of the different stimuli. Finally, Munson et al. reported on the finding of speakers who did not sound in accordance to their sexuality. Addressing the issue would have provided a significant contribution to the field.
2.3. Studies on gay/lesbian speech based on the second approach

In the previous sections I explained why I believe that the approach followed by Pierrehumbert et al. (2004) and other researchers, based on the theory that identity determines speech, is valuable in testing stereotypes and finding general patterns, but it does not allow for a more introspective outlook on language variation. The shortcomings with this approach can be summarized as follows:

1) It insufficiently accounts for language variation and change within speakers and speaker groups;

2) It appears to assume that individuals are passive enactors of their own identities;

3) It insufficiently takes into account listeners' expectations or the importance of audience in the co-construction of a speaker's identity.

The second approach is based on queer theory's notion of 'performativity', which I have discussed in more detail in Section 2.1.2.

2.3.1. Studying speakers on the basis of perceived sexuality

Ron Smyth, Greg Jacobs and Henry Rogers conducted a series of studies on male voices (namely, Jacobs et al. 2000, Rogers and Smyth 2003, and Smyth et al. 2003). Their approach was based on determining why a man's voice could be described as gay-
sounding or straight-sounding, rather than on investigating the phonetic characteristics of gay speech. Their main article is entitled *Male voices and perceived sexual orientation: An experimental and theoretical approach*. I report only on the 2003 article as it is both based on the previous two studies and represents the most complete attempt to date for allowing the possibility that gay men can be mistaken for straight on the basis of speech and vice versa. Smyth et al. (2003) specifically aims at building a database of male voices ranging from 'very gay-sounding to very straight-sounding' (Smyth et al. 2003:329). The study was divided into two studies – a production and a perception study. For the production task, Smyth et al. selected 25 men, whose native language was a dialect of Canadian English. Seventeen of these men were self-identified as gay, and 8 as straight. The participants were asked to perform two tasks. The first was to read two passages, one being scientific, the other dramatic. The scientific reading was the phonetically-balanced *Rainbow Passage*, authored by Grant Fairbanks (1966). The dramatic reading, written by Sean Crist (1997), described a building on fire, and its purpose was to investigate the phoneme /s/. The second task entailed asking the participants to recount an event they had experienced while under duress. The scientific reading was phonetically balanced and aimed at creating the least 'emotional involvement
in the speaker' (Smyth et al. 2003:333). In contrast, the dramatic passage was designed to involve the speaker emotionally. The objective of the event narration, instead, was to elicit spontaneous speech. The perception task involved 46 listeners, 14 of whom identified themselves as gay. The remaining listeners (13 men and 19 women) were not asked of their sexuality, although the authors believed they were predominantly straight. All the listeners were presented a 30-second selection from each of the three recorded passages made by all the speakers. They judged each voice as sounding gay or straight, and were asked to rate their own confidence for each judgment 'on a scale from zero ("total guess") to six ("100% accurate")' (2003:334). Each selection from the spontaneous speech was checked for lexical and pragmatic factors that would suggest the sexuality of the gay speakers.

The results indicated that (on average for the three passages) listeners had a clear idea about (i.e., indicated high confidence on their own judgments) and agreed upon which voices sounded gay, which sounded straight and which were between the two. Interestingly, the voice that the listeners rated as the straightest-sounding belonged to a gay man. Another gay man's voice was judged as the third-most straight sounding. In addition, a voice belonging to a straight man was placed toward the gayer-sounding end
of the scale. Another important result was that the straight speakers were perceived as
gayer sounding in the scientific reading than in both the dramatic and the spontaneous
speech passages. The topic choice, then, appeared to have an effect on the listeners' rat-
ing of the speakers. Smyth et al. additionally found that the gay male listeners tended to
judge a voice as sounding gay more frequently than the other male listeners (whereas
the female listeners did not). Their interpretation of these findings was that 'for those
gay men who have a gay-sounding voice, listeners are obviously detecting particular
features of such a voice, and responding to them; for these gay men, gaydar is quite
accurate. However, there are gay men who simply do not sound gay' (2003:344). ‘Gay-
dar’ ('gay' + 'radar') is loosely defined as the ability to correctly identify a gay man or
a lesbian. Stereotypically, gays and lesbians are thought to possess this skill.

Another telling result had to do with the perceptions of the following two listener
groups: one made up of only the gay men and the other consisting of a mix of all the
women with the rest of the men. Although these two groups, in general, agreed upon
their ratings for the speakers, the analysis of individual speakers' voices revealed that
some of their voices might have been perceived differently by the two groups. Given
that Smyth et al. did not have enough speakers to accomplish finding an overall effect, a clear conclusion could not be reached.

A problematic discovery occurred in the rating of spontaneous speech by all listeners toward speakers in that they found every gay speaker to sound gay, and did so with extreme confidence. Therefore, Smyth et al. suspected that their attempt to eliminate any lexical and pragmatic gay content\(^{15}\) from the selection played back to the listeners had been unsuccessful. To test this possibility, they transcribed all the selections that had been used for the spontaneous speech experiment, and then had them read by 16 people (8 men and 8 women). The participants were asked to rate the readings according to the same scale utilized for the main study. The results strongly indicated that, indeed, Smyth et al. had failed to remove all gay content from the selections.

Smyth et al. likewise investigated whether or not 'the construct “gay- or straight-sounding” would give different results from other, similar constructs' (2003:341). According to popular belief, gay men are feminine, whereas straight men are masculine. It might then be feasible for a gay-sounding voice to be labeled as feminine. Smyth et al. devised a study in which 16 participants (8 women and 8 men, all students of the

\(^{15}\) Smyth et al. did not provide examples of lexical or pragmatic gay content.
University of Toronto) listened to the same selections of speech from the main study. However, this time the listeners were to rate the voices as either ‘masculine’ or ‘feminine’, and to indicate their confidence using the same mode as in the main study. The results suggested that the ‘constructs “[straight]/gay” and “masculine/feminine” are highly correlated in terms of listener judgments. However, the “masculine/feminine” ratings were on average lower than the “[straight]/gay” ratings’ (Smyth et al., 2003:344). To justify this finding, Smyth et al. hypothesized that the factor involved might be pitch. Mean pitch was then observed in correlation with the two ratings, that is, ‘masculine/feminine’, and ‘straight/gay’, and the results indicated that listeners showed no resistance to rating a low-pitched voice as gay-sounding, but hesitated in judging it as ‘feminine’. Smyth et al. offered that these results ‘were compatible with findings that suggest a relationship between pitch and masculine/feminine ratings, even though there is no such relationship for [straight]/gay ratings’ (2003:343). This conclusion confirms Gaudio’s (1994) research as failing to find a correlation between mean pitch and gay ratings.

Overall, the results (particularly that some gay men were rated as sounding straight and vice versa) were interpreted by Smyth et al. as being in sync with the notion of
'performativity' already observed in the previous sections. Individuals' performances are not always recognized as legitimate, as in the case of gay-sounding voices (at least, in North America, Smyth et al. argue). Therefore, Smyth et al. conclude that some gay men might choose not to sound gay, whereas others, at their own peril, do the opposite. Smyth et al. do not discuss how conscious this choice is.

Smyth et al. (2003) focus on listeners' expectations as to what a voice might sound like. Considering Smyth et al.'s work, I was prompted to contribute methodology improvements (see Chapter 3) for my own dissertation as follows. In their study, performativity is not fully addressed, as the importance of audience in the co-construction of an individual's identity is considered only to a limited degree. This is reflected in that the speakers of this study were asked to perform specific tasks without reported consideration for their audience. It can be argued that the presence of one or more of the researchers or even their absence might have influenced their tasks. If a researcher had been present, s/he would have helped the speaker to construct a specific persona. If no researcher had been present, the speaker would have presumably picked an ideal audience about which we have no information. These arguments prompted me to include what I believe to be a more focused attention on audiences in my dissertation.
Finally, no interviews with speakers or listeners were conducted. Such interviews might have 1) shed light on the reasons why speakers might choose (more or less consciously) to sound differently from what it is expected of them because of their specific sexuality, and 2) given answers as to what cued listeners in their judgments. The possibility of using interviews also informed the approach to my dissertation.

2.4. Conclusions

In this chapter, I introduced two main approaches which in my opinion have been followed thus far in the study of gay/lesbian and straight speech. The first approach seems to be based on the theory that an individual's identity determines her/his speech. Accordingly, proponents of this approach have sought phonetic features that might characterize the speech of gay/lesbian individuals in contrast to that of straight individuals. Although I recognized the value of this approach in establishing wide patterns on the basis of identity groups, and its ability to test stereotypes, I criticized it as being unable to address the possibility that speakers might choose (intentionally or not) to sound differently from what their sexuality would 'dictate'. Moreover, this approach does not suf-
ficiently address the importance of listeners' expectations, particularly in those 'deviant' cases when speakers do not sound as expected for their sexuality.

The second approach directly focuses upon the possibility that speakers can make a choice on whether to conform or to challenge the norm. This approach is based on queer linguistics, or the linguistics branch of queer theory, and specifically upon the concepts of 'performativity' (Butler 1990) and 'heteronormativity' (Warner 1991). In my study, I follow this second approach.
CHAPTER 3.

RESEARCH QUESTIONS, HYPOTHESES, AND METHODOLOGY

3.1. Preliminary observations

As discussed in Chapter 2, most studies on gay and lesbian speech (e.g., Gaudio 1994 and Pierrehumbert et al. 2004) have claimed that listeners can generally identify the sexuality of a speaker. Other research (e.g., Smyth et al. 2003) has shown that a one-to-one correspondence between an individual’s self-reported sexuality and the way her/his voice is perceived by listeners does not always hold. Specifically, Smyth et al. (2003) have shown that male voices can be judged as either gay or straight sounding, regardless of the sexuality declared by the speakers. Smyth et al. created a database of male voices ranging from very gay sounding to very straight sounding. In line with Butler’s (1990) notion of performativity, Smyth et al. have suggested that some gay men might decide to sound gay, whereas others might not. As North-American culture is largely homophobic and penalizes men who do not sound straight, Smyth et al. wonder why some gay men would choose to sound gay. However, they do not investigate this matter. In the present dissertation, I follow both Butler’s concept of performativity and
Wagner's (1991) of heteronormativity and address the question that Smyth et al. left open along with other issues, as explained in the following sections.

This chapter is organized as follows. After briefly outlining my methodology (Section 3.2), I introduce my research questions and present my hypotheses (Section 3.3). Then I report in depth on my perception study (Section 3.4), production study (Section 3.5), the interaction between the two studies (Section 3.6), and on my interviews with the speakers (Section 3.7).

3.2. Methodology outline

Before proceeding to the outline, an important foreword is needed. I do not see gays and lesbians as belonging to a unified speech community. The assumption that gay men and lesbians share such a community prevents us from defining who gay men and lesbians are. As I pointed out in Chapter 1, this dissertation is not centered on the semantics of gays, lesbians, homosexuals and such. However, for clarification I am compelled to now give my particular definition of 'gay/lesbian' and 'straight'. Very simply, whoever calls him/herself gay, lesbian or straight at a certain point in time is a gay man, a lesbian or a straight person at that point in time. (This means that only those
gays and lesbians who are ‘out’ could be included.) When I recruited my speakers and
listeners, I basically asked for gay men, lesbians, and straight men and women to par-
ticipate in a social study of speech. I accepted the fact that they self-identified in one of
these sexualities to mean that they identified with one of these sexualities at that spe-
cific time of their participation.

My study as a whole is divided into three parts: a perception study, a production
study and interviews with the speakers.

The perception study was the first I carried out. It involved participants who lis-
tened to the recorded voices of both straight and gay/lesbian speakers, and assessed
these voices as sounding gay/lesbian or straight. Interviews with these listeners were
conducted in an attempt to understand what cues they followed when giving their
judgments. Other listeners rated the same voices using other parameters, such as
‘rude/polite’. Through the judgments of the first group of listeners, two separate rank-
ings, one per gender, of the speakers’ voices were built. The rankings range from ‘defi-
nitely homosexual sounding’ to ‘definitely heterosexual sounding’.

My production study was aimed at investigating whether or not specific phonetic
features might relate to perceived sexuality. To this end, the features had been incorpo-
rated into a text that was read by the speakers, a selection of which was played to the listeners described above.

Finally, each speaker was interviewed about her/his speech, in search of possible reasons an individual might sound different from what her/his sexuality would 'dictate'.

3.3. Research questions and hypotheses

3.3.1. Dissertation's aims

The purpose of this dissertation is based on the observations and arguments given in Chapter 2 and summarized in Section 3.1. Specifically, the main purpose is to build toward identification of the phonetic characteristics associated with gay/lesbian-sounding and straight-sounding speech. Some of the phonetic features investigated include vowel space dispersion, diphthong distance and stop release. As a secondary purpose, I investigate why some individuals defy heteronormative norms by sounding gay/lesbian in the face of discrimination, and why others, instead, reproduce hetero-normativity.
3.3.2. Hypotheses

In this section I discuss the hypotheses underlying my two objectives, and the reasons behind my choice of speakers and materials.

3.3.2.1. Phonetic features related to perceived sexuality

In order to address my first objective, a database of both male and female voices, ranked by listeners from 'definitely homosexual sounding' to 'definitely heterosexual sounding', was created. The database was built and the characteristics were identified by comparing a production study with a perception study, as clarified later in this chapter. Pierrehumbert et al. (2004) found that their speakers showed a differentiation in vowel space dispersion depending on the sexuality of their speakers. Specifically, the vowel spaces of their gay male and straight female speakers were expanded. Conversely, their lesbian and male straight speakers showed a smaller vowel space. As vowel space dispersion is thought to be related to hyperarticulation/hypoarticulation of speech, it might be expected that the speech of gay-sounding men and straight-sounding women is more hyperarticulated, and that the speech of lesbian-sounding women and straight-sounding men is more hypoarticulated. Accordingly, I decided to explore whether vowel space dispersion and other phonetic features that relate to hyperarticula-
tion/hypoarticulation of speech might be predictors of perceived sexuality. Thus, possibly my male gay-sounding speakers would present an expanded vowel space, and, on the contrary, my lesbian-sounding speakers might present a smaller vowel space than my straight-sounding female speakers.

Other elements that may correspond to the hyperarticulated/hypoarticulated dimension of speech are diphthong distance (or how widely spaced the two elements of a diphthong are) and stop release. Assuming that greater differentiation in the elements of a diphthong would require more effort, we might expect that gay-sounding men and straight-sounding women articulate their diphthongs with a longer distance (i.e., with more quality differentiation within the diphthong) than lesbian-sounding women and straight-sounding men.

Potentially, gay-sounding men and straight-sounding women release their stops more often than lesbian-sounding women and straight-sounding men. Phonetician Dani Byrd (1993) observed the frequency of stop release in American English and found that women release their stops more frequently than men. Thus, perhaps my female speakers release their stops more often than my male speakers.
In my study I also consider vowel duration as a possible indicator of perceived sexuality. Just as Pierrehumbert et al. (2004) found that their participating women produced longer vowels than their men, I also hypothesize the same result may occur. But if vowel duration varies with gender, it could affect perceived sexuality. Therefore, I would hypothesize that my gay-sounding men use longer vowels than my straight-sounding men, and that my lesbian-sounding women use shorter vowels than my straight-sounding women.

Finally, I consider monophthong quality. Differences in monophthong quality associated with sexuality were observed both by Pierrehumbert et al. (2004) and Munson et al. (2006). No appreciable overlap among the two studies exists. To that end, no specific hypothesis can be formulated for this feature.

To summarize, the hypotheses related to the phonetic features investigated in this dissertation are as follows:

1. Female speakers articulate longer vowels than male speakers.

2. Gay-sounding speakers use longer vowels than straight-sounding male speakers.

3. Lesbian-sounding speakers employ shorter vowels than straight-sounding female speakers.
4. Gay-sounding speakers present a more expanded vowel space than straight-sounding male speakers.

5. Lesbian-sounding speakers have a smaller vowel space than straight-sounding female speakers.

6. Gay-sounding speakers articulate their diphthongs with a longer distance (i.e., more quality differentiation between the diphthong's two targets) than straight-sounding male speakers.

7. Lesbian-sounding speakers articulate their diphthongs with a shorter distance (i.e., less quality differentiation between the diphthong's two target) than straight-sounding female speakers.

8. Female speakers release their stops more often than male speakers.

9. Gay-sounding speakers release their stops more often than straight-sounding male speakers.

10. Lesbian-sounding speakers release their stops less often than straight-sounding female speakers.
3.3.2.2. Resisting or reproducing heteronormativity

To pursue my second objective (e.g., exploring why some individuals defy heteronormativity and others do not, and to what extent they might be aware of this choice), I interviewed speakers on how they feel about their own speech. Because to my knowledge no previous sociophonetic research has attempted to investigate this issue, the only hypotheses I can formulate comes from Labov’s (1973) work on sociolinguistic markers. According to Labov, sociolinguistic markers are one of three types of linguistic variables (the other two are indicators and stereotypes). Each variable has a different degree of sociolinguistic salience, that is, the extent to which speakers are aware of their social evaluation. Social markers are in the middle of the scale, and are usually classic sociolinguistic variables such as the use of (ing), (r) and (th) in New York City. They are called ‘markers’ because they mark or relate to social characteristics or identities. They show both stylistic and social stratification, and, importantly, ‘may lie below the level of conscious awareness, [but] will produce regular subjective responses on subjective reaction tests’ (1973:314). Thus, speakers tend to not be aware of sociolinguistic markers, but listeners are, and bestow social evaluations on them. Possibly, then, my speakers will produce sociolinguistic markers that relate to sounding gay/lesbian or
straight, and, with varying degrees, might or might not be aware of it. However, my listeners likely will hear these markers and correspondingly interpret them. Smyth et al. 2003 wondered why some of their participating gay men defied heteronormativity by sounding gay, but chose not to conduct interviews with them. My study addresses this unanswered question and expands upon it. In the interviewing of my speakers, I considered my own role in the co-construction of performance by each speaker and address it in Chapter 5.

3.3.2.3. Speaker selection

In my search for phonetic factors that might serve as cues to the perception of sexuality, selected vowels and stops were incorporated into a text that was read by four groups of speakers who were chosen on the basis of gender and sexuality. Specifically, they were all self-identified gay men, lesbians, straight men, and straight women. Controlling for gender and self-declared sexuality follows Smyth et al.’s (2003) suggestion that various listener groups might have a diversity of expectations for different speakers. This control further tests Moonwoman-Baird’s (1997) hypothesis that lesbians are unable to recognize each other (and that others do not recognize them) on the basis of speech.
3.3.2.4. Text and topic choice

Among others, Gaudio (1994) and Waksler (2001), as explained in Chapter 2, focused on pitch as a possible feature related to gay and lesbian speech. Neither of these studies could connect pitch to sexuality, and one explanation Gaudio and Waksler made for this lack of success was topic choice. According to them, two separate topics that uniquely appealed to gays and lesbians would elicit gay and lesbian speech. However, I believe there is a great deal of difficulty in finding such topics of interest. For instance, lesbian motherhood, gay marriage, discrimination, piercing, tattoos, etc. are certainly interesting to some lesbians, but not to all. Although topic choice might truly play a role in a person's speech, the speaker's audience should be at the center of attention when observing the co-construction of a speaker's performance. That is, I believe audience is more relevant than topic. Therefore, I employed a topic that I expected neutrality from, would not directly appeal to either gender or sexuality, and aimed at being interesting and enjoyable to any reader. I asked the speakers to read as if they were in the presence of one or a group of actual friends of the same gender (hopefully, of the same sexuality as well, though this was not explicitly requested, as it would have influenced them). The desired effect of this strategy was to help out the speakers by diminishing the inti-
midating presence of the recorder, to have them feel relaxed enough to read in a natural way, and to easily speak with the ‘appropriate’ audience that was suggested to them. In this way, I attempted to provide them with what I thought to be the most ideal audience to elicit their best performance as individuals of a specific gender and of a specific sexuality. Although the topic was minimally scientific, it was thought unlikely to bias listener judgments. This was something to consider, as Smyth et al. (2003) found that their scientific passage swayed the listeners toward identifying most speakers as sounding gay. In contrast, the material picked for this study was intended to be humorous and pleasant to read. This was confirmed by the speakers\textsuperscript{16}. My study is the first to suggest an audience to whom the speakers can appropriately relate and together with which they can create their own performance. Evidently, having a real audience of friends for each speaker would have been the most preferred situation, but as this was highly impractical, I had to rely upon the imaginative abilities of my speakers for keeping their audience in mind.

It can be argued that the choice between speakers reading a written text and speaking spontaneously leaves room for concern. Having my speakers tell a story of

\textsuperscript{16} All speakers commented that they found the reading to be either entertaining or, at the least, silly and fun.
their preference or using some other stratagem to obtain the most naturally-occurring speech would have been the best choice. Although such a method gives satisfying results when observing pitch, its use is impractical with vowels or consonants. I needed to ensure that enough vowel and stop tokens appearing in similar phonetically-balanced environments would be elicited from the speakers, and this process would have likely required an enormous amount of data. Therefore, I created a reading passage containing a specific number of vowel and stop tokens appearing in appropriate environments within the text.

3.4. Methodology: Production study

The purpose of the production study was to investigate certain phonetic features to find whether or not they relate to perceived sexuality.

3.4.1. Speakers

A total of 24 speakers were selected. The speakers were divided into the following four groups: 6 self-identified lesbians, 6 self-identified straight women, 6 self-identified gay men, and 6 self-identified straight men. The participants were controlled for regional accent. All were born and raised in the area stretching from 'Ewa to Honolulu to
Kailua on the Hawaiian island of O'ahu. Their ages ranged between 18 and 65. Some were students at UH Mānoa. Others were older individuals from the community at large. Ethnicity and social status were not controlled for. The speakers were recruited directly by me, by word-of-mouth, and through mailing lists. They were remunerated with a movie coupon\textsuperscript{17} for their time.

3.4.2. Tasks

The speakers met personally with me at the Language Analysis and Experimentation (LAE) General Lab at UH Mānoa. This structure has two sound booths dedicated to phonetic recordings. Each speaker was instructed to record her/himself on a Sony MiniDisc recorder MZ-NF810 as s/he read, alone in one of the booths, a text about a 'walking' octopus. The aim of this strategy was for the speakers to have as little influence and pressure from me as possible. Before their reading, the speakers were given no information about the study’s investigation into phonetic cues which relate to perceived sexuality, as this would have influenced their task. Instead, they were told that the topic of this dissertation was about how people convey and perceive social characteristics through speech. The speakers were first shown a very brief (less than 5 seconds) video

\textsuperscript{17} All participants, speakers and listeners alike, were compensated with a movie coupon at the end of their task.
clip on my laptop computer screen of a live octopus walking on the bottom of the
ocean, and then were given a descriptive explanation about the unique strategy deve-
loped by this sea creature. Subsequently, I asked the speakers to imagine they had dis-
covered this video on their own and then by coincidence happened to read a magazine
article about this particular group of octopuses. Then the speakers were then instructed
to read the article (i.e., the octopus passage) to themselves. This allowed them to
become familiar with the text, so as to minimize reading errors during the recording.
After the speakers completed their silent reading, I asked them to imagine being at a
party or in a comfortable environment with friends of the same gender. I invited the
speakers to read this article as if these friends were with them. While doing so, their
voices were recorded. Each speaker took about 3 to 5 minutes to read the passage. At
the end of the recordings, the speakers were informed about this study’s true purpose,
and then were given the option to withdraw from participation, if they chose to do so.
All speakers agreed to have their data analyzed.

All of the speakers’ recordings were later re-digitized with Audacity (a free software
program commonly used by phoneticians to digitize speech) at a sampling rate of
16,000 Hz. This is the most advantageous rate for the present study, as it sufficiently
allows analysis of /t/, which has the highest-frequency acoustic energy among the sounds observed. The other sounds also appear in clear display at lower frequencies.

After the octopus reading, each speaker was interviewed about her/his own voice. Interview questions are introduced below in Section 3.7 and discussed at duration in Chapter 5.

3.4.3. Materials

3.4.3.1. Text

For my text topic, I chose the recent discovery of a particular octopus that moves peculiarly by picking up six of its eight arms while scooting across the bottom of the ocean on its remaining two arms. This is an evolutionary strategy that allows the animal to move quickly and to simultaneously hide from predators, by resembling a rock moved by water currents. The text can be found in Appendix A. The words containing the vowel and stop tokens are in bold face. A detailed description of the tokens is given in the next section.

3.4.3.2. Vowel tokens

Pierrehumbert et al. (2004) studied the vowels /i/, /e/, /æ/, /ə/, /u/, treating /e/ as if it were a monophthong in English. Munson et al. (2006) studied the vowels /i/,
/i/, /ei/, /e/, /æ/, /ɔi/, /ou/, and /u/, but treated the diphthongs as monophthongs. Specifically, they replicated what Pierrehumbert et al. did, and measured only the first element of each diphthong as a monophthong. For my dissertation, I chose to select the monophthongs appearing at the corners of the vowel space. These are:

/i/, /æ/, /ɔi/, /u/

Which are the monophthongs presumably occurring at the corners of the vowel space in General American English. The choice of these monophthongs assumes that hyperarticulation or hypoarticulation of speech (with respect to vowel production) can be measured, and it largely mirrors Pierrehumbert et al.'s monophthong selection.

The following symmetrical set of 4 diphthongs was studied:

/et/, /aɪ/, /au/, /ou/

The choice of both monophthongs and diphthongs is based on the American English vowel inventory from John Wells' (1982) Accents of English, and reflects General American English. These vowels are all utilized in the English variety spoken on the Hawaiian island of O'ahu (though, to my knowledge, /et/ and /ou/ are monophthongal for some

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18 Many North Americans merge /ɔ/ as in Don, cot, with /o/ or /ɔ/ as in Dawn, caught. Care was taken to choose only words that would be pronounced as [ɔ] by all speakers who make the distinction.
speakers and in some styles), and were all utilized by the speakers who participated in the present dissertation.

Every vowel in the elicited text occurred in stressed monosyllables. Furthermore, all monosyllables appeared at an intonation peak within a sentence. There are two specific reasons for choosing these parameters. The first is to ensure that the vowels studied appear in the same environment. The second is to guarantee that the 'maximal vowel space' for a speaker can be studied. This can be achieved with stressed monosyllables occurring at intonation peaks, as these monosyllables have the longest and most differentiated vowels for a given speaker.

Ideally, each syllable containing the vowels studied was of the kind: /s/ /t/ (such as in seat), where the beginning and the end of the vowel are clearly visible from the waveform and spectrogram. This choice is based upon the necessity to isolate the vowel. As it was not possible to find enough appropriate /s/ /t/ stressed monosyllables, I decided to choose other monosyllables with different combinations, such as /f/ /t/, but always in the combination of voiceless fricative + vowel + voiceless stop. /f/ appears at lower frequencies than /s/, however it still minimally interferes with the production of vowels. Finally, the environment voiceless stop + vowel + voiceless stop was also
employed, as it allows for minimal influence of the consonants on the production of the vowel.

The reading passage was designed so that each of the 4 monophthongs was produced 5 times by each participant from each group, for a total of 20 tokens articulated by each speaker. The overall number of tokens studied was therefore 480 (4 monophthongs x 5 repetitions x 6 speakers x 4 groups).

3.4.3.3. Stop tokens

Word-final stops in English can be either released or unreleased. According to a series of studies of American English stops by phonetician Dani Byrd (1993, 1994, among others), place of articulation, but not voicing, is directly correlated with stop release. Specifically, alveolar and velar stops are more likely to be released than bilabials. Apparently, the occurrence of release also has to do with the sex of the speakers, with women releasing their stops more frequently than men. Finally, dialect variation is not related to release (at least, not within the United States). Byrd's results are based on TIMIT (from Texas Instrument, or TI, and Massachusetts Institute of Technology, or MIT), a large database containing 2342 phonetically-balanced sentences spoken by a total of 630 participants from throughout the entire United States. Byrd observed stop
release in different environments (such as at the end of words preceding another stop), but, in order to have a transparent picture of how the phenomenon works, she focused on stops in sentence-final position. According to Byrd, this environment keeps events such as stop assimilation from occurring, and is evidenced by a clearer display of the stop release or lack thereof in the spectrogram.

The present dissertation follows Byrd's (1993, 1994) methodology regarding the presence of stop release. In particular, word-final stops at the end of a sentence are studied. As suggested by Byrd, alveolar and velar stops are most consistently released sentence-finally. Thus, both kinds of stops, occurring at the end of a monosyllable in sentence-final position, were utilized. Since voicing does not appear to affect stop release, as shown by Byrd, voiceless alveolar and velar stops, that is, /t/ and /k/, were used. In the present study, the burst of noise (i.e., a sharp spike in the spectrogram) which follows the closure (i.e., absence of signal in the spectrogram) was counted as a released stop. An unreleased stop does not produce such a burst.

Each speaker's production was examined for 5 examples of two stops (i.e., [t] and [k]) at the end of a sentence, for a total of 10 tokens. The total number of stop tokens considered for data analysis is 240 (2 stops x 5 repetitions x 6 speakers x 4 groups).
3.4.4. Data analysis

3.4.4.1. Vowels – Vowel duration

Duration for each of the tested monophthongs and diphthongs was measured as follows. Waveforms were considered to be the main reference for duration. As each of the vowels was preceded by a voiceless obstruent, each vowel was determined to start when the first major periodic peak was present – this signaled the beginning of voicing — and to end at the following consonant closure. When the closure was evident, as in the case of Figure 1 (below), the waveform was used as the only reference for vowel duration. However, if the closure was not apparent, the ending point of multiple formants in the spectrogram was considered the ending point for the vowel, as in Figure 2 (below). After measuring all of the designated monophthongs and diphthongs, the average duration of all the measured monophthongs and diphthongs was calculated.

To interpret vowel duration data, I employed a statistical test called ‘two-way, between subjects ANOVA’ (an acronym for ‘analysis of variance’)\(^\text{19}\). Briefly, this test is used when data can be organized along two dimensions, commonly known as ‘factors’ or ‘independent variables’. A two-way, between-subjects ANOVA examines whether or

\(^{19}\) I ran all my statistics on SPSS 15, with the exception of correlations, which I performed on Microsoft Excel 2007.
not one or the other factor individually influences the data (i.e., it tests for the main effects of separate factors), and also whether the interaction between the two factors influences the data or not (i.e., it tests for an interactional effect between the two factors). In the case of vowel duration, the data (called 'dependent variable') are the average duration of all of each speaker's designated vowels. The two factors are gender and perceived sexuality. It is necessary to assess whether or not the results given by a two-way, between-subjects ANOVA are statistically significant. The significance level (known as $\alpha$), or the point which determines whether or not a result is statistically significant, is commonly determined at 5%, or $\alpha=0.05$. This level determines that there is a 95% probability that the results are due to actual variation, rather than to random chance. The calculation for a two-way, between-subjects ANOVA provides a value called $p$. If $p$ is smaller than the significance level (i.e., if $p<0.05$), the result is statistically significant, or an effect (be it main or interactional) is, to statistical standards, valid. A statistically-significant $p$ is further described by a value called 'partial $\eta^2$'. This value describes to what extent the independent variable or the interaction between two independent variables contribute to the effect on the dependent variable. Finally, whenever a statistically-significant main effect is found, other tests (mostly ANOVAs
Figure 1. Example of monophthong duration measurement with a clear consonant closure after the monophthong (word: feet)
Figure 2. Example of monophthong duration measurement with no evident closure for the consonant following the monophthong (word: seek)
with only factor and one dependent measure) can be run to further investigate the matter. These tests, called 'post-hoc tests', are employed in this study.

Vowel duration data are illustrated in Section 4.3.1 and its results are discussed in Section 4.4.2.

3.4.4.2. Vowels – Monophthong quality

As in Pierrehumbert et al. (2004) and Munson et al. (2006) the first two formants (i.e., F1 and F2) of each monophthong were measured for each participant. By looking at spectrograms, each monophthong was at first isolated (i.e., identified and distinguished from the two consonants flanking it). Then, both F1 and F2 were measured with Praat (a free software commonly employed for phonetic analysis) through Linear Predictive Coding (or LPC) with a 25-millisecond window. Figure 3 (below) offers an example of the formant tracks calculated by Praat after correctly setting the parameters\(^{20}\) in order for the tracks to match the visual representation of the formants. Each measurement is

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\(^{20}\) The parameters were the number of formants to be calculated and the frequency ceiling to be analyzed. Praat requires entering a number of formants to be calculated that is slightly higher than the actual number of formants desired – this allows for a better calculation of the desired formants. Furthermore, the two parameters interacted with each other, in that calculating more formants required higher ceilings. Also, individual speakers required distinct settings, due to different voice quality. For most female speakers, 4 to 6 formants were analyzed within a ceiling of 5,500 – 7,000 Hz. Male speakers usually required the same number of formants, but with lower ceilings (i.e., between 5,000 and 6,000 Hz).
taken from a steady-state portion of the monophthong, which corresponds in Figure 3 to the highlighted selection. Here, all the values for the formant tracks for $F_1$ and $F_2$ (marked by the white boxes in the figure, with enlarged dots for emphasis) are averaged separately, and the resulting values are reported in the right-hand side of the figure. As English-stressed monophthongs might diphthongize in some dialects or styles, care was taken to measure all monophthongs at two points. This was determined by identifying one point shortly after any consonantal effect (for example, noise or transitions), and then the second point before any such effects of the final consonant. Some monophthongs, in the end, turned out to be diphthongized, and they are discussed in Section 4.3.2. All measurements were, at this point, converted from Hertz into Bark. As the Bark scale relates to how sounds are heard by the human ear, it is better suited to study phonetic cues from the point of view of listeners (Zwicker and Ternhardt, 1980).

Finally, for each speaker, each of her/his monophthongs was considered individually, and the average frequency of its $F_1$ and the average frequency of its $F_2$ (at one of the measuring points) were calculated. These measurements indicate individual monophthong articulation.
Statistical tools such as ANOVAs (i.e., ‘analysis of variance’) and MANOVAs (i.e., ‘multivariate analysis of variance’) were used to find the possible differences in monophthong articulation among the gay-/lesbian-/straight-sounding groups. In statistics, a MANOVA is a test that allows for the description of general patterns. With a MANOVA, it is possible to analyze the behavior of the first two formants of all monophthongs in relation to the gender and the sexuality of the speakers. This analysis serves as a broad indication of how speakers in particular groups articulate their monophthongs. A statistically-significant result would therefore highlight a general tendency in the vowel qualities of the groups, and would certainly need to be reconsidered in smaller, more focused statistical tests. Specifically, a two-way, between subjects MANOVA (i.e., a statistical tool that allows for the comparison of dependent variables in relation to two factors) was employed to investigate monophthong quality. In this MANOVA, gender and perceived sexuality were the factors. The dependent variables were average F₁ for all monophthongs and average F₂ for all monophthongs. The presence of significant values for main effects is to be investigated further through post-hoc tests.

The data for vowel duration are reported in Section 4.3.2. The results are discussed in Section 4.4.3.
3.4.4.3. Monophthongs – Vowel space dispersion

For each speaker, vowel space dispersion (hereafter, VSD) was found. VSD measures vowel space size, and can be calculated through a technique created by Bradlow et al. (1996). First, the center of the vowel space was established for each speaker by finding the middle point between the highest F1 token and the lowest F1 token (regardless of vowel category). Then, the middle point for F2 was calculated in the same way. These two points gave the coordinates for the center of the vowel space.

Next, the distance for each token from the center of the vowel space was measured through the Euclidian distance formula, that is,

$$\sqrt{[(x_1 - x_2)^2 + (y_1 - y_2)^2]}$$

The value of $X_1$ was taken to invariably correspond to the F2 of the center of the vowel space, and $y_1$ to the F1 of the center of the vowel space. The values for $x_2$ and $y_2$ were chosen to indicate, respectively, the F2 and F1 of each monophthong token. The distance of each token from the center of the vowel space was calculated. Finally, for each speaker the average distance of each token for vowel category from the center of the vowel space was found.
Other elements (such as vocal tract size) being equal, a broad dispersion (i.e., high numbers) corresponds to an expanded vowel space, and presumably to more effort and clarity in speech. A narrow dispersion, given in lower numbers, translates into smaller vowel space and may be associated with less effort and clarity of speech.

I employed a two-way ANOVA with VSD as dependent measure, and gender and perceived sexuality as factors, to investigate whether VSD might be linked to perceived sexuality (or gender). The VSD data can be found in Section 4.3.3 and the results are discussed in Section 4.4.3.

3.4.4.4. Vowels – Degree of diphthongization

As diphthongs involve a change in vowel quality, they can be viewed as having two ‘targets’ or ‘elements’. They were measured (again, with Praat) as follows. For each speaker, after isolating each diphthong from its surrounding consonants, the first element of the diphthong was considered and its first two formant values were measured by following the same guidelines outlined for the monophthongs. Then, the second element of the diphthong was analyzed and its first two formants’ values were recorded. Therefore, for each diphthong two $F_1$ and two $F_2$ values were obtained. It was resolved that if a diphthong appeared to have monophthongized, it would be considered to have
a 'diphthong distance' near to zero. See Section 4.3.2 for an account on monophthongized diphthongs. Next, for each diphthong, the values of the $F_1$ and the values of $F_2$ for each element were separately averaged for each speaker (but recorded as belonging to the same diphthong). To summarize, two steps were taken as follows:

**Step 1:**

- First element of diphthong: $F_1$ and $F_2$ values measured
- For each diphthong token
  - Second element of diphthong: $F_1$ and $F_2$ values measured

**Step 2:**

- Average of $F_1$ and average of $F_2$ for the first element of each diphthong
- For each speaker
  - Average of $F_1$ and average of $F_2$ for the second element of each diphthong
All formant values were then converted from Hertz into Bark. Figures 4 and 5 below illustrate an example of Step 1. Figure 4 refers to the measurements of $F_1$ and $F_2$ for the first element of a diphthong, while Figure 5 shows the first two formants for the second element of the same diphthong token. Each measurement is enclosed in a white box, with the formant dots emphasized for enhanced display. Tables 38 and 39 (shown in Section 4.3.4) depict the results of Step 2 (in Bark).

Next, for each speaker I drew an $F_1/F_2$ plot of the individual's diphthongs based on the average values obtained. On the plot, the first and second elements of each diphthong are linked to one another by an arrow showing the trajectory of the diphthong and the degree of dissimilarity of its elements (which I call the 'diphthong distance'). A sample plot is given below, in Figure 6. For each plot, it is possible to determine the length of the arrow uniting the first and the second part of each diphthong. This was achieved by calculating the hypotenuse of a triangle, that is, by adding the $F_1$ difference squared to the $F_2$ difference squared, and then finding the square root of that sum. This procedure gives, for each speaker, a total of four measurements that correspond to the length of the arrows uniting the two parts of each diphthong. Because greater dissimilarity, and thus greater distance, between the two elements of a diphthong presumably
Figure 4. Example of measurement of the first two formants of a diphthong's first element (word: *sight*, speaker: Het_M_5)
Figure 5. Example of measurement of the first two formants of a diphthong's second element (the diphthong token is the same as in Figure 4)
requires greater articulatory effort, the four measurements may offer an indication of speech effort and clarity.

In conclusion, for each speaker, the following measurements are given:

1. Four values for each diphthong, corresponding to the average values of each diphthong's first and second elements. These values are used to calculate 'diphthong distance' in 2.

2. One value for each diphthong distance. These distances may indicate speech effort and clarity.
Diphthong distance among the gay-/lesbian-/straight-sounding groups was studied through an ANOVA with diphthong distance as the dependent measure, and gender and perceived sexuality as factors. The data for diphthong distance are introduced in Section 4.3.4 and the results are discussed in Section 4.4.3.

3.4.4.5. Stop release

I counted the occurrences of release in designated stops for each speaker and organized them as percentages appearing in tables. The tables are shown in Section 4.3.5. The behavior of stop release was studied through a two-way ANOVA with stop release as dependent measure, and gender and perceived sexuality as factors. The results are discussed in Section 4.4.4.

3.5. Methodology: Perception study

The purpose of the perception study was to assign rankings to the speakers in the production study along a variety of scales: 'homosexual sounding/heterosexual sounding', 'rude/polite', 'dumb/intelligent', and others, in order to investigate whether the constructs 'heterosexual sounding' and 'homosexual sounding' are related to other constructs.
3.5.1. Listeners

For the perception study, two groups of listeners (none of whom participated as speakers) were selected. Group 1 rated the speakers on the basis of perceived sexuality. Group 2 ranked the speakers according to the remaining scales. The two groups gave their judgments on different scales as I wanted to figure out how certain constructs (such as ‘rude/polite’) relate with ‘sounding heterosexual/homosexual’ when the choice of ‘sounding heterosexual/homosexual’ is not present.

3.5.1.1. Group 1 – Participant selection

Group 1 comprised a total of 20 listeners, divided into two major groups, that is, gay/lesbian listeners and straight listeners. Within each group, 5 listeners were women and 5 were men. There was no control for the listeners in terms of age or ethnicity. However, it was required that they all be native speakers of American English. The listeners were recruited in the same way as the speakers: through mailing lists, by word-of-mouth, and directly by me. Their ages ranged between 20 and 64. Most were either students/staff at the University of Hawai‘i at Mānoa, or friends/partners of students and staff. They were either from Hawai‘i or had lived in the state for at least a year.
3.5.1.2. *Group 1 – Tasks*

The listeners were asked to judge the voices of the speakers from the production study as follows. In a quiet room, without external interference, each listener was requested to play the same CD containing the same selection of the voices of all speakers. They used a headset connected to a Sony CD player. The listeners were instructed not to play any part of the selection more than once, nor to pause the CD player. The total time required for each listener's task was approximately 30 minutes.

After the listening, judging and answering tasks were over, each listener was briefly interviewed. Their interviews were recorded. Listeners were again asked about what they listened for in their assessment of sexuality. The reason for asking the same question twice was to simply elicit as much information as possible from the listeners about what they paid attention to. Answers in precise phonetic terms were, of course, not expected. However, the listeners' impressionistic utterances/imitations of all speakers could sometimes be interpreted as having phonetic equivalents. For instance, if a listener believed that a speaker talked fast or slow, this judgment was related to speech rate. If a listener found a voice to be sounding precise and well articulated, this might have related to either an expanded vowel space or slow speech rate, or perhaps to a
good number of stop releases, or to some combination of these factors. Other judgments and interpretations were also considered. The whole experiment lasted approximately 30-40 minutes for each Group 1 listener.

The listeners were handed a form on which to write their judgments, and were given as much time as they needed both to answer the final question appearing on the form and to provide comments. The form is discussed in the next section.

3.5.1.3. Group 1 – Materials

3.5.1.3.1. Octopus text extract on CD

For each speaker, an extract from the octopus passage was recorded on a CD and then presented to Group 1 listeners. The extract is the following:

"[...] disguising only works so much," the octopus pondered as it sat there, "and it does not get you around." The octopus felt safe but could only move a little. When you live in an area with very few hiding points, you cannot be at peace. As soon as you move away from your post, those spread-out tentacles give it away. Some big, stout fish passing by might spot you, get ready for a nice octopus soup and sink its huge, fat horrible teeth into you, just like that. You cannot put up a fight with this monster. If you are in its sight, you must quickly play your usual trick. You stop in your tracks, flop down,
wrap yourself tight in your own tentacles, and hope you will not become its favorite soup. If you are fast, it works, but our octopus friend must have gotten tired of it.

Here it is, pondering: “I wish I could just hover around without worrying about all those fat predators. But hovering puts me at risk. On the other tentacle, the rock trick keeps me safe. Yet, on the third tentacle, if I am a rock, I am pretty much stuck. Certainly, I need to find a way to be safe, and I am not safe like that.”

This selection was based on two factors. The first factor is that the passage contains as many instances as possible of the phonetic features investigated. Therefore, it includes as many monophthongs, diphthongs, and stop releases that can fit within 30-45 seconds. This ensured that listeners were exposed to as many of these sounds as could be practically applied. Specifically, the tokens are: three repetitions of /æ/, two tokens each of /ɑ/ and /u/, and one token of /i/; three repetitions of /aɪ/, two of /ou/, and one each of /eɪ/ and /au/; finally, two repetitions of /t/ at the end of a sentence, and one token of /k/ at the end of a sentence. The second factor for choosing the octopus selection is that the passage was extracted from a period starting at least 30 - 45 seconds into the recording (each recording lasted between 3 and 5 minutes). At that point the speakers were already well into the text, thus minimizing chance hesitations and misreadings.
The sample extracts for each speaker were presented in random order. Appendix B shows the sequence of speakers in the recording. The partial running time for the selection was about 720 seconds (30 to 45 seconds x 24 speakers), which equals 12 minutes. A 15-second break after each sample was introduced, to allow time for the listener to judge each voice and to rate their own confidence on a form, as explained below. A message lasting a few seconds was also introduced midway (i.e., after the twelfth speaker) to help orient the listeners toward staying on track with the recordings. Finally, another short message appeared at the end of the recordings, thanking the listeners and informing them that their task was complete. Thus, the total running time for the CD was about 30 minutes ((30 to 45 seconds + 15 seconds) x 24 speakers + 30 seconds overall for the two messages).

3.5.1.3.2. Group 1 rating form

Each Group 1 listener was provided with a rating form which requested that, as s/he heard the recording, s/he judge each voice on a scale from 1 ('sounds definitely homosexual') to 7 ('sounds definitely heterosexual'). The form also asked the listeners to indicate how much confidence they had in their judgments of each speaker. The confidence scale ranged from 1 ('not confident at all') to 7 ('very confident'). At the end of the form
the following question was asked, then answered immediately after the listening task was finished:

'When judging a voice as belonging to either sexual orientation, what did you listen for?'

Finally, the form encouraged comments. The form itself can be found in Appendix C.

3.5.1.4. Group 2 - Participant selection

All Group 2 participants were selected with the same criteria as Group 1, and also consisted of 20 listeners.

3.5.1.5. Group 2 - Tasks

The speakers of Group 2 met with me in the same room as Group 1 listeners. They were asked to listen (on the same Sony player) to a CD containing the same extract from the octopus text, and to rate the speakers on the scales 'educated/uneducated', 'feminine/masculine', 'dumb/intelligent', 'serious/frivolous', and 'rude/polite'. They were not told the scope of the present dissertation before their task, as this could have influenced their judgments – they were informed about it at the end of the experiment. They were not interviewed. For each Group 2 listener, the overall task lasted about 35 minutes.
3.5.1.6. **Group 2 – Materials**

3.5.1.6.1. *Octopus text extract on CD*

The same speech samples utilized for Group 1 were employed for Group 2. The only difference was the insertion of a longer pause (i.e., 15 seconds) between speakers, to allow more time for the listeners to rate the speakers on five different scales.

3.5.1.6.2. **Group 2 rating form**

The form used for these listeners can be found in Appendix D. This form is very similar to that used by Group 1 listeners, with the set of parameters ‘educated/ineducated’, ‘feminine/masculine’, ‘dumb/intelligent’, ‘serious/frivolous’ and ‘polite/rude’ for them to rate. However, the form neither requested that the listeners indicate confidence levels nor did it encourage comments. The parameters were arranged so that listeners would remain alert during their tasks, and that potential biases could be averted. Having all negative adjectives appearing consistently as first terms or as second terms in the parameters would have likely encouraged laziness in the listeners' minds. This might have led to their rating without observing where the terms appeared. Or it might have led to their simplifying responses to 'all positive' or 'all negative'. More importantly, the parameter 'feminine/masculine' would have arguably
created prejudices in this type of arrangement. If, for instance, 'feminine' appeared on the side of all the negative terms, this could have suggested to the listeners that 'feminine' also has a negative connotation.

3.6. Methodology: Interaction between perception and production

Group 1 listeners' ratings were utilized to select speakers for data analysis as explained in the following sections.

3.6.1. Group 1 listeners – Determining sexuality ratings and selecting speakers

Each speaker was assigned a sexuality rating (from this point on, SR) on the basis of Group 1 listeners' judgments. To this end, all the values given by all the listeners were averaged for each speaker. As the various listener groups might have different expectations on which to base their judgments, the ratings given to each speaker by each individual listening group were also considered. The ranking scale, as described above, was 1.00 – 7.00 (see Table 1). Any rating between 1.00 and 3.99 was considered to identify a speaker as sounding gay/lesbian, and any rating between 4.01 and 7.00 to categorize a speaker as sounding straight. A rating of 4.00 for a speaker was interpreted as sounding 'neutral'. Intermediate values represented further gradations. For both male
Table 1. Rating system for perceived sexuality rating (SR) and confidence

| Sounds definitely homosexual: 1.00 – 1.99 | Not confident at all: 1.00 – 1.99 |
| Sounds homosexual: 2.00 – 2.99 | Not confident: 2.00 – 2.99 |
| Sounds slightly homosexual: 3.00 – 3.99 | Not very confident: 3.00 – 3.99 |
| Neutral: 4.00 | Neutral: 4.00 |
| Sounds slightly heterosexual: 4.01 – 4.99 | Slightly confident: 4.01 – 4.99 |
| Sounds heterosexual: 5.00 – 5.99 | Confident: 5.00 – 5.99 |
| Sounds definitely heterosexual: 6.00 – 7.00 | Very confident: 6.00 – 7.00 |

and female voices, three possible main categories were thus obtained: ‘homosexual sounding’, ‘neutral sounding’, and ‘heterosexual sounding’. The categories roughly represent the continuum: ‘definitely homosexual sounding’ to ‘definitely heterosexual sounding’. The present study refers either to the categories or the continuum as appropriate.

A second rating scale, related to the confidence with which Group 1 listeners gave their judgments, was also created. This scale was organized along the same lines as the previous one (see, once more, Table 1). For each speaker a single, averaged value was found both for all the listeners and for each individual group. This second scale provides a further indication as to how strongly one speaker is recognizable in her/his performance, and to what degree of certainty s/he can be placed in a particular area of the
proposed continuum. It might be expected that speakers at the ends of the SR scale would score a higher confidence rating, as they are more recognizable as sounding either gay/lesbian or straight. Conversely, speakers falling into or nearby the ‘neutral’ area might be characterized by a lower confidence rating. As not all speakers are expected to be recognized as sounding gay/lesbian or straight by all listening groups, the confidence scale is used in conjunction with the SR scale to select speakers for data analysis. Those speakers who are consistently rated (by all the listening groups in general and by each individual listening group) as falling into either SR category are included in the discussion and the results.

Those who are not judged as sounding either gay/lesbian or straight across the board are considered for exclusion. The final decision for determining whether to omit these speakers from the study lies in the confidence scale. The average confidence level of individual listener groups gives an indication of how strongly (or weakly) a specific group feels about judging a particular group of speakers. If, for instance, a listening group’s confidence about some speaker group is low (i.e., below 3.99), it is understood that these listeners are unsure about what to listen for. In this case, their judgment bears less weight in the selection of the speakers. Therefore, if a particular speaker
scores an SR that places him/her in a specific gay-/lesbian-/straight-sounding category for all the listener groups, with the exception of one listener group; and if this group displays an average low confidence level, then the speaker is included in the results.

To sum up, two rating values were assigned to each speaker: one along the continuum 'definitely homosexual sounding' to 'definitely heterosexual sounding', and the other on the scale from 'very confident' to 'not confident at all'. The values were determined separately on the basis of all Group 1 listeners' judgments and of each individual listening group. As interviews with the listeners provided valuable insight into the listeners' judgments, a summary of these interviews is reported in Appendix E.

The SR scales are given and discussed in Section 4.2.1.

3.6.2. Group 2: Investigating the parameters

Group 2 listeners' judgments were employed to investigate whether patterns between gay/lesbian-/straight-sounding ratings (i.e., SR) and the parameters introduced in Section 3.5.1 follow somewhat of a parallel model. To this end, each speaker was assigned a point in the continuum from 'sounds X' (where X is the first term of each parameter) to 'sounds Y' (where Y is the second term of each parameter). The resulting scales were compared with SR. An explanation of the scales is presented in Table 2.
Table 2. Rating system for Group 2. X represents, in sequence, a) 'educated', b) 'feminine', c) 'dumb', d) 'serious', and e) 'rude'. Y represents, respectively, a) 'uneducated', b) 'masculine', c) 'intelligent', d) 'frivolous', and e) 'polite'.

| Sounds definitely homosexual: 1.00 – 1.99 | Not confident at all: 1.00 – 1.99 |
| Sounds homosexual: 2.00 – 2.99 | Not confident: 2.00 – 2.99 |
| Sounds slightly homosexual: 3.00 – 3.99 | Not very confident: 3.00 – 3.99 |
| Neutral: 4.00 | Neutral: 4.00 |
| Sounds slightly heterosexual: 4.01 – 4.99 | Slightly confident: 4.01 – 4.99 |
| Sounds heterosexual: 5.00 – 5.99 | Confident: 5.00 – 5.99 |
| Sounds definitely heterosexual: 6.00 – 7.00 | Very confident: 6.00 – 7.00 |

Only the speakers who were selected for data analysis on the basis of Group 1 listeners' SRs are included in the results. The scales are reported as tables in Section 4.2.2.

Statistical correlation coefficients (or, simply, 'correlations', indicated in statistics as $r$) between the SR and the parameters were sought for all Group 2 listeners' judgments. Possible correlations between the parameters themselves were also investigated.

A correlation coefficient is given as a number between -1 and +1. A positive correlation coefficient indicates that larger values of SR tend to be associated with larger values of a parameter (and, vice versa, smaller values of SR correspond to smaller values of a parameter). In contrast, a negative correlation coefficient suggests that larger values of SR tend to be associated with smaller values of a parameter (and, vice versa, smaller values of SR correspond to larger values of a parameter). A correlation coeffi-
cient of (or close to) 0 shows that the values of an SR and parameter are unrelated. Therefore, positive correlations indicate both a connection between gay/lesbian-sounding speakers and the first term of a parameter, and a connection between straight-sounding speakers the second term of a parameter. Conversely, negative correlations show both a link between straight-sounding speakers and the first term of a parameter, and a relationship between gay/lesbian-sounding speakers and the second term of a parameter. A correlation of (or close to) 0, instead, indicates no relation between sounding gay/lesbian or straight and a parameter.

When observing correlations, it is necessary to test whether a correlation is statistically significant or not. This is done through statistical tables that relate the number of data entered (or \( n \)) to the significance level sought. The present study uses tables taken from *Elementary Statistics*, by Paul G. Hoel (1971). It is common practice to choose a significance level (or \( \alpha \)) of 5%. This means that there is a 5% chance that the correlation investigated is due to chance, rather than to an actual relation between the two parameters. The present study uses this significance level. Once both \( n \) and \( \alpha \) have been chosen and identified in the statistical table, a number corresponding to the interaction of these two parameters is found. This number is called 'critical value'. The critical
value is used to determine the critical region, or a series of values within which the correlation is can be established. The critical value is reported on in Section 4.2.2.

Correlations can be graphically represented through specific charts, also known as 'scattergrams'. An example of scattergram is given in Figure 7. The charts indicate SR on the horizontal axis and each different parameter on the vertical axis. Thus gay/lesbian-sounding speakers appear in the left area of the scattergrams (with values between 1.00 and 3.99 on the horizontal axis), and straight-sounding speakers are
shown in the right area of the scattergrams (with values between 4.01 and 7.00 on the same axis). The first term of each parameter corresponds to the lower part of the charts (values: 1.00 – 3.99 on the vertical axis), and the second term of each parameter is depicted in the higher part of the charts (with values of 4.01 through 7.00 on the same axis). The charts are to be read as follows. Whenever the data are aligned in a straight line, then a correlation between SR and the parameter exists. The straighter the line and the closer the speakers’ values are to that line, the stronger the correlation between SR and the parameter.

The results for the correlations are discussed in Section 4.2.2.

3.7. Methodology: Interviews with the speakers

After recording each speaker, I briefly interviewed her/him about her/his own speech. The interview was recorded on the same MiniDisc device used for the octopus text. I asked the following informal questions:

1) ‘How would you describe your voice or the way you talk? Do you think it sounds interesting, warm, rude, silly etc.? Why?’
2) 'Have you ever been given any hard time because of your voice or the way you talk? If so, can you tell me about it or give me an example about it?'

3) 'Have you ever experienced any benefit/advantage thanks to your voice? If so, can you tell me about it or give me an example about it?'

These questions, as previously noted (see Section 3.3.2), were intended to elicit information about why people choose to perform against or in favor of heteronormativity. As I attempted to understand whether or not the speakers were conscious about the way they sounded, I omitted asking whether or not they thought their voices sounded straight or gay/lesbian. If such information was volunteered by an individual, I then acknowledged that her/his choice was at least to some extent conscious and pursued the matter further by asking direct questions about her/his speech in relation to sexuality. Finally, in interpreting these interviews, I considered the effect of my presence as the interviewer in the co-construction of the speakers' performance.

To analyze my interviews, I digitized them with Audacity and transcribed them on a Word 2007 file. The interviews lasted between 2 minutes 47 seconds and 12 minutes 58 seconds.
CHAPTER 4.

RESULTS

4.1. Preliminary observations

Chapter 3 described the methodology employed in this dissertation. This chapter is dedicated to the analysis of the data collected and to the presentation of the results. It first reports on the perception study (Section 4.2), and then moves on to the production study (Section 4.3). Next, the two studies are compared (Section 4.4). Throughout the chapter, the hypotheses formulated in Chapter 3 are reiterated for the sake of convenience.

4.2. Perception study

4.2.1. Ratings of speakers on the basis of perceived sexuality

As shown in Chapter 3, the sexuality ratings given by Group 1 listeners were employed to build a scale of perceived sexuality for each gender. This Section discusses the scales. Again, a rating of 1 indicates 'sounds definitely homosexual' and a rating of 7 means 'sounds definitely heterosexual'.
### Table 3. Male speakers as rated by all Group 1 listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>1.60</td>
<td>6.00</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>2.30</td>
<td>4.85</td>
</tr>
<tr>
<td>G_M_5</td>
<td>2.35</td>
<td>5.05</td>
</tr>
<tr>
<td>G_M_6</td>
<td>2.60</td>
<td>4.65</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>3.15</td>
<td>4.40</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>3.60</td>
<td>4.30</td>
</tr>
<tr>
<td>G_M_2</td>
<td>3.95</td>
<td>4.20</td>
</tr>
<tr>
<td>G_M_4</td>
<td>4.65</td>
<td>4.20</td>
</tr>
<tr>
<td>Het_M_2</td>
<td>4.65</td>
<td>4.40</td>
</tr>
<tr>
<td>G_M_1</td>
<td>4.70</td>
<td>4.65</td>
</tr>
<tr>
<td>Het_M_5</td>
<td>4.95</td>
<td>4.55</td>
</tr>
<tr>
<td>Het_M_1</td>
<td>5.40</td>
<td>4.55</td>
</tr>
</tbody>
</table>

Total Confidence: 55.80
Average Confidence: 4.65

#### 4.2.1.1. Ratings of male speakers

Table 3 illustrates the rating of the male speakers on the basis of all listeners' judgments. In this and all the subsequent tables showing any of Group 1 listeners' ratings, the smaller gaps indicate subdivisions within a speaker group, and the wider gap signals the distinction between the two gay-/straight-sounding groups. Seven males were rated as sounding gay, and the remaining 5, as straight. One individual, that is, G_M_3, was ranked as sounding 'definitely homosexual' (i.e., in the 1.00 to 1.99 area). At the other
end of the ranking system, H_M_1 was judged as sounding 'heterosexual' (i.e., in the
5.00 to 5.99 range). No speaker was judged as sounding 'neutral' (or as scoring exactly
4.00). As hypothesized in Section 3.6.1, most speakers at one end or the other of the
scale scored higher confidence values than the speakers closer to the 'neutral' rating.

The overall average confidence was 4.65 or in the 'slightly confident' area.

4.2.1.2. Agreement and confidence (male speakers)

Tables 4 through 7 (below) show the rating scales for each individual listener group.

Considering all the scales for male speakers, it appears that the different groups of lis-
teners mostly agree with each other's judgments. In fact, the same speakers tend to be
rated similarly both across the various listening groups and in the overall rating scale by
all listeners. This reflects the impressions given generally by the listeners in their inter-
views and short questionnaires, that is, they held a substantially clear opinion about
what gay men sound like in contrast to straight men.

Among all groups, lesbian listeners present the highest confidence level, ranging
between 4.60 and 6.60 (with an average confidence value of 5.37). The straight listen-
ing groups present a lower confidence rate, varying between 4.00 and 5.80 (average
Table 4. Male speakers as rated by Group 1 lesbian listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>G.M.3</td>
<td>1.60</td>
<td>6.60</td>
</tr>
<tr>
<td>G.M.5</td>
<td>2.00</td>
<td>5.60</td>
</tr>
<tr>
<td>G.M.6</td>
<td>2.20</td>
<td>5.60</td>
</tr>
<tr>
<td>Het.M.4</td>
<td>2.40</td>
<td>5.80</td>
</tr>
<tr>
<td>Het.M.3</td>
<td>3.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Het.M.6</td>
<td>3.40</td>
<td>4.80</td>
</tr>
<tr>
<td>G.M.2</td>
<td>3.80</td>
<td>4.60</td>
</tr>
<tr>
<td>G.M.1</td>
<td>4.20</td>
<td>4.80</td>
</tr>
<tr>
<td>G.M.4</td>
<td>4.80</td>
<td>5.20</td>
</tr>
<tr>
<td>Het.M.1</td>
<td>5.40</td>
<td>5.60</td>
</tr>
<tr>
<td>Het.M.5</td>
<td>5.40</td>
<td>5.40</td>
</tr>
<tr>
<td>Het.M.2</td>
<td>5.60</td>
<td>5.40</td>
</tr>
</tbody>
</table>

64.40 Total Confidence
5.37 Average Confidence

...confidence: 4.50) for the female listeners and 4.00 to 6.60 (average confidence: 4.87) for the male listeners.

These results might give the impression that the ratings were distributed along sexuality lines, because the straight listeners appear to be less sure than the lesbian listeners about judging a male voice as sounding gay or straight. However, the gay male listeners do not confirm this impression, as their confidence levels are the lowest among the groups. Specifically, the scale produced by the gay male listeners sets itself apart from the others, in that the gay male listeners show a strong tendency toward hearing...
Table 5. Male speakers as rated by Group 1 straight female listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M.3</td>
<td>1.60</td>
<td>5.80</td>
</tr>
<tr>
<td>G_M.5</td>
<td>2.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Het_M.4</td>
<td>2.60</td>
<td>4.00</td>
</tr>
<tr>
<td>G_M.6</td>
<td>3.40</td>
<td>3.80</td>
</tr>
<tr>
<td>Het_M.3</td>
<td>3.60</td>
<td>4.60</td>
</tr>
<tr>
<td>Het_M.6</td>
<td>4.20</td>
<td>4.00</td>
</tr>
<tr>
<td>G_M.2</td>
<td>4.20</td>
<td>4.40</td>
</tr>
<tr>
<td>Het_M.2</td>
<td>4.60</td>
<td>4.20</td>
</tr>
<tr>
<td>Het_M.5</td>
<td>4.60</td>
<td>5.20</td>
</tr>
<tr>
<td>G_M.4</td>
<td>4.80</td>
<td>4.00</td>
</tr>
<tr>
<td>G_M.1</td>
<td>4.80</td>
<td>4.60</td>
</tr>
<tr>
<td>Het_M.1</td>
<td>5.80</td>
<td>4.40</td>
</tr>
</tbody>
</table>

54.00 Total Confidence
4.50 Average Confidence

male voices as sounding either gay or neutral – only one man, that is, Het_M.1, is indicated as sounding ‘heterosexual’ (i.e., in the 5.00 – 5.99 range), and two other male speakers were judged as sounding ‘slightly heterosexual’. This result is, to some extent, in line with Smyth, Jacobs and Rogers’ (2003) finding that gay men were more inclined than any other group\textsuperscript{21} to classify a male voice as sounding gay. Two of the gay male listeners confirmed this point to a certain level, as in their interviews they claimed that

\textsuperscript{21} Smyth et al. employed three listening groups. One group was formed by 14 gay men, whereas the other two groups included, respectively, men and women whose sexuality was unknown.
judge it as belonging to a straight man. However, on average, only one male speaker was judged as sounding 'heterosexual' by this group of listeners, with two more males being placed in the 'slightly heterosexual' sounding area, and three in the 'neutral' area.

This can be interpreted as follows: to gay men, the norm for a male voice appears to be the gay voice. The gay male listeners displayed resistance to classifying a male voice as

Smyth et al. report that they assumed most of the listeners of the last two groups were heterosexual.
Table 7. Male speakers as rated by Group 1 straight male listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>1.20</td>
<td>6.60</td>
</tr>
<tr>
<td>G_M_6</td>
<td>2.00</td>
<td>4.80</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>2.00</td>
<td>5.00</td>
</tr>
<tr>
<td>G_M_5</td>
<td>2.80</td>
<td>5.00</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>3.00</td>
<td>4.60</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>3.40</td>
<td>4.80</td>
</tr>
<tr>
<td>G_M_2</td>
<td>3.80</td>
<td>4.60</td>
</tr>
<tr>
<td>Het_M_2</td>
<td>4.40</td>
<td>4.60</td>
</tr>
<tr>
<td>G_M_4</td>
<td>4.80</td>
<td>4.60</td>
</tr>
<tr>
<td>Het_M_5</td>
<td>5.20</td>
<td>4.00</td>
</tr>
<tr>
<td>Het_M_1</td>
<td>5.40</td>
<td>4.40</td>
</tr>
<tr>
<td>G_M_1</td>
<td>5.80</td>
<td>5.40</td>
</tr>
</tbody>
</table>

58.40  Total Confidence
4.87   Average Confidence

belonging to a straight man. This resistance might be due to two possible factors (or even a combination of the two).

Perhaps wishful thinking guided the listeners into rating the male voices as belonging to gay men – as was the case for Smyth et al.’s listeners. This wishful thinking is hinted at by their low confidence. Alternatively, they may have simply believed that most male speakers were gay because of their local Hawai‘i accent. Most listeners were from the Mainland, but have lived in Hawai‘i between one and 40 years. In their interviews, many gay male listeners said that the speakers’ accent makes them all sound gay...
Table 8. Gaydar chart for Group 1 listeners (for each pair of numbers, the first number relates to how many speakers were identified, correctly or incorrectly; the second number is the total sum of speakers per category. For example, 3 out of 6 gay men were correctly identified as gay)

<table>
<thead>
<tr>
<th></th>
<th>Correct Identification</th>
<th>Incorrect Identification</th>
<th>Correct Identification</th>
<th>Incorrect Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gay men</td>
<td>Straight Men Mistaken for Gay Men</td>
<td>Lesbians</td>
<td>Straight Women Mistaken for Lesbians</td>
</tr>
<tr>
<td>Gay Male Listeners</td>
<td>3/6</td>
<td>3/6</td>
<td>5/6</td>
<td>5/6</td>
</tr>
<tr>
<td>Lesbian Listeners</td>
<td>4/6</td>
<td>3/6</td>
<td>4/6</td>
<td>4/6</td>
</tr>
<tr>
<td>Total Hom. Listeners</td>
<td>7/12</td>
<td>6/12</td>
<td>9/12</td>
<td>9/12</td>
</tr>
<tr>
<td>Het. Male Listeners</td>
<td>4/6</td>
<td>3/6</td>
<td>0/6</td>
<td>2/6</td>
</tr>
<tr>
<td>Het. Fem. Listeners</td>
<td>3/6</td>
<td>2/6</td>
<td>0/6</td>
<td>2/6</td>
</tr>
<tr>
<td>Total Het. Listeners</td>
<td>7/12</td>
<td>5/12</td>
<td>0/12</td>
<td>4/12</td>
</tr>
</tbody>
</table>

(which is very much in contrast with some of my speakers' claim that, on the Hawaiian Islands, sounding 'standard' means sounding gay). Again, the low confidence expressed by the gay male listeners might corroborate this hypothesis.

4.2.1.3. Gaydar and identification (male speakers)

A further parallel with Smyth et al.'s study lies in the conclusion that the existence of gaydar is questionable, at least with respect to speech. As previously stated, the term 'gaydar' suggests the ability of gay/lesbian people to identify gay/lesbian individuals. Theoretically, gay men can recognize other gay men and lesbians can detect other les-

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22 Leap (1996) devotes a chapter to the phenomenon of 'gaydar'.
bians. But, as Table 8 (above) shows, the gay male listeners correctly matched only three gay speakers with their self-declared sexuality, incorrectly placing two in the neutral category and one in the straight category. Further, three straight speakers were incorrectly judged as gay, one as neutral and two as straight. In other words, the gay men correctly identified the sexuality of 6 of the 12 male speakers and 6 of the 12 female speakers. As noted above, the gay male listeners' confidence levels are low for all of their judgments (the lowest levels among all the listening groups), with the exception of their levels for the male speakers who ranked in the range 'sounds homosexual' — that is, 2.00 – 2.99. In this irregularity, the confidence of the gay male listeners was higher – between 4.00 and 5.00. This level, albeit low, is at least in the 'slightly confident' to 'confident' range, which indicates that the gay male listeners have some confidence in recognizing what a gay man sounds like. To sum up, if male gaydar exists, then the gay male listeners who participated in this study do not seem to have it – or it is based on characteristics other than voice. However, they appear to have an idea of what a gay man's voice sounds like (it is, after all, the 'norm' to them), as reflected in their higher confidence level for those speakers who sound gay/lesbian to them – and
from their interviews. If the neutral identifications (i.e., those rated 4.00) are eliminated, the gay male listeners made 5 correct judgments of sexuality out of 9.

An interesting comparison can be made with the rest of the listener groups. The lesbian listeners show a high confidence in their judgments. They match 4 gay men with their self-identified sexuality, but place two in the straight category. They misjudge 3 straight men as gay and identify the other 3 as straight. In other words, the lesbian listeners correctly identified the sexuality of 7 of the 12 male speakers. The lesbian listeners, then, tend to incorrectly identify the gay speakers. However, their confidence indicates that they have a clear opinion about whether a male's voice sounds gay or straight. The straight listeners follow a very similar pattern to that of the lesbians, in that they are generally unable to correctly identify the gay speakers as gay, and they incorrectly place several straight speakers in the gay category. Nevertheless, their confidence levels are in the 'slightly-confident' area, which suggests that they, too, have at least some notion of what a male voice sounds like in terms of sexuality.

4.2.1.4. Speaker selection (males)

Comparing the tables collectively, it appears that all listeners agree that the following speakers sound gay: G_M_3, G_M_5, G_M_6, Het_M_3 and Het_M_4. The following
speakers are, instead, consistently judged as sounding straight: Het_M_1, Het_M_5 and G_M_4. The straight-sounding group, however, may be expanded to additionally include G_M_1 and Het_M_2. These two speakers were placed into the straight-sounding male group on the basis of their overall SR, and were considered as sounding straight by all individual listener groups, with the only exception being gay male listeners. Once more, as the gay male listeners tended to identify the male speakers as gay (cf. Smyth et al., 2003), particularly when judging straight male voices, and exhibited a very low confidence level, it is possible to ignore their ratings as an individual group with respect to speaker selection. In the remainder of this dissertation, the two groups are analyzed in contrast with each other, in search for possible patterns. Two speakers (i.e., Het_M_6 and G_M_2) are left out from the groups, as they are not consistently judged as sounding either gay or straight.

4.2.1.5. Ratings of female speakers

Table 9 (below) features the SR for the female speakers based on all the listener groups. Four speakers were judged as sounding lesbian and eight as sounding straight. One speaker, namely, Het_W_5, was ranked as the most lesbian sounding speaker in the range 2.00 – 2.99. Two speakers ended up at the opposite end of the scale: L_W_1 and
Table 9. Female speakers as rated by all Group 1 listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Het_W_5</td>
<td>2.95</td>
<td>4.90</td>
</tr>
<tr>
<td>Het_W_6</td>
<td>3.40</td>
<td>4.50</td>
</tr>
<tr>
<td>L_W_2</td>
<td>3.70</td>
<td>4.80</td>
</tr>
<tr>
<td>Het_W_4</td>
<td>3.95</td>
<td>4.15</td>
</tr>
<tr>
<td>L_W_6</td>
<td>4.10</td>
<td>4.45</td>
</tr>
<tr>
<td>Het_W_3</td>
<td>4.15</td>
<td>4.05</td>
</tr>
<tr>
<td>Het_W_2</td>
<td>4.20</td>
<td>4.35</td>
</tr>
<tr>
<td>L_W_4</td>
<td>4.35</td>
<td>4.30</td>
</tr>
<tr>
<td>L_W_5</td>
<td>4.40</td>
<td>5.00</td>
</tr>
<tr>
<td>L_W_3</td>
<td>4.95</td>
<td>4.55</td>
</tr>
<tr>
<td>L_W_1</td>
<td>5.30</td>
<td>4.65</td>
</tr>
<tr>
<td>Het_W_1</td>
<td>5.55</td>
<td>5.00</td>
</tr>
</tbody>
</table>

54.70       Total Confidence
4.56        Average Confidence

Het_W_1 were judged in the 'heterosexual'-sounding area, that is, between 5.00 and 5.99 points. No speakers sounded exactly 'neutral', although at least two ratings are close to 'neutral' (i.e., 3.95 for Het_W_4 and 4.10 for L_W_6). Finally, the average confidence was 4.65, or in the 'slightly confident' range.

4.2.1.6. Agreement and confidence (female speakers)

Tables 10 – 13 (below) show the ratings for the female speakers given by each individual listener group. The analysis of the SR scales for these speakers reveals that judgments are divided along sexuality lines. In other words, the gay/lesbian listeners
Table 10. Female speakers as rated by Group 1 lesbian listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>L_W_2</td>
<td>2.40</td>
<td>6.20</td>
</tr>
<tr>
<td>Het_W_5</td>
<td>2.60</td>
<td>5.40</td>
</tr>
<tr>
<td>Het_W_4</td>
<td>3.40</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W_6</td>
<td>3.60</td>
<td>5.00</td>
</tr>
<tr>
<td>Het_W_6</td>
<td>3.80</td>
<td>4.60</td>
</tr>
<tr>
<td>Het_W_2</td>
<td>3.80</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W_4</td>
<td>3.80</td>
<td>5.00</td>
</tr>
<tr>
<td>L_W_5</td>
<td>3.80</td>
<td>6.20</td>
</tr>
<tr>
<td>Het_W_3</td>
<td>4.60</td>
<td>5.00</td>
</tr>
<tr>
<td>L_W_3</td>
<td>5.00</td>
<td>5.00</td>
</tr>
<tr>
<td>L_W_1</td>
<td>5.40</td>
<td>5.80</td>
</tr>
<tr>
<td>Het_W_1</td>
<td>5.60</td>
<td>6.20</td>
</tr>
</tbody>
</table>

63.60 Total Confidence
5.30 Average Confidence

Table 11. Female speakers as rated by Group 1 straight female listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Het_W_6</td>
<td>3.40</td>
<td>4.40</td>
</tr>
<tr>
<td>Het_W_5</td>
<td>3.80</td>
<td>5.00</td>
</tr>
<tr>
<td>Het_W_3</td>
<td>4.40</td>
<td>3.60</td>
</tr>
<tr>
<td>L_W_4</td>
<td>4.60</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W_6</td>
<td>5.00</td>
<td>4.20</td>
</tr>
<tr>
<td>Het_W_1</td>
<td>5.00</td>
<td>4.80</td>
</tr>
<tr>
<td>Het_W_4</td>
<td>5.20</td>
<td>4.40</td>
</tr>
<tr>
<td>L_W_5</td>
<td>5.20</td>
<td>4.60</td>
</tr>
<tr>
<td>Het_W_2</td>
<td>5.20</td>
<td>4.80</td>
</tr>
<tr>
<td>L_W_3</td>
<td>5.40</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W_2</td>
<td>5.40</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W_1</td>
<td>5.40</td>
<td>4.60</td>
</tr>
</tbody>
</table>

54.20 Total confidence
4.52 Average Confidence
Table 12. Female speakers as rated by Group 1 gay male listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>L_W_6</td>
<td>2.60</td>
<td>4.00</td>
</tr>
<tr>
<td>L_W_2</td>
<td>2.80</td>
<td>4.00</td>
</tr>
<tr>
<td>Het_W_4</td>
<td>3.00</td>
<td>3.40</td>
</tr>
<tr>
<td>Het_W_6</td>
<td>3.00</td>
<td>4.20</td>
</tr>
<tr>
<td>L_W_5</td>
<td>3.20</td>
<td>3.80</td>
</tr>
<tr>
<td>Het_W_3</td>
<td>3.60</td>
<td>3.20</td>
</tr>
<tr>
<td>L_W_3</td>
<td>3.60</td>
<td>3.40</td>
</tr>
<tr>
<td>Het_W_5</td>
<td>3.60</td>
<td>3.80</td>
</tr>
<tr>
<td>L_W_4</td>
<td>3.80</td>
<td>3.00</td>
</tr>
<tr>
<td>Het_W_2</td>
<td>3.80</td>
<td>3.60</td>
</tr>
<tr>
<td>L_W_1</td>
<td>4.80</td>
<td>3.60</td>
</tr>
<tr>
<td>Het_W_1</td>
<td>5.20</td>
<td>3.60</td>
</tr>
</tbody>
</table>

43.60  Total Confidence  
3.63  Average Confidence

tend to hear female voices as sounding gay/lesbian, whereas the straight listeners are likely to hear them as sounding straight. This is only partially reflected by the interviews with the listeners, where it was earlier observed that the gay men claimed to know what a gay man sounds like, and this was the standard they followed. The lesbian listeners, instead, all remarked upon the difficulty of distinguishing a lesbian from a straight woman on the basis of her speech. One lesbian listener even commented that Hawai'i lesbians tend to sound similar to straight women for fear of social consequences. However, the lesbian listeners’ self-reported confidence is relatively high.
Table 13. Female speakers as rated by Group 1 straight male listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Listeners' Rating</th>
<th>Average Listeners' Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Het_W5</td>
<td>1.80</td>
<td>5.40</td>
</tr>
<tr>
<td>Het_W6</td>
<td>3.40</td>
<td>4.80</td>
</tr>
<tr>
<td>Het_W3</td>
<td>4.00</td>
<td>4.40</td>
</tr>
<tr>
<td>Het_W2</td>
<td>4.00</td>
<td>4.40</td>
</tr>
<tr>
<td>Het_W4</td>
<td>4.20</td>
<td>4.20</td>
</tr>
<tr>
<td>L_W2</td>
<td>4.20</td>
<td>4.40</td>
</tr>
<tr>
<td>L_W4</td>
<td>5.20</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W6</td>
<td>5.20</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W5</td>
<td>5.40</td>
<td>5.40</td>
</tr>
<tr>
<td>L_W1</td>
<td>5.60</td>
<td>4.60</td>
</tr>
<tr>
<td>L_W3</td>
<td>5.80</td>
<td>5.20</td>
</tr>
<tr>
<td>Het_W1</td>
<td>6.40</td>
<td>5.40</td>
</tr>
</tbody>
</table>

Total Confidence: 57.40
Average Confidence: 4.78

(average 5.30). In the rating scales, most listeners to a large extent mirror their interviews, as explained above, and as can be seen in Appendix E.

The interviews, coupled with the rating scale based on the straight listeners' judgments, partially parallel the findings of Moonwomon-Baird (1997), who claims that lesbian speech is not recognizable. Her listeners (comprising both straight and lesbian women) also stated that they had no concept of what lesbians sound like. What is more, they resisted classifying a female voice as belonging to a lesbian, not even when a voice presented to them was stereotypically lesbian sounding (for example, 'loud, harsh, or
low-pitched' (Moonwomon-Baird, 1997:208)). In the present dissertation, it appears that lesbian speech is indeed unrecognizable – for the straight listeners. Moonwomon-Baird pointed out that not even lesbians are able to hear lesbian speech, which is in accord with what was found in this study, although this result goes the opposite direction of her study in some respects. In the present dissertation, the majority of lesbian listeners described several characteristics related to lesbian speech, and tended to hear most female voices as sounding lesbian (i.e., 8 out of 12). Finally, the gay male listeners, although having a tendency to judge female voices as belonging to lesbians, display again the lowest confidence levels among the groups, ranging between 3.00 and 4.20 (average confidence: 3.63). This suggests that the gay men are guessing more than knowing what to listen for. It is possible that for them, as for the straight listeners, lesbian speech is unrecognizable. However, when asked to choose between the options 'homosexual sounding' and 'heterosexual sounding', they prefer the former.

4.2.1.7. Gaydar and identification (female speakers)

As for the gay men, gaydar for the lesbian speakers appears to be a non-existent phenomenon (refer back to Table 8 on this matter). The lesbian listeners correctly identify 4 of the 6 lesbian speakers and incorrectly identify 4 of the 6 straight women as
being lesbians. The gay men properly recognize 5 lesbians and mismatch 5 straight
women. However, the poorest performance is provided by the straight listeners – and
epectedly so, judging from what emerged in their interviews. Neither straight group, in
fact, correctly identifies any lesbian. What is more, they incorrectly believe (or guess)
that two straight women are lesbians.

4.2.1.8. Speaker selection (females)

By examining the complete results, what emerges is all listener groups agree
Het_W_5 and Het_W_6 sound straight, and Het_W_1 and L_W_1 sound lesbian. One more
speaker, namely, L_W_3, may also be added to the straight-sounding speakers. Her over-
all SR is 4.95 (which is close to 'heterosexual', that is, the category between 5.00 and
5.99 points). Only the gay male listeners do not judge her as sounding straight. Gay
male listeners' judgments (as a group), once more, can be excluded from the selection of
the female speakers, as they show a tendency to over-identify speakers as being lesbian
– and have the lowest confidence level among the listener groups. In fact, they rate just
two women as sounding straight. The rest of the female speakers are omitted from the
groupings because there was no general agreement among the listening groups about
what they sounded like.
4.2.2. Group 2 listeners

Tables 14 through 18 (below) present the ratings given by Group 2 listeners in relation to the parameters ‘educated/uneducated’, ‘feminine/masculine’, ‘dumb/intelligent’, ‘serious/frivolous’, and ‘rude/polite’ for the male speakers, and Tables 19 through 23 (below) feature the same rankings for the female speakers.

The correlation values for the males are reported in Tables 24 through 28 (below). The correlations for the females appear in Tables 29 through 33 (below). The present discussion refers primarily to the correlations based on all Group 2 listeners as featured, for each gender, in Tables 14 and 19. However, when discrepancies among the four groups of listeners do appear, they are reported.

As introduced in Chapter 3, correlations were sought to investigate the relationship between SR and the parameters, and among the parameters themselves. Two values in particular had to be established for the correlations to work. The first value was \( n \), or the number of data investigated. In the case of the male speakers, \( n = 10 \) (as the number of speakers selected, that is, identified by the listeners as sounding gay or straight, is 10). For the females, \( n = 5 \) (because 5 female speakers were selected as so identified). Once \( n \) was found, it had to be related to the significance level, or \( \alpha \), in order to find the
Table 14. Male speakers, as rated by all Group 2 listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1) / Frivolous (7)</th>
<th>Rude (1) / Polite (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>1.60</td>
<td>2.80</td>
<td>3.45</td>
<td>5.35</td>
<td>4.70</td>
<td>3.25</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>2.30</td>
<td>3.40</td>
<td>5.15</td>
<td>4.45</td>
<td>4.65</td>
<td>3.00</td>
</tr>
<tr>
<td>G_M_5</td>
<td>2.35</td>
<td>2.60</td>
<td>4.85</td>
<td>5.30</td>
<td>3.45</td>
<td>3.35</td>
</tr>
<tr>
<td>G_M_6</td>
<td>2.60</td>
<td>4.70</td>
<td>5.20</td>
<td>3.95</td>
<td>3.75</td>
<td>2.80</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>3.15</td>
<td>2.05</td>
<td>5.30</td>
<td>5.90</td>
<td>2.60</td>
<td>2.60</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>3.60</td>
<td>3.25</td>
<td>5.35</td>
<td>5.00</td>
<td>3.05</td>
<td>3.55</td>
</tr>
<tr>
<td>G_M_2</td>
<td>3.95</td>
<td>2.20</td>
<td>5.75</td>
<td>5.75</td>
<td>2.95</td>
<td>2.90</td>
</tr>
<tr>
<td>G_M_4</td>
<td>4.65</td>
<td>4.65</td>
<td>6.00</td>
<td>3.90</td>
<td>3.10</td>
<td>4.20</td>
</tr>
<tr>
<td>Het_M_2</td>
<td>4.65</td>
<td>4.55</td>
<td>6.00</td>
<td>4.00</td>
<td>3.25</td>
<td>3.05</td>
</tr>
<tr>
<td>G_M_1</td>
<td>4.70</td>
<td>2.60</td>
<td>6.00</td>
<td>5.20</td>
<td>2.90</td>
<td>2.70</td>
</tr>
<tr>
<td>Het_M_5</td>
<td>4.95</td>
<td>4.95</td>
<td>5.90</td>
<td>3.05</td>
<td>3.15</td>
<td>4.30</td>
</tr>
<tr>
<td>Het_M_1</td>
<td>5.40</td>
<td>4.65</td>
<td>6.30</td>
<td>4.05</td>
<td>3.55</td>
<td>3.35</td>
</tr>
</tbody>
</table>

Table 15. Male speakers, as rated by Group 2 lesbian listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1) / Frivolous (7)</th>
<th>Rude (1) / Polite (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>1.60</td>
<td>2.20</td>
<td>4.00</td>
<td>5.40</td>
<td>5.40</td>
<td>3.00</td>
</tr>
<tr>
<td>G_M_5</td>
<td>2.00</td>
<td>2.40</td>
<td>4.80</td>
<td>5.80</td>
<td>3.80</td>
<td>3.00</td>
</tr>
<tr>
<td>G_M_6</td>
<td>2.20</td>
<td>5.00</td>
<td>5.80</td>
<td>3.80</td>
<td>4.00</td>
<td>2.60</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>2.40</td>
<td>3.20</td>
<td>6.20</td>
<td>4.40</td>
<td>5.40</td>
<td>3.00</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>3.00</td>
<td>1.60</td>
<td>5.80</td>
<td>6.20</td>
<td>2.80</td>
<td>2.80</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>3.40</td>
<td>4.80</td>
<td>6.00</td>
<td>5.20</td>
<td>3.20</td>
<td>3.60</td>
</tr>
<tr>
<td>G_M_2</td>
<td>3.80</td>
<td>2.20</td>
<td>6.40</td>
<td>6.20</td>
<td>2.00</td>
<td>3.20</td>
</tr>
<tr>
<td>G_M_1</td>
<td>4.20</td>
<td>2.20</td>
<td>5.60</td>
<td>5.20</td>
<td>3.40</td>
<td>2.80</td>
</tr>
<tr>
<td>G_M_4</td>
<td>4.80</td>
<td>4.40</td>
<td>6.60</td>
<td>3.80</td>
<td>2.40</td>
<td>4.20</td>
</tr>
<tr>
<td>Het_M_1</td>
<td>5.40</td>
<td>4.60</td>
<td>6.80</td>
<td>4.00</td>
<td>3.60</td>
<td>3.60</td>
</tr>
<tr>
<td>Het_M_5</td>
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<td>4.80</td>
<td>6.40</td>
<td>3.00</td>
<td>2.40</td>
<td>5.20</td>
</tr>
<tr>
<td>Het_M_2</td>
<td>5.60</td>
<td>4.80</td>
<td>6.60</td>
<td>3.60</td>
<td>3.60</td>
<td>3.40</td>
</tr>
</tbody>
</table>
### Table 16. Male speakers, as rated by Group 2 gay male listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1) / Frivolous (7)</th>
<th>Rude (1) / Polite (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>2.00</td>
<td>2.80</td>
<td>2.80</td>
<td>5.80</td>
<td>4.60</td>
<td>3.20</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>2.20</td>
<td>3.60</td>
<td>4.60</td>
<td>4.80</td>
<td>4.40</td>
<td>2.80</td>
</tr>
<tr>
<td>G_M_5</td>
<td>2.60</td>
<td>2.40</td>
<td>4.40</td>
<td>5.60</td>
<td>2.60</td>
<td>3.20</td>
</tr>
<tr>
<td>G_M_6</td>
<td>2.80</td>
<td>4.80</td>
<td>4.80</td>
<td>4.00</td>
<td>3.60</td>
<td>2.40</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>3.00</td>
<td>2.00</td>
<td>4.80</td>
<td>6.20</td>
<td>1.80</td>
<td>2.40</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>3.40</td>
<td>3.80</td>
<td>4.80</td>
<td>4.80</td>
<td>2.80</td>
<td>3.40</td>
</tr>
<tr>
<td>G_M_2</td>
<td>4.00</td>
<td>2.00</td>
<td>4.80</td>
<td>5.60</td>
<td>3.20</td>
<td>2.40</td>
</tr>
<tr>
<td>Het_M_2</td>
<td>4.00</td>
<td>4.00</td>
<td>5.60</td>
<td>4.20</td>
<td>2.60</td>
<td>2.40</td>
</tr>
<tr>
<td>G_M_1</td>
<td>4.00</td>
<td>3.00</td>
<td>6.20</td>
<td>5.40</td>
<td>2.20</td>
<td>2.20</td>
</tr>
<tr>
<td>G_M_4</td>
<td>4.20</td>
<td>5.20</td>
<td>5.60</td>
<td>4.00</td>
<td>2.80</td>
<td>4.00</td>
</tr>
<tr>
<td>Het_M_5</td>
<td>4.60</td>
<td>5.20</td>
<td>5.60</td>
<td>2.40</td>
<td>2.80</td>
<td>4.00</td>
</tr>
<tr>
<td>Het_M_1</td>
<td>5.00</td>
<td>4.20</td>
<td>5.80</td>
<td>4.40</td>
<td>3.00</td>
<td>2.80</td>
</tr>
</tbody>
</table>

### Table 17. Male speakers, as rated by Group 2 straight female listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1) / Frivolous (7)</th>
<th>Rude (1) / Polite (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>1.60</td>
<td>2.60</td>
<td>3.60</td>
<td>5.80</td>
<td>4.60</td>
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<tr>
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</tr>
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<td>3.00</td>
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<td>4.80</td>
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<td>5.80</td>
<td>5.20</td>
<td>3.40</td>
<td>2.80</td>
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### Table 18. Male speakers, as rated by Group 2 straight male listeners

<table>
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<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1)</th>
<th>Rude (1) / Frivolous</th>
<th>Polite (7)</th>
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<td>6.00</td>
<td>4.00</td>
<td>4.40</td>
<td>3.40</td>
<td></td>
</tr>
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<td>3.20</td>
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<td>2.80</td>
<td>3.00</td>
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<td>5.80</td>
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<td>3.80</td>
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<td>6.40</td>
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<td>2.60</td>
<td>3.00</td>
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### Table 19. Female speakers, as rated by all Group 2 listeners

<table>
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<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1)</th>
<th>Rude (1) / Frivolous</th>
<th>Polite (7)</th>
</tr>
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<tbody>
<tr>
<td>Het_W_5</td>
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<td>5.55</td>
<td>2.90</td>
<td>3.35</td>
<td></td>
</tr>
<tr>
<td>Het_W_6</td>
<td>3.40</td>
<td>2.05</td>
<td>2.65</td>
<td>6.00</td>
<td>3.70</td>
<td>2.95</td>
<td></td>
</tr>
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<td>L_W_2</td>
<td>3.70</td>
<td>4.60</td>
<td>2.35</td>
<td>3.70</td>
<td>3.10</td>
<td>3.35</td>
<td></td>
</tr>
<tr>
<td>Het_W_4</td>
<td>3.95</td>
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<td>2.30</td>
<td>5.25</td>
<td>3.10</td>
<td>2.75</td>
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</tr>
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<td>1.90</td>
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<td>2.85</td>
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<td>5.70</td>
<td>2.90</td>
<td>2.40</td>
<td>2.85</td>
<td>3.15</td>
<td></td>
</tr>
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<td>3.60</td>
<td>1.95</td>
<td>4.45</td>
<td>3.25</td>
<td>3.55</td>
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</tr>
<tr>
<td>L_W_4</td>
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<td>2.80</td>
<td>1.75</td>
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<td>4.20</td>
<td>2.45</td>
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<td>1.70</td>
<td>5.55</td>
<td>3.10</td>
<td>2.80</td>
<td></td>
</tr>
<tr>
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<td>1.90</td>
<td>5.40</td>
<td>3.15</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
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<td>2.30</td>
<td>1.45</td>
<td>4.95</td>
<td>2.95</td>
<td>2.85</td>
<td></td>
</tr>
<tr>
<td>Het_W_1</td>
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<td>2.20</td>
<td>1.20</td>
<td>5.45</td>
<td>3.70</td>
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### Table 20. Female speakers, as rated by Group 2 lesbian listeners

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Fem. (1) / Dumb (1) / Serious (1) / Rude (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Edu. (1) / Fem. (1) / Dumb (1) / Serious (1) / Rude (1)</td>
</tr>
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</tr>
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<td>1.80 / 3.60 / 5.80 / 2.80 / 4.00</td>
</tr>
<tr>
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<td>1.80 / 1.40 / 5.60 / 3.20 / 3.00</td>
</tr>
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<td>L_W.6</td>
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<td>2.00 / 1.80 / 6.00 / 2.20 / 2.60</td>
</tr>
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<td>1.80 / 2.00 / 6.00 / 2.20 / 2.80</td>
</tr>
<tr>
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<td>3.80 / 1.80 / 3.60 / 2.60 / 3.80</td>
</tr>
<tr>
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</tr>
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<td>2.00 / 1.40 / 5.80 / 3.40 / 2.60</td>
</tr>
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<td>6.00 / 2.20 / 2.20 / 3.20 / 3.60</td>
</tr>
<tr>
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<td>2.20 / 1.20 / 6.00 / 3.60 / 1.80</td>
</tr>
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<td>2.00 / 1.20 / 4.60 / 2.80 / 2.80</td>
</tr>
<tr>
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<td>2.80 / 1.00 / 5.00 / 3.60 / 2.00</td>
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### Table 21. Female speakers, as rated by Group 2 gay male listeners

<table>
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<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Fem. (1) / Dumb (1) / Serious (1) / Rude (1)</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Edu. (1) / Fem. (1) / Dumb (1) / Serious (1) / Rude (1)</td>
</tr>
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</tr>
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</tr>
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<td>2.60 / 3.20 / 6.40 / 2.80 / 2.60</td>
</tr>
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</tr>
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</tr>
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<td>2.80 / 2.80 / 5.40 / 3.40 / 2.40</td>
</tr>
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<td>2.80 / 1.60 / 5.20 / 3.80 / 1.80</td>
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### Table 22. Female speakers, as rated by Group 2 straight female listeners

<table>
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<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1) / Frivolous (7)</th>
<th>Rude (1)/ Polite (7)</th>
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<tbody>
<tr>
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<td>2.60</td>
<td>6.00</td>
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<td>3.00</td>
</tr>
<tr>
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<td>3.40</td>
<td>5.40</td>
<td>2.80</td>
<td>2.80</td>
</tr>
<tr>
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<td>3.60</td>
<td>2.20</td>
<td>2.60</td>
<td>3.20</td>
</tr>
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<td>2.00</td>
<td>5.20</td>
<td>3.80</td>
<td>2.60</td>
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<tr>
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<td>1.80</td>
<td>5.40</td>
<td>2.60</td>
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</tr>
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<td>5.20</td>
<td>2.80</td>
<td>2.40</td>
</tr>
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<td>6.00</td>
<td>3.20</td>
<td>2.20</td>
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<td>3.60</td>
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<td>2.60</td>
<td>3.60</td>
<td>3.80</td>
<td>3.40</td>
</tr>
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<td>1.80</td>
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### Table 23. Female speakers, as rated by Group 2 straight male listeners

<table>
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<th>Speaker</th>
<th>Average Group 1 SR</th>
<th>Educ. (1) / Uneduc. (7)</th>
<th>Fem. (1) / Masc. (7)</th>
<th>Dumb (1) / Intellig. (7)</th>
<th>Serious (1) / Frivolous (7)</th>
<th>Rude (1)/ Polite (7)</th>
</tr>
</thead>
<tbody>
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<td>5.60</td>
<td>2.60</td>
<td>2.80</td>
</tr>
<tr>
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<td>3.40</td>
<td>2.20</td>
<td>2.80</td>
<td>5.60</td>
<td>4.20</td>
<td>3.40</td>
</tr>
<tr>
<td>Het_W_3</td>
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<td>5.60</td>
<td>3.00</td>
<td>2.60</td>
<td>3.40</td>
<td>3.40</td>
</tr>
<tr>
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<td>2.00</td>
<td>4.40</td>
<td>3.80</td>
<td>4.00</td>
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<td>4.60</td>
<td>3.60</td>
<td>3.20</td>
</tr>
<tr>
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<td>2.60</td>
<td>4.20</td>
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</tr>
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<td>2.00</td>
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<td>3.00</td>
</tr>
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<td>1.80</td>
<td>5.00</td>
<td>2.80</td>
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<tr>
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<td>1.80</td>
<td>5.20</td>
<td>3.20</td>
<td>3.00</td>
</tr>
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<td>1.20</td>
<td>4.60</td>
<td>2.80</td>
<td>3.00</td>
</tr>
<tr>
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<td>2.20</td>
<td>5.20</td>
<td>2.80</td>
<td>3.40</td>
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<td>2.60</td>
<td>1.60</td>
<td>5.80</td>
<td>3.60</td>
<td>2.80</td>
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</table>
second value needed, that is, the so-called critical value. In the case of the male speakers, for both \( n=10 \) and \( \alpha=5\% \), the critical value is +0.632. This means that any correlation coefficient that is greater than or equal to +0.632, or is smaller than or equal to -0.632 is statistically significant. For the female speakers, \( n=5 \) and \( \alpha=5\% \). The corresponding critical value is 0.878. Consequently, any \( r \) that is greater than or equal to 0.878, or smaller than or equal to -0.878 is statistically significant. In sum, for a correlation to be established, it has to be the following:

\[
 r \geq +0.632 \text{ or } r \leq -0.632 \text{ (for males)} \\
 r \geq +0.878 \text{ or } r \leq -0.878 \text{ (for females)}
\]

Scattergrams for all of the 10 selected male speakers are given in Figures 8 to 12 and scattergrams for all of the 5 selected female speakers are in Figures 13 through 17. The Figures appear in the following sections.

A note of caution is due at this point. Because the listeners did not make strong judgments regarding the sexuality of the speakers, relatively few data are used in these correlations. If \( n \) is small, then stray data are more likely to influence relationships than if many data are used, so statistics will be used here in conjunction with tables and scattergrams. A correlation might not be established. However, in cases when the \( r \) value is
close to significance, its scattergram could be suggestive, as it might show a pattern that is obscured because of stray data skewing the relationship.

4.2.2.1. Correlations of male speakers

Table 14 (above) reports the rankings for the male speakers on the basis of all the listener groups' judgments. In the tables, the speakers who were excluded from the final analysis have been shaded out. The speakers are shown according to the sexuality rating (henceforth, SR) they received from Group 1 listeners. Each speaker's SR value is reported in the second column of the table. The scales created by Group 2 are found in the remaining columns. Tables 3 through 18 (above) show the scales created on the basis of the groups within Group 1.
Figure 8. Selected male speakers' ratings for the continuum 'Educated/Uneducated', as rated by all Group 2 listeners.

As interviews were not conducted with Group 2 listeners, some of the conclusions regarding the results are necessarily limited.

4.2.2.1.1. Educated/uneducated (male speakers)

For the male speakers, a slightly positive relationship \((r = +0.54)\) was found, in general, between the SR and the parameter 'educated/uneducated' (see Table 24 above). This value lies outside the critical region (i.e.: \(r \geq +0.632\) or \(r \leq -0.632\)), which means that a correlation cannot be established. However, Table 14 and the scattergram...
in Figure 8, both above, show one stray value for each SR sounding group. In fact, among the gay-sounding males, 4 out of 5 appear in the ‘educated’ area, and only one (i.e., G_M_6) is in the ‘uneducated’ area. Similarly, the straight-sounding males appear 4 out of 5 times in the ‘uneducated’ area and once (i.e., G_M_1) in the ‘educated’ area. Furthermore, the same two speakers who had one stray value for each SR sounding group also show stray values for individual listening groups. As the presence of these values might create statistically non-significant relationships for most listeners, I excluded them and re-ran a correlation test. The result indicated a positive correlation ($r = +0.84$), thus suggesting that the values were stray. Arguably, then, Group 2 in general associates sounding gay with sounding educated. These results appear to confirm the stereotype of gay men seeming more educated than straight men. This stereotype has also been substantiated by Smyth et al. (2003), as their listeners rated all speakers as sounding gayer when reading a scientific passage. The topic used for the reading passage in this dissertation was meant to be neutral to all speakers, minimally scientific, and enjoyable enough to encourage an un-self-conscious reading. However, Group 2 listeners find that gay-sounding men also sound educated. It is possible (although I find it unlikely) that the topic chosen turned out nevertheless to be too scientific.
Table 25. Relationships between the SR and the parameters for selected males (table based on Group 2 lesbian listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>0.58</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>0.80</td>
<td>0.68</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.64</td>
<td>-0.95</td>
<td>-0.68</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>-0.66</td>
<td>-0.27</td>
<td>-0.52</td>
<td>0.25</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>0.67</td>
<td>0.53</td>
<td>0.48</td>
<td>-0.66</td>
<td>-0.57</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 26. Relationships between the SR and the parameters for selected males (table based on Group 2 gay male listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>0.55</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>0.85</td>
<td>0.44</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.59</td>
<td>-0.92</td>
<td>-0.47</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>-0.54</td>
<td>0.16</td>
<td>-0.66</td>
<td>-0.05</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>0.20</td>
<td>0.48</td>
<td>-0.09</td>
<td>-0.50</td>
<td>0.16</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 27. Relationships between the SR and the parameters for selected male speakers (table based on Group 2 straight female listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>0.70</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>0.76</td>
<td>0.34</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.60</td>
<td>-0.88</td>
<td>-0.39</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>-0.66</td>
<td>-0.37</td>
<td>-0.34</td>
<td>0.23</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>0.40</td>
<td>0.67</td>
<td>0.48</td>
<td>-0.70</td>
<td>0.21</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 28. Relationships between the SR and the parameters for selected male speakers (table based on Group 2 straight male listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>0.24</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>0.81</td>
<td>0.34</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.23</td>
<td>-0.94</td>
<td>-0.22</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>-0.42</td>
<td>0.58</td>
<td>-0.21</td>
<td>-0.57</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>0.12</td>
<td>0.41</td>
<td>-0.14</td>
<td>-0.43</td>
<td>0.05</td>
<td>1</td>
</tr>
</tbody>
</table>

It seems more plausible to me that having the speakers read a story that had been narrated mostly in the first person by a resourceful octopus might have suggested the story to be a spin-off from some sort of a fairy tale. In their minds, perhaps, this could have elicited a fantastical quality to the text, thus allowing the listeners to hear a connection between sounding imaginative and sounding gay. Whatever the cause, the attempt to keep the topic as neutral as possible for most speakers may have failed (at least with the male speakers).²³

²³ The finding that 'education' correlates with sexuality is also in line with sociolinguistic research on gender and standard/nonstandard speech, such as that produced by Peter Trudgill (1974) and Walt Wolfram (1969) on the use of (-in)/(-ing) variables in the UK and the USA, as well as multiple negation, as researched by Labov (1966). Generally speaking, males were more likely to use nonstandard speech than females, regardless of social class (though social class did matter). Sexuality was not tested in these studies, but there is a general link to be made in relationship to gendered language. The listeners resisted judging gay-sounding men as feminine, as I show later in my dissertation, however they considered the gay-sounding men less masculine.
Figure 9. Selected male speakers' ratings for the continuum 'Feminine/Masculine', as rated by all Group 2 listeners

4.2.2.1.2. Feminine/masculine (male speakers)

A positive correlation ($r = + 0.90$) was found between the SR of male speakers and the 'feminine/masculine' parameter. This would indicate that gay-sounding men also sound feminine and that straight-sounding men sound masculine. However, Table 14 above (and Figure 9) unambiguously shows that only the gayest-sounding speaker, that is, G_M_3, was placed on the feminine side of the scale. The rest of the speakers were than the straight-sounding men. It is likely that the connection between gay-sounding men and lesser masculinity implied a link between these men and sounding educated.
placed on the masculine side of the scale. This point does not affect the correlation per se. In fact, it is clear from the table that the gay-sounding men are judged as less masculine than the straight-sounding men. However, this result further shows that G_M_3, who has been consistently rated as the gayest-sounding man, is also perceived as the most feminine-sounding man, to the point of being considered as the only feminine-sounding man. A further implication of this result is that the listeners in general are inclined to judge a male voice as masculine rather than feminine. This point replicates the resistance shown by Smyth et al.'s (2003) listeners in judging a male voice as feminine, and it contrasts with the findings of Gaudio (1994), whose listeners judged all gay male speakers as sounding effeminate. 'Effeminate' relates only to males who are exaggeratedly feminine. The term 'feminine' was used in the present study because female and male voices were played in random order to the listeners, and it would have been awkward to ask whether or not a female voice sounded effeminate. It can be argued that G_M_3 would have been judged as sounding effeminate, if the listeners had been given the opportunity to make that choice.

To summarize, it appears that Group 2 listeners refused to judge any of the male speakers as feminine, with the only exception being G_M_3. Presumably, he was rated as
such because he is the gayest-sounding speaker. Therefore, it seems that sounding extremely gay corresponds to sounding feminine (possibly, effeminate).

4.2.2.1.3. Dumb/intelligent (male speakers)

A very strong negative correlation ($r=-0.96$) resulted between the ‘educated/uneducated’ and the ‘dumb/intelligent’ parameters. This correlation is not surprising, as it shows that speakers who were rated as educated were also judged to be intelligent, and those who were rated as uneducated were also judged to be dumb. It is, though, worth pointing out that there is no established correlation ($r=-0.54$) between the SR and the ‘dumb/intelligent’ parameter. Therefore, this study did not establish any relation between the SR and this parameter.

The lesbian listeners present a statistically-significant (although barely, as $r=-0.64$) negative correlation between SR and ‘dumb/intelligent’. To them, apparently, gay-sounding men tend to sound more intelligent than straight-sounding men (see, for comparison, Table 15 above, where 4 out of 5 gay-sounding speakers are judged as intelligent, and 3 out of 5 straight-sounding male speakers are rated as dumb). This stereotype might be fueled by the possibility that the lesbians may think that sounding feminine is related to sounding both educated and intelligent. In fact, for the lesbian
Figure 10. Selected male speakers' ratings for the continuum 'Dumb/Intelligent', as rated by all Group 2 listeners

listeners, there is a positive correlation between the parameters 'feminine/masculine' and 'educated/uneducated' ($r = +0.68$), and a negative correlation between 'feminine/masculine' and 'dumb/intelligent' ($r = -0.68$). Table 15 above confirms that these two correlations do not need any further interpretation, as the values are distributed as expected (i.e., most values of one parameter vary with their corresponding values of the other parameter). Furthermore, both correlations are unique to lesbian listeners.
4.2.2.1.4. Serious/frivolous (male speakers)

An $r$ value of -0.63 for the SR and the 'serious/frivolous' parameter suggests that sounding gay coincides with sounding frivolous. This relationship is not statistically significant, although it is very close to being so. In fact, as the scattergram in Figure 11 below shows, it is only the gayest-sounding speakers, that is, G_M_3 and Het_M_4, who are judged as sounding frivolous. The rest of the speakers are rated as sounding serious. In other words, the straighter a man sounds, the more serious he seems to sound, and only speakers who are clearly recognizable as sounding gay are also considered to sound frivolous. Importantly, only female listeners (regardless of their sexuality) present a statistically-significant correlation between SR and this parameter. In fact, for both of the female listening groups $r=-0.66$. The male listeners do not correlate these two parameters.

Furthermore, for Group 2 listeners as a whole there is a negative correlation (i.e., $r=-0.66$) between the 'serious/frivolous' and 'feminine/masculine' parameters. The correlation is expected, as both correlations between the SR and the two parameters existed. As a result, it appears that sounding gay means sounding both feminine and frivolous. Conversely, sounding straight implies sounding masculine and serious. As
illustrated above, the listeners displayed resistance to characterizing a male voice as sounding feminine or frivolous. The only exceptions to this resistance were the two gayest-sounding speakers. In light of this, it is possible to conclude that this result is mainly valid for very gay-sounding speakers, to the point that they influenced the statistics for Group 2 listeners in general. The result also appears to be strongly supported by the gay male listeners, for whom the correlation exists \( r = -0.66 \). Results for the rest of
the listeners, instead, are rather weak and not statistically significant (particularly those
for straight men and women, respectively \( r = -0.34 \) and \( r = -0.21 \)).

4.2.2.1.5. Rude/polite (male speakers)

Finally, an \( r \) value of \(+0.38\) was found between the SR and the 'rude/polite' parameter. This is not statistically significant, showing that there is in general no connection for Group 2 between perceived sexuality and sounding rude or polite. Possibly, this result is due to the fact that most speakers were judged as sounding rude, with the exception of two straight-sounding speakers (i.e., G_M_4 and Het_M_5), who were rated on the slightly-polite side (with values only a little higher than the neutral cut-off point of 4.00). The bottom line, then, appears to be that almost all speakers were believed to sound on the rude side, regardless of their perceived sexuality. Although an exception to these results exists, this exception appears to be skewed by one value. The lesbian listeners, in fact, follow exactly the general trend of Group 2 listeners in that they judge all speakers as sounding rude, with the exception of the gay-sounding speakers G_M_4 and Het_M_5. However, lesbian listeners present a positive correlation (\( r = +0.67 \)) between the SR and the 'rude/polite' parameter, which would indicate that lesbians believe that sounding gay means also sounding rude and, conversely, sounding straight
corresponds to sounding polite. The correlation suffers from a stray value, that is, the one given to Het_M_5. This value (i.e., 5.20) is so high, compared to those of the other speakers, that it might have created a skewed result. Therefore, a new correlation between the SR and the ‘rude/polite’ parameter was sought after discarding such a value and it was found to be statistically significant ($r = +0.66$). Thus, it is likely that lesbians seem to think that sounding gay is linked to sounding rude.
A possible explanation for the general Group 2 perception that speakers sound on the rude side may be related to the local accent of the speakers. Hawai'i Creole English (or HCE, commonly known as Pidgin on the Hawaiian Islands) is often considered in a somewhat negative light in Hawai'i, as it is commonly related to low social status and lack of education. Conversely, speaking Standard American English in Hawai'i is often believed to represent status and good education. However, sounding 'too standard' in Hawai'i can also indicate that a person is out of touch with local life, pretentious and rude. Peppo's *Pidgin to da Max* (1981), an illustrated dictionary of HCE, features a number of cartoons where characters representing conceited mainlanders speak Standard American English. It is therefore possible that the speakers sounded too standard to the listeners, and thus, rude. This explanation is supported by interviews with the speakers themselves. At least 90% of the speakers were educated: they either had a college degree or were undergraduate students in their junior or senior years. Most of them claimed that, since childhood, they were strongly discouraged or even prohibited from speaking Hawai'i Creole English by their families. Their accent, then, tended to be recognizable as local, but with some degree of standardization. The listeners might have picked up on the standardization, and associated it with intelligence (although not with
education, as there is no correlation for Group 2 in general between ‘educated/uneducated’ and ‘rude/polite’, except for straight female listeners, who present a positive correlation: \( r = +0.67 \). However, the listeners (who, for the most part were either born and raised in Hawai'i or have lived in the state for at least 15 years) might also have linked standardization with ‘Mainland’ speech, thus with pretentiousness or arrogance, both of which imply rudeness. The female listeners may have felt particularly adamant about this point, as they presented negative correlations between ‘dumb/intelligent’ and ‘rude/polite’ (for lesbians, \( r = -0.66 \); for straight women, \( r = -0.70 \)). This point relates to overt and covert prestige, which produces contradictory notions of ‘good’ language (HCE is ‘good’ for not ‘sounding rude’, but ‘bad’ for sounding ‘uneducated’).

4.2.2.1.6. Conclusions on male speakers

In conclusion, for the male speakers, sounding gay was generally found to be associated with sounding educated and intelligent. Sounding extremely gay was also found to correspond with sounding feminine and frivolous. Conversely, sounding straight appears to be associated with being uneducated. The listeners resisted judging most speakers as sounding feminine or frivolous. Finally, the parameter ‘rude/polite’ produ-
Table 29. Relationships between the SR and the parameters for selected female speakers (table based on all Group 2 listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>-0.07</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>-0.99</td>
<td>0.21</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.67</td>
<td>-0.53</td>
<td>0.60</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>0.13</td>
<td>-0.87</td>
<td>-0.25</td>
<td>0.62</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>-0.86</td>
<td>0.31</td>
<td>0.85</td>
<td>0.22</td>
<td>-0.50</td>
<td>1</td>
</tr>
</tbody>
</table>

ceded the surprising result that almost every speaker (regardless of their perceived sexuality) was placed on the rude side. One possible interpretation for this result is that the speakers used a relatively standard speech that the listeners associated with rudeness.

4.2.2.2. Correlations of female speakers

Table 19 (above) shows the relations between all Group 1 listeners’ SR and all Group 2 listeners’ ratings. Tables 20 through 22 (above), instead, report the results between the SR given by each individual Group 1 listening group and its corresponding Group 2 counterpart. As was done for the male speakers, the female speakers who were not systematically judged as belonging to one category or the other are shaded out in the tables. The speakers that were, instead, consistently judged as sounding gay or straight are shown in regular font. The discussion focuses on all Group 2 listeners'
Table 30. Relationships between the SR and the parameters for selected female speakers (table based on Group 2 lesbian listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>0.72</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>-0.97</td>
<td>-0.65</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.63</td>
<td>-0.42</td>
<td>0.46</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>0.35</td>
<td>0.48</td>
<td>-0.51</td>
<td>0.40</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>-0.84</td>
<td>-0.70</td>
<td>0.91</td>
<td>0.11</td>
<td>-0.76</td>
<td>1</td>
</tr>
</tbody>
</table>

judgments, although attention is called to discrepancies among the individual groups, whenever such are present. As a preliminary note, absolutely no correlation was found for the straight listeners (although there were two quasi-correlations for straight men). This result mirrors the interviews with Group 1 straight listeners, who claimed that they had few clues to go by for distinguishing between a lesbian and a straight woman on the basis of speech alone.
Table 31. Relationships between the SR and the parameters for selected female speakers (table based on Group 2 gay male listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td></td>
<td>0.91</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>-0.96</td>
<td>0.94</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.39</td>
<td>0.24</td>
<td>0.52</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>0.35</td>
<td>-0.14</td>
<td>-0.18</td>
<td>-0.14</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>-0.54</td>
<td>0.84</td>
<td>0.67</td>
<td>0.06</td>
<td>0.32</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 32. Relationships between the SR and the parameters for selected female speakers (table based on Group 2 straight female listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>0.23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>-0.71</td>
<td>0.49</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.60</td>
<td>-0.81</td>
<td>0.01</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>0.24</td>
<td>-0.65</td>
<td>-0.56</td>
<td>0.27</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>0.10</td>
<td>0.30</td>
<td>0.04</td>
<td>-0.64</td>
<td>0.10</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 33. Relationships between the SR and the parameters for selected female speakers (table based on Group 2 straight male listeners' judgments; correlations are in bold face, on a white background)

<table>
<thead>
<tr>
<th></th>
<th>Hom/Het</th>
<th>Ed/Uned</th>
<th>Fem/Mas</th>
<th>Dumb/Int</th>
<th>Ser/Priv</th>
<th>Rude/Pol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hom/Het</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed/Uned</td>
<td>0.62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fem/Mas</td>
<td>-0.85</td>
<td>-0.84</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dumb/Int</td>
<td>-0.30</td>
<td>-0.35</td>
<td>0.57</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ser/Priv</td>
<td>0.06</td>
<td>-0.44</td>
<td>0.13</td>
<td>0.49</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rude/Pol</td>
<td>0.09</td>
<td>-0.67</td>
<td>0.23</td>
<td>-0.18</td>
<td>0.34</td>
<td>1</td>
</tr>
</tbody>
</table>
4.2.2.2.1. Educated/uneducated (female speakers)

A small negative $r$ value (-0.07) exists between the SR and the parameter 'educated/uneducated' for all Group 2 listeners. This is not statistically significant, as it lies well outside the critical region (once again, for female speakers the critical region is $r \geq +0.878$ or $r \leq -0.878$) – and as it is very close to 0. Therefore, speakers' perceived sexualities and 'educated/uneducated' parameters are unrelated for Group 2 in general.
4.2.2.2.2. Feminine/masculine (female speakers)

The correlation between the SR and the 'feminine/masculine' parameter is very strong and negative ($r = -0.99$). This result might give the impression that female speakers are judged as sounding masculine if they sound gay and sounding feminine if they sound straight. However, by examining Figure 14 it appears obvious that all speakers were rated as educated.

Figure 14. Selected female speakers' ratings for the continuum 'Feminine/Masculine', as rated by all Group 2 listeners.

The scattergram in Figure 13 (and Table 19, both above) show that all speakers were rated as educated.
are rated on the feminine side of the scale, although the lesbian-sounding women are judged as sounding less feminine than the straight-sounding women. Remarkably, both the lesbians and the gay men show a negative correlation between the SR and the 'feminine/masculine' parameter (for lesbians, $r=-0.97$; for gay men: $r=-0.96$). These correlations indicate that gay/lesbian listeners make a stronger connection between perceived sexuality and being masculine or feminine than the other groups. Furthermore, both the lesbians and gay men rate all the female speakers as sounding feminine, although they judge lesbian-sounding speakers as less feminine than straight-sounding speakers (see Tables 20 and 21 above).

The gay male listeners also present a positive correlation ($r=+0.94$) between the 'educated/uneducated' and the 'feminine/masculine' parameters. The gay men, in fact, judged all female speakers as sounding both educated and feminine. However, Table 23 above shows that the lesbian-sounding speakers were rated by these listeners as sounding both less educated and less feminine than the straight-sounding speakers.
4.2.2.2.3. Dumb/intelligent (female speakers)

No correlation was found between the SR and the 'dumb/intelligent' parameter for Group 2 (i.e., $r=-0.67$). All female speakers were judged as intelligent (see Figure 15). Although the lesbian-sounding speakers were rated a notch more intelligent than the straight-sounding speakers, all female speakers' values are concentrated in a very small area, or between 4.95 and 6.00.
Because the area is so minute, it appears that there is no difference between lesbian- and straight-sounding women in relation to the 'dumb/intelligent' parameter.

4.2.2.2.4. Serious/frivolous (female speakers)

No correlation was found between the SR and the 'serious/frivolous' parameter ($r = +0.13$). As such, it reveals no connection between the perceived sexuality of females and their perceived seriousness or frivolity. Figure 16 shows, in fact, that all speakers were rated on the serious side of the scale. Remarkably, however, there is a
Figure 17. Selected female speakers' ratings for the continuum 'Rude/Polite', as rated by all Group 2 listeners

near statistically-significant, negative relationship ($r=-0.87$) between the 'educated/uneducated' and 'serious/frivolous' parameters which might indicate that to some Group 2 listeners being educated corresponds to being frivolous, and being uneducated relates to being serious. As the results in Section 4.2.2.2.1 above pointed out that all speakers were judged as sounding educated, it might be concluded that to some listeners the female speakers in general sounded both educated and frivolous.
4.2.2.2.5. Rude/polite (female speakers)

The relationship between the SR and the 'rude/polite' parameter is negative and close to being statistically significant ($r = -0.86$). Figure 17 above shows that all speakers were placed on the 'rude' side of the scale. Although the lesbian-sounding speakers appear to sound less rude than the straight-sounding, all speakers values are concentrated in a very small area (i.e., they range between 2.35 and 3.35). And so, it can be concluded that all female speakers sound rude, regardless of their sexuality. This finding replicates and strengthens what was previously hypothesized about the male speakers, who were also established as sounding rude. Once again, as previously noted, it is possible that the standardization of local Hawai‘i English exhibited by the speakers has negatively affected the perception of the listeners, who found the speakers as sounding possibly arrogant and definitely on the rude side.

Finally, there is a positive correlation ($r = +0.91$) between the parameters 'feminine/masculine' and 'rude/polite' for lesbian listeners. To these listeners, sounding feminine corresponds to sounding rude, and sounding masculine to sounding polite. The lesbian listeners rated all female speakers as sounding both feminine and rude. However, this correlation, coupled with the negative and statistically-significant correlation found
for these listeners between SR and 'feminine/masculine' (see Section 4.2.2.2.2), shows that the lesbian listeners tend to judge the lesbian-sounding speakers as sounding less feminine and less rude than the straight-sounding speakers.

4.2.2.2.6. Conclusions for female speakers

There was a striking difference between the judgments of the male and of the female speakers. Group 2 listeners have a definite idea about what gay-sounding men sound like, but are very hesitant about lesbian-sounding women. In fact, the female speakers were judged as a whole, rather than according to their perceived sexuality. In other words, they were all rated in general as being educated, feminine, intelligent, on the 'serious' side and on the 'rude' side. Within these terms, though, evidence was found that for some groups, particularly the gay and lesbian groups, some division exists along perceived sexuality lines. In fact, the gay men seem to believe that the lesbian-sounding women were less feminine than the straight-sounding women. The lesbian listeners also appear to perceive lesbian-sounding women as less feminine and less rude than straight-sounding women. Group 2 also displays a tendency to consider the lesbian-sounding women as less feminine than the straight-sounding women, and there is evidence to
suggest that to some listeners, in general, the female speakers sound educated and frivolous (rather than serious).

Moreover, Group 2 listeners resist judging any female speaker as sounding masculine. This finding mirrors the same tendency that Group 2 displayed with their avoidance of rating any male speaker as sounding feminine (see Section 4.2.2.1.2.). Finally, just as with the male speakers, the female speakers were as a whole considered to be on the rude side. This result would be consistent with the hypothesis formulated previously in Section 4.2.2.1.5. (and repeated in Section 4.2.2.2.5.) that a certain degree of standardization in the accent of the speakers might have been picked up by the listeners and then associated with rudeness.

4.3. Production study

As explained in Chapter 3, designated vowel tokens (monophthongs and diphthongs) from each speaker's entire reading passage were examined with Praat (Boersma and Weenink, 2006).

The present section reports on the data collected.
4.3.1. Vowels – Vowel duration

Vowel duration was measured as explained in Section 3.4.4. Averages are shown below in Tables 34 (for the male speakers) and 35 (for the female speakers). For each table, the speakers who were excluded from the final analysis have been shaded out.

4.3.2. Vowels – Monophthong quality

For each speaker, the quality of monophthongs (i.e., the first two formants) was calculated as shown in Section 3.4.4.

Four monophthong tokens were found to have diphthongized. These were all /u/ tokens pronounced as [ju] in the word soup by G_M_3, Het_M_1, and Het_M_4. Notice was taken of these tokens as indicative of a possible dialectal variation, and it was decided to discard them from the final analysis.24

The results for monophthong quality can be found below in Tables 36 (for the males) and 37 (for the females). In these tables, the speakers excluded from the final analysis are shaded out.

---

24 As each speaker produced only 5 tokens for each vowel, any pronunciation that deviates from the area in which most tokens are concentrated would likely lead to problems with averages.
Table 34. Vowel duration and vowel space dispersion for male speakers (table ranked by the SR of all Group 1 listeners)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>SR</th>
<th>Avg. Vowel Duration</th>
<th>VSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>1.60</td>
<td>0.12</td>
<td>1.97</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>2.30</td>
<td>0.14</td>
<td>1.92</td>
</tr>
<tr>
<td>G_M_5</td>
<td>2.35</td>
<td>0.14</td>
<td>1.94</td>
</tr>
<tr>
<td>G_M_6</td>
<td>2.60</td>
<td>0.13</td>
<td>2.43</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>3.15</td>
<td>0.14</td>
<td>2.37</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>3.60</td>
<td>0.11</td>
<td>2.27</td>
</tr>
<tr>
<td>G_M_2</td>
<td>3.95</td>
<td>0.13</td>
<td>2.09</td>
</tr>
<tr>
<td>G_M_4</td>
<td>4.65</td>
<td>0.12</td>
<td>2.18</td>
</tr>
<tr>
<td>Het_M_2</td>
<td>4.65</td>
<td>0.13</td>
<td>1.96</td>
</tr>
<tr>
<td>G_M_1</td>
<td>4.70</td>
<td>0.13</td>
<td>2.10</td>
</tr>
<tr>
<td>Het_M_5</td>
<td>4.95</td>
<td>0.15</td>
<td>1.49</td>
</tr>
<tr>
<td>Het_M_1</td>
<td>5.40</td>
<td>0.13</td>
<td>1.66</td>
</tr>
</tbody>
</table>

Table 35. Vowel duration and vowel space dispersion for female speakers (table ranked by the SR of all Group 1 listeners)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>SR</th>
<th>Avg. Vowel Duration</th>
<th>VSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Het_W_5</td>
<td>2.95</td>
<td>0.12</td>
<td>1.97</td>
</tr>
<tr>
<td>Het_W_6</td>
<td>3.40</td>
<td>0.14</td>
<td>2.39</td>
</tr>
<tr>
<td>L_W_2</td>
<td>3.70</td>
<td>0.16</td>
<td>1.93</td>
</tr>
<tr>
<td>Het_W_4</td>
<td>3.95</td>
<td>0.13</td>
<td>2.33</td>
</tr>
<tr>
<td>L_W_6</td>
<td>4.10</td>
<td>0.12</td>
<td>1.87</td>
</tr>
<tr>
<td>Het_W_3</td>
<td>4.15</td>
<td>0.14</td>
<td>2.44</td>
</tr>
<tr>
<td>Het_W_2</td>
<td>4.20</td>
<td>0.12</td>
<td>2.18</td>
</tr>
<tr>
<td>L_W_4</td>
<td>4.35</td>
<td>0.10</td>
<td>2.24</td>
</tr>
<tr>
<td>L_W_5</td>
<td>4.40</td>
<td>0.16</td>
<td>2.11</td>
</tr>
<tr>
<td>L_W_3</td>
<td>4.95</td>
<td>0.13</td>
<td>2.18</td>
</tr>
<tr>
<td>L_W_1</td>
<td>5.30</td>
<td>0.12</td>
<td>2.37</td>
</tr>
<tr>
<td>Het_W_1</td>
<td>5.55</td>
<td>0.09</td>
<td>2.28</td>
</tr>
</tbody>
</table>
Table 36. Monophthong measurements for all male speakers (table ranked by the SR of all Group 1 listeners; gay-sounding speakers at the top of the table and straight-sounding speakers at the bottom)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mon. /l/</td>
<td>Mon. /l/</td>
<td>Mon. /æ/</td>
<td>Mon. /æ/</td>
<td>Mon. /α/</td>
<td>Mon. /α/</td>
<td>Mon. /u/</td>
<td>Mon. /u/</td>
</tr>
<tr>
<td>G_M_3</td>
<td>4.11</td>
<td>14.88</td>
<td>6.45</td>
<td>11.69</td>
<td>6.95</td>
<td>10.40</td>
<td>4.30</td>
<td>13.01</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>3.92</td>
<td>14.15</td>
<td>6.81</td>
<td>12.57</td>
<td>6.75</td>
<td>10.08</td>
<td>4.47</td>
<td>12.82</td>
</tr>
<tr>
<td>G_M_5</td>
<td>3.43</td>
<td>13.94</td>
<td>6.33</td>
<td>11.56</td>
<td>6.64</td>
<td>10.16</td>
<td>3.70</td>
<td>12.36</td>
</tr>
<tr>
<td>G_M_6</td>
<td>2.97</td>
<td>14.58</td>
<td>7.46</td>
<td>11.68</td>
<td>7.15</td>
<td>10.56</td>
<td>3.74</td>
<td>12.17</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>2.85</td>
<td>14.12</td>
<td>6.53</td>
<td>11.70</td>
<td>6.97</td>
<td>9.43</td>
<td>3.41</td>
<td>11.82</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>3.50</td>
<td>14.58</td>
<td>7.20</td>
<td>11.85</td>
<td>6.91</td>
<td>10.65</td>
<td>3.62</td>
<td>11.86</td>
</tr>
<tr>
<td>G_M_2</td>
<td>3.52</td>
<td>13.94</td>
<td>6.94</td>
<td>12.07</td>
<td>7.19</td>
<td>10.21</td>
<td>4.22</td>
<td>11.93</td>
</tr>
</tbody>
</table>

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Table 37. Monophthong measurements for all female speakers (table ranked by the SR of all Group 1 listeners; gay-sounding speakers at the top of the table and straight-sounding speakers at the bottom)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
<th>Average F1 (Bark)</th>
<th>Average F2 (Bark)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mon. /i/</td>
<td>Mon. /i/</td>
<td>Mon. /æ/</td>
<td>Mon. /æ/</td>
<td>Mon. /æ/</td>
<td>Mon. /æ/</td>
<td>Mon. /ø/</td>
<td>Mon. /ø/</td>
</tr>
<tr>
<td>Het_W_5</td>
<td>4.12</td>
<td>14.45</td>
<td>7.00</td>
<td>11.74</td>
<td>7.03</td>
<td>10.62</td>
<td>4.30</td>
<td>12.58</td>
</tr>
<tr>
<td>Het_W_6</td>
<td>3.89</td>
<td>15.12</td>
<td>7.65</td>
<td>12.50</td>
<td>7.58</td>
<td>10.93</td>
<td>4.00</td>
<td>12.49</td>
</tr>
<tr>
<td>L_W_2</td>
<td>4.04</td>
<td>14.61</td>
<td>7.36</td>
<td>12.78</td>
<td>7.09</td>
<td>11.40</td>
<td>4.22</td>
<td>12.55</td>
</tr>
<tr>
<td>Het_W_4</td>
<td>3.96</td>
<td>15.31</td>
<td>7.36</td>
<td>12.62</td>
<td>7.50</td>
<td>10.64</td>
<td>4.32</td>
<td>12.38</td>
</tr>
<tr>
<td>L_W_6</td>
<td>3.93</td>
<td>13.61</td>
<td>7.19</td>
<td>12.66</td>
<td>7.20</td>
<td>10.79</td>
<td>4.26</td>
<td>12.46</td>
</tr>
<tr>
<td>Het_W_3</td>
<td>3.80</td>
<td>15.44</td>
<td>7.63</td>
<td>12.78</td>
<td>7.09</td>
<td>11.07</td>
<td>4.16</td>
<td>11.51</td>
</tr>
<tr>
<td>Het_W_2</td>
<td>3.92</td>
<td>14.96</td>
<td>7.34</td>
<td>12.21</td>
<td>7.30</td>
<td>11.34</td>
<td>4.08</td>
<td>12.64</td>
</tr>
<tr>
<td>L_W_4</td>
<td>4.29</td>
<td>14.91</td>
<td>7.48</td>
<td>13.09</td>
<td>7.79</td>
<td>11.24</td>
<td>3.99</td>
<td>11.81</td>
</tr>
<tr>
<td>L_W_5</td>
<td>4.26</td>
<td>15.04</td>
<td>7.41</td>
<td>12.78</td>
<td>7.09</td>
<td>10.60</td>
<td>4.36</td>
<td>12.99</td>
</tr>
<tr>
<td>L_W_3</td>
<td>4.40</td>
<td>15.26</td>
<td>7.84</td>
<td>12.63</td>
<td>7.69</td>
<td>11.35</td>
<td>4.40</td>
<td>13.69</td>
</tr>
<tr>
<td>L_W_1</td>
<td>3.86</td>
<td>15.43</td>
<td>7.78</td>
<td>12.65</td>
<td>7.28</td>
<td>11.50</td>
<td>3.85</td>
<td>13.08</td>
</tr>
<tr>
<td>Het_W_1</td>
<td>3.90</td>
<td>15.10</td>
<td>8.01</td>
<td>12.40</td>
<td>8.02</td>
<td>11.41</td>
<td>4.27</td>
<td>12.97</td>
</tr>
</tbody>
</table>
Table 38. Diphthong distance (i.e., length of arrow uniting the first and the second element of each diphthong) in Bark for male speakers (table ranked by the SR of all Group 1 listeners)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M_3</td>
<td>0.85</td>
<td>2.23</td>
<td>1.20</td>
<td>0.92</td>
</tr>
<tr>
<td>Het_M_4</td>
<td>0.93</td>
<td>0.92</td>
<td>2.20</td>
<td>0.47</td>
</tr>
<tr>
<td>G_M_5</td>
<td>1.57</td>
<td>3.53</td>
<td>1.67</td>
<td>1.28</td>
</tr>
<tr>
<td>G_M_6</td>
<td>0.67</td>
<td>3.66</td>
<td>1.92</td>
<td>0.54</td>
</tr>
<tr>
<td>Het_M_3</td>
<td>1.18</td>
<td>3.55</td>
<td>1.65</td>
<td>1.08</td>
</tr>
<tr>
<td>Het_M_6</td>
<td>0.91</td>
<td>2.84</td>
<td>2.27</td>
<td>0.92</td>
</tr>
<tr>
<td>G_M_2</td>
<td>1.32</td>
<td>2.55</td>
<td>1.55</td>
<td>1.28</td>
</tr>
<tr>
<td>G_M_4</td>
<td>0.65</td>
<td>2.54</td>
<td>1.92</td>
<td>0.87</td>
</tr>
<tr>
<td>Het_M_2</td>
<td>0.58</td>
<td>3.35</td>
<td>1.49</td>
<td>0.56</td>
</tr>
<tr>
<td>G_M_1</td>
<td>1.68</td>
<td>2.87</td>
<td>1.90</td>
<td>0.72</td>
</tr>
<tr>
<td>Het_M_5</td>
<td>0.59</td>
<td>1.84</td>
<td>1.06</td>
<td>0.63</td>
</tr>
<tr>
<td>Het_M_1</td>
<td>0.59</td>
<td>1.86</td>
<td>1.14</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 39. Diphthong distance (i.e., length of arrow uniting the first and the second element of each diphthong) in Bark for female speakers (table ranked by the SR of all Group 1 listeners)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Het_W_5</td>
<td>0.85</td>
<td>1.88</td>
<td>2.02</td>
<td>0.95</td>
</tr>
<tr>
<td>Het_W_6</td>
<td>1.61</td>
<td>2.58</td>
<td>3.43</td>
<td>1.10</td>
</tr>
<tr>
<td>L_W_2</td>
<td>1.97</td>
<td>2.31</td>
<td>2.63</td>
<td>2.19</td>
</tr>
<tr>
<td>Het_W_4</td>
<td>1.76</td>
<td>3.35</td>
<td>2.14</td>
<td>0.84</td>
</tr>
<tr>
<td>L_W_6</td>
<td>1.05</td>
<td>2.21</td>
<td>1.66</td>
<td>1.01</td>
</tr>
<tr>
<td>Het_W_3</td>
<td>1.32</td>
<td>3.79</td>
<td>2.34</td>
<td>1.18</td>
</tr>
<tr>
<td>Het_W_2</td>
<td>0.70</td>
<td>2.40</td>
<td>1.36</td>
<td>1.30</td>
</tr>
<tr>
<td>L_W_4</td>
<td>1.23</td>
<td>2.29</td>
<td>2.00</td>
<td>1.08</td>
</tr>
<tr>
<td>L_W_5</td>
<td>1.24</td>
<td>3.77</td>
<td>2.51</td>
<td>1.09</td>
</tr>
<tr>
<td>L_W_3</td>
<td>0.94</td>
<td>3.40</td>
<td>1.97</td>
<td>1.44</td>
</tr>
<tr>
<td>L_W_1</td>
<td>1.17</td>
<td>2.50</td>
<td>2.12</td>
<td>1.68</td>
</tr>
<tr>
<td>Het_W_1</td>
<td>1.03</td>
<td>2.25</td>
<td>1.47</td>
<td>1.39</td>
</tr>
</tbody>
</table>

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4.3.3. Vowels – VSD

VSD (or vowel space dispersion) was measured for each speaker as explained in Section 3.4.4. The data for both genders can be found in Tables 34 and 35 (both above). All the results are discussed in Section 4.4.

4.3.4. Vowels - Diphthongs

As introduced in Section 3.4.4, diphthong distance was observed and its results are reported, for both genders, in a table format. Table 38 (above) shows diphthong distance for the male speakers, and Table 39 (above) shows diphthong distance for the female speakers. Each table features the most gay-/lesbian-sounding speaker at the top and the straightest-sounding at the bottom. The other speakers appear according to their SR. No diphthong was observed to monophthongize completely, although there was a considerable degree of monophthongization in the /ei/s and /ou/s of some speakers.

A discussion of the results is given in Section 4.4.
Table 40. Stop release percentages for male speakers (table ranked by the SR of all Group 1 listeners)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Stop Release (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G_M.3</td>
<td>60%</td>
</tr>
<tr>
<td>Het_M.4</td>
<td>60%</td>
</tr>
<tr>
<td>G_M.5</td>
<td>50%</td>
</tr>
<tr>
<td>G_M.6</td>
<td>60%</td>
</tr>
<tr>
<td>Het_M.3</td>
<td>50%</td>
</tr>
<tr>
<td>Het_M.6</td>
<td>10%</td>
</tr>
<tr>
<td>G_M.2</td>
<td>40%</td>
</tr>
<tr>
<td>G_M.4</td>
<td>50%</td>
</tr>
<tr>
<td>Het_M.2</td>
<td>50%</td>
</tr>
<tr>
<td>G_M.1</td>
<td>70%</td>
</tr>
<tr>
<td>Het_M.5</td>
<td>40%</td>
</tr>
<tr>
<td>Het_M.1</td>
<td>80%</td>
</tr>
</tbody>
</table>

Table 41. Stop release percentages for female speakers (table ranked by the SR of all Group 1 listeners)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Stop Release (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Het_W.5</td>
<td>50%</td>
</tr>
<tr>
<td>Het_W.6</td>
<td>40%</td>
</tr>
<tr>
<td>L_W.2</td>
<td>70%</td>
</tr>
<tr>
<td>Het_W.4</td>
<td>50%</td>
</tr>
<tr>
<td>L_W.6</td>
<td>50%</td>
</tr>
<tr>
<td>Het_W.3</td>
<td>60%</td>
</tr>
<tr>
<td>Het_W.2</td>
<td>50%</td>
</tr>
<tr>
<td>L_W.4</td>
<td>80%</td>
</tr>
<tr>
<td>L_W.5</td>
<td>60%</td>
</tr>
<tr>
<td>L_W.3</td>
<td>40%</td>
</tr>
<tr>
<td>L_W.1</td>
<td>100%</td>
</tr>
<tr>
<td>Het_W.1</td>
<td>60%</td>
</tr>
</tbody>
</table>
4.3.1. *Stop release*

In Section 3.4.4 is an explanation of the methodology I used to calculate and analyze stop release as a potential predictor of perceived sexuality. In this section, I present the data related to stop release.

Table 40 (above) presents the percentages of release for the male speakers, and Table 41 (above) shows the percentages of release for female speakers. For each table, the most gay-/lesbian-sounding voice appears at the top, whereas the straightest-sounding voice is at the bottom. Again, some speakers have been shaded out in the tables, as they have not been consistently rated as sounding gay/lesbian or straight. The results are discussed in Section 4.4.

4.4. *Comparing perceived sexuality and production*

4.4.1. *Preliminary considerations*

As outlined in Chapter 3, separate tests were run to investigate patterns related to each of the phonetic features considered in relation to the speakers' gender and perceived sexuality.
As shown in Section 4.2.2, for each gender, it was possible to create two groups on the basis of Group 1 listeners’ judgments. For the male speakers, the group of gay-sounding individuals \((n = 5)\) comprised G_M_3, G_M_5, G_M_6, Het_M_3 and Het_M_4. The straight-sounding group \((n = 5)\) included Het_M_1, Het_M_5, Het_M_2, G_M_1 and G_M_4. For the female speakers, lesbian-sounding persons \((n = 2)\) were: Het_W_1 and L_W_1. The female straight-sounding speakers \((n = 3)\) consisted of Het_W_5, Het_W_6, and L_W_3.

For each speaker, I excluded cases of her/his failure to pronounce a word or an obvious mispronunciation. A total of 8 tokens were left out for gay-sounding speakers and 9 for straight-sounding male speakers. For lesbian-sounding female speakers, 3 tokens were eliminated, and, for straight-sounding female speakers, 4 tokens.

For each phonetic feature investigated, the hypotheses formulated in Chapter 3 are reported again for convenience.

4.4.2. Vowels – vowel duration

In the section dedicated to the analysis of vowel tokens, vowel duration was determined for each speaker. The present section discusses vowel duration.
4.4.2.1. Vowel duration - hypotheses

The first measurement relates to the average duration of all monophthongs and diphthongs. The present study hypothesizes that gay-sounding individuals' speech might be hyperarticulated and that lesbian-sounding individuals' speech might be hypoarticulated. It can be argued that this hypothesis does not relate to vowel duration (a positive relationship between slow speech and hyperarticulated speech is sometimes assumed, but this does not appear to be justified, as it is possible to speak both quickly and clearly). Therefore, no specific hypothesis was proposed for either gender about whether the gay-/lesbian-sounding group might exhibit shorter or longer vowels than
the straight-sounding group. However, as already discussed in Chapter 3, perhaps female speakers’ vowels are longer than male speakers’ vowels. Further, it may be that gay-sounding speakers articulate longer vowels than straight-sounding male speakers, and lesbian-sounding speakers produce shorter vowels than straight-sounding female speakers.

4.4.2.2. Vowel duration – results

Figure 18 (above) suggests patterns related both to gender and perceived sexuality. Specifically, regardless of the speakers’ gender, the gay-/lesbian-sounding speakers’ vowels tend to be similar in duration to each other and longer than the straight-sounding speakers’. The straight-sounding female speakers produce the shortest vowels among the groups. Despite these observations, the two-way, between-subjects ANOVA returned no statistically-significant results, although a marginal effect for perceived sexuality ($F[1,14]=4.04, p=0.07, \text{partial } \eta^2=0.27$) was found. And so, it appears that vowel duration is not a feature that distinguishes my gay-/lesbian-sounding speakers from my straight-sounding speakers of either gender. However, a tendency in this direction might exist for the gay-/lesbian-sounding speakers’ vowels to be longer than the straight-sounding speakers’ vowels (see Figure 18 above).
These results do not support the hypotheses delineated above and are in part contrary to Pierrehumbert et al. (2004), who also found no difference in vowel duration related to sexuality or to the interaction between gender and sexuality, but did observe that their female speakers' vowels were significantly longer than those of male speakers. Finally, the results aligned with Munson et al. (2006), who found no main effect on vowel duration for either gender or sexuality and no interactional effect between gender and sexuality.

4.4.3. Vowels – Monophthongs

As previously discussed, monophthong quality and vowel space dispersions were analyzed for each speaker. This section reports on the results for these measurements.

4.4.3.1. Monophthong quality - Hypotheses

Monophthong quality was measured based on the F₁ and F₂ values for each monophthong.

As the findings on monophthong quality by Pierrehumbert et al. (2004) and by Munson et al. (2006) present too little of an overlap, I offer no specific hypotheses to. Each result is reported below and compared with those by Pierrehumbert et al. and Munson et al.
4.4.3.2. Monophthong quality – General results

The two-way, between-subjects MANOVA returned an unsurprising highly statistically-significant main effect of gender on both average $F_1$ and average $F_2$ (for $F_1$: $F[1,14] = 24.00$, $p < 0.01$, partial $\eta^2 = 0.69$; for $F_2$: $F[1,14] = 29.35$, $p < 0.01$, partial $\eta^2 = 0.73$). Average formant frequencies are commonly lower for men than for women (see, among others, Fitch and Giedd, 1999 and Hillenbrand et al., 1995), as men’s vocal tracts tend to be larger than women’s. The data employed in the present dissertation appear to reflect this pattern. Both Figure 19 and Figure 20 (below) show unequivocally that the female speakers present higher average formant values than the male...
speakers. Both Pierrehumbert et al. (2004) and Munson et al. (2006) obtained the same result and explained it in terms of females' higher formant frequencies. As the result is statistically significant, it is considered further in the next section.

A more remarkable outcome is the statistically-significant interaction between perceived sexuality and gender for $F_2$ ($F[1,14] = 8.85, p = 0.01, \text{partial } \eta^2 = 0.45$). Figure 20 illustrates the interaction between gender and sexuality in determining $F_2$. This interaction is reflected by the intersection of the two lines that relate to perceived sexuality. From the Figure, it appears that in the case of women, lesbian-sounding speakers produce an average lower $F_2$ (i.e., backer vowels) than straight-sounding speakers, whereas
Figure 21. Bar plot showing the difference of the average $F_2$ of the monophthong /i/ between gay-sounding and straight-sounding male speakers. The plot displays error bars. The shorter the bars, the smaller the error.

for men, the situation is the opposite. As this interaction was found to be statistically significant, it is further considered below. Pierrehumbert et al. (2004) found a similar significant interaction between gender and sexuality for $F_2$, although Munson et al. (2006) did not.

4.4.3.3. Monophthong quality – Post-hoc tests

For the statistically-significant main effects, I ran post-hoc tests (i.e., one-way ANOVAs with only one factor and one dependent variable at a time). For the main
Figure 22. Bar plot showing the difference of the average $F_2$ of the monophthong /u/ between gay-sounding and straight-sounding male speakers. The plot displays error bars. The shorter the bars, the smaller the error.

effects of all monophthongs' average $F_1$ and for all monophthongs' average $F_2$, it was found that the straight-sounding female speakers' average $F_2$ was significantly higher than the straight-sounding men's ($F[1,6] = 42.7, p < 0.01$). The result, again, reflects the difference between the vocal tract sizes of female and male speakers. This, in part, is the same result reported by Pierrehumbert et al. (2004), who stated that both $F_1$ and $F_2$ were significantly higher for straight women than for straight men. Munson et al. (2006) did not offer further exploration on this issue.
Figure 23. Bar plot showing the difference of the average $F_1$ of the monophthong /a/ between gay-sounding and straight-sounding male speakers. The plot displays error bars. The shorter the bars, the smaller the error.

4.4.3.4. Monophthong quality – Further results: male speakers

For male speakers, it was found that high monophthongs appear to vary as a function of perceived sexuality. In fact, ANOVAs returned a significant result for the $F_2$ of the monophthongs /i/ and /u/ (for /i/: $F[1,8]=6.86$, $p=0.03$; for /u/: $F[1,8]=6.62$, $p=0.03$). The charts in Figures 21 and 22 (both above) show that the gay-sounding speakers’ $F_2$ values for these two monophthongs are higher than the straight-sounding speakers’. This means that the high monophthongs of the gay-sounding speakers are
more fronted than those of the straight-sounding male speakers, as shown in Figures 24 and 25 (both below). Figure 24 illustrates all the monophthongs produced by the gay-sounding speakers. Figure 25 shows the monophthongs produced by the male straight-sounding speakers. For each speaker, monophthong tokens are represented by a symbol.

Both high monophthongs appear to be more fronted for the gay-sounding men than for the straight-sounding men.

A marginally-significant result was found for $F_1$ of the monophthong /a/ ($F[1,8]=4.27, p=0.07$). This small tendency appears to be a higher $F_1$ for /a/ for the gay-sounding speakers than for the straight-sounding male speakers. This observation is reflected in Figures 24 and 25 (below) by a slightly lower vowel quality of /a/ for the gay-sounding speakers compared to the straight-sounding male speakers. The marginal effect is shown in Figure 23 (above) by the slight overlap between the averages of the two groups for the $F_1$ of /a/.

No other statistically-significant results were found for the male speakers. In conclusion, it appears that the gay-sounding speakers front their high vowels and possibly tend to have a lower /a/.
Figure 24. Gay-sounding male speakers' monophthongs (chart based on all Group 1 listeners' judgments; stray tokens are excluded)

Figure 25. Straight-sounding male speakers' monophthongs (chart based on all Group 1 listeners' judgments; stray tokens are excluded)
Figure 26. The gayest-sounding speaker's (i.e., G_M_3) and the straightest-sounding male speaker's (i.e., Het_M_1) monophthong quality (stray tokens are excluded from the averages)

The results reproduce Pierrehumbert et al.'s (2004) findings to a limited degree. In that study, /i/ – but not /u/ – fronting was found to indicate gay orientation for males. Pierrehumbert et al. further claimed that /i/’s F₁ was also a factor involved in gay speech (with gay men articulating this vowel with a higher F₁ than straight men), but this result was not replicated by the present study. Pierrehumbert et al. also found that gay men produced both /æ/ and /æ/ with a higher F₁ than straight men, which is not completely reflected in the results of the present dissertation. However, Pierrehumbert et al. argued that these vowels differed also in terms of F₂, that is, gay men produced
/a/ with a lower F₂ value and /æ/ with a higher F₂ value than straight men. In this study, instead, F₂ in low vowels did not count as a predictor of perceived sexuality. The results do not appear to be very much in sync with Munson et al. (2006), who claimed that back vowels’ F₂ influences judgments of sexuality for male speakers. Specifically, Munson et al.’s listeners were likely to judge a man as sounding gay if he produced a high F₂ for back vowels. I only found, instead, that a high F₂ for the back vowel /u/ signals gay-sounding speech for males. No difference in F₂ was determined for the back low vowel /a/. As Munson et al. considered the first element of /ou/ as part of the back vowels, I ran a separate ANOVA for that same element, but found no statistically-significant result. Furthermore, Munson et al. claimed that a higher F₁ for front vowels tends to make listeners judge a male voice as sounding gay. The present study did not replicate this finding, but shows instead that, possibly, it is a higher F₁ for /a/ vowels that characterizes the speech of gay-sounding men.

Finally, Figure 26 (above) shows the averages of each monophthong produced by the gayest-sounding speaker, that is, G_M_3, and by the straightest-sounding speaker, that is, Het_M_1.
Figure 27. Bar plot showing the difference of the average $F_2$ of the monophthong /a/ between lesbian-sounding and straight-sounding female speakers. The plot displays error bars. The shorter the bars, the smaller the error.

4.4.3.5. **Monophthong quality – Further results: female speakers**

For female speakers, only one statistically-significant result was found. $F_2$ for the monophthong /a/ appears to contribute to distinguishing the speech of lesbian-sounding speakers from female straight-sounding speakers ($F[1,3] = 25.56, p = 0.02$). The bar plot in Figure 27 shows that the lesbian-sounding speakers' $F_2$ for /a/ is lower than that of the female straight-sounding speakers. This means the lesbian-sounding speakers show some additional backing or rounding of /a/ – or we might say that the straight-
Figure 28. Lesbian-sounding female speakers' monophthongs (chart based on all Group 1 listeners' judgments; stray tokens are excluded)

Figure 29. Straight-sounding female speakers' monophthongs (chart based on all Group 1 listeners' judgments; stray tokens are excluded)
Figure 30. The most lesbian-sounding female speaker's (i.e., Het_W_5) and the straightest-sounding female speaker's monophthong articulations (i.e., Het_W_1)

sounding female speakers front their /a/s. A comparison between Figures 28 and 29 (both above), which depict, respectively, the production of monophthong tokens by the lesbian-sounding speakers and by the female straight-sounding speakers, graphically shows that the lesbian-sounding women's /a/ tokens are less fronted than those of the straight-sounding women. This finding minimally reflects the results of Pierrehumbert et al. (2004), but not those of Munson et al. (2006). Pierrehumbert et al. reported that their gay/lesbian speakers' F₂ for their back monophthongs (i.e., /a/ and /u/) were lower than those of their straight speakers. Moreover, their lesbian speakers also
exhibited lower values for $F_1$ and $F_2$ than their female straight speakers, which was not replicated here. This contrasts with Munson et al., who stated that a high $F_2$ in back vowels (i.e., /ɔi/, /ou/, and /u/) resulted in more straight-sounding judgments for women.

Finally, Figure 30 (above) illustrates the quality of the monophthongs produced by the most lesbian-sounding speaker (Het_W_5) and by the straightest-sounding female speaker (Het_W_1).

4.4.4. VSD – Hypotheses

As introduced in Section 3.3.2, gay-sounding males are hypothesized to use hyperarticulated speech. So, it is expected that their vowel space is expanded, or that the value of their vowel space dispersion is bigger than that of straight-sounding males. Conversely, as it was hypothesized that lesbian-sounding speakers' speech is hypoarticulated, it may be that these individuals present a smaller vowel space dispersion value than that of straight-sounding speakers. Again, tests were run to investigate the matter and the results are reported in the following sections.
4.4.4.1. Overall vowel space dispersion – General results

The analysis through a two-way ANOVA with vowel space dispersion as the dependent measure, and with gender and perceived sexuality as factors, did not produce statistically-significant results. Therefore, generally speaking, it seems that the speakers of neither gender relied upon vowel space dispersion to convey sexuality. This finding does not support the hypotheses made in the previous section. Indeed, for both genders, the gay-/lesbian-sounding speakers' vowel space dispersion was similar to that of the straight-sounding speakers. Munson et al. (2006) found a similar result. However, Pierrehumbert et al.'s (2004) speakers displayed a difference in vowel space dispersions
Figure 32. Vowel space dispersion for G_M_3, the gayest-sounding speaker (SR: 1.60)

Figure 33. Vowel space dispersion for Het_M_1, the straightest-sounding male speaker (SR: 5.40)
Figure 34. Vowel space dispersion for Het_W_5, the most lesbian-sounding speaker (SR: 2.95)

Figure 35. Vowel space dispersion for Het_W_1, the straightest-sounding female speaker (SR: 5.55)
along sexuality lines. Specifically, their gay/lesbian and bisexual speakers produced more expanded vowel spaces than their straight speakers. Furthermore, apparently the vowel space dispersion produced by female speakers in this dissertation was overall very similar to that of the male speakers, as can be seen in Figure 31 (above). This result parallels that of Munson et al. (2006), whose speakers also showed similar vowel space dispersion regardless of their gender, and it is in contrast with both Pierrehumbert et al. (2004) and Bradlow et al. (1996), whose studies suggested that female speakers have a higher vowel space dispersion than male speakers.

Figure 32 (above) features the vowel space dispersion of the gayest-sounding speaker, that is, G_M_3. Figure 33 (above) portrays the vowel space dispersion of Het_M_1, or the straightest-sounding male speaker. In these two extreme cases, G_M_3's vowel space is clearly more expanded than Het_M_1's, particularly in terms of $F_2$. However, neither speaker exhibits extreme values in comparison to the rest of the speakers. In other words, both speakers have vowel space dispersion values that fall within a range – with Het_M_5 featuring the smaller value for this range (1.55) and G_M_6 presenting the higher value (2.41).
Finally, Figure 34 (above) shows the vowel space dispersion for the most lesbian-sounding speaker, and Figure 35 (above) depicts the vowel space dispersion for the straightest-sounding female speaker. A comparison between the two figures reveals the similarity of this measure between the two speakers.

4.4.4.2. Diphthong distance - Hypotheses

As the hypothesis goes (see Section 3.3.2), gay-sounding speakers produce more hyperarticulated speech; thus, they may be expected to produce longer diphthong distances than straight-sounding male speakers. Lesbian-sounding speakers, instead, should produce shorter diphthong distances than straight-sounding female speakers, because lesbian-sounding speakers' speech is hypothesized to be hypoarticulated.

4.4.4.3. Diphthong distance - General results

A two-way ANOVA was run using gender and perceived sexuality as factors and average diphthong distance for all diphthongs as dependent variable. The aim was to inspect whether diphthong distance on average might count as a predictor of perceived sexuality. The two-way ANOVA produced no statistically-significant results for diphthong distance in relation to gender, perceived sexuality or the interaction between gender and perceived sexuality. Generally speaking, then, diphthong distance is not
used by the speakers to convey perceived sexuality and it does not differentiate the speech of the speakers on the basis of their gender.

Even though no effect was found, it is still possible that the diphthong distance of individual diphthongs might be statistically significant – the average distance comprising all the diphthongs might obscure this result. Therefore, ANOVAs were run with the distance for each individual diphthong as dependent variable.

4.4.4.4. Diphthong distance – Male speakers

The analysis for the diphthong distance of each diphthong in relation to the male speakers returned no statistically-significant results. In conclusion, then, it appears that the production of diphthongs does not differentiate the speech of gay-sounding males from that of straight-sounding males as hypothesized in the previous section. Figures 36 through 45 (below) show the articulation of the diphthongs by each male speaker. The large degree of variation in articulation from one speaker to the next is evident. Some speakers articulate minimally diphthongal /et/ and /ou/, almost to the point of monophthongization. This seems to be a characteristic of Hawai‘i English (Odo, 1970).
Figure 36. Diphthong charts for gay-sounding speakers: G_M_3 (SR: 1.60)

Figure 37. Diphthong charts for gay-sounding speakers: G_M_5 (SR: 2.35)

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Figure 38. Diphthong charts for gay-sounding speakers: G_M_6 (SR: 2.60)

Figure 39. Diphthong charts for gay-sounding speakers: Het_M_3 (SR: 3.15)
Figure 40. Diphthong charts for gay-sounding speakers: Het_M_4 (SR: 2.30)

Figure 41. Diphthong charts for straight-sounding male speakers: Het_M_1 (SR: 5.40)
Figure 42. Diphthong charts for straight-sounding male speakers: Het_M_2 (SR: 4.65)

Figure 43. Diphthong charts for straight-sounding male speakers: Het_M_5 (SR: 4.95)
Figure 44. Diphthong charts for straight-sounding male speakers: G_M_1 (SR: 4.70)

Figure 45. Diphthong charts for straight-sounding male speakers: G_M_4 (SR: 4.65)
Figure 46. Bar plot showing the difference of the average diphthong distance of the diphthong /ou/ between lesbian-sounding and straight-sounding female speakers. The plot displays error bars. The shorter the bars, the smaller the error.

4.4.4.5. Diphthong distance – Female speakers

The only statistically-significant result found for female speakers was the one for the diphthong /ou/ (F[1,3] = 14.31, p = 0.03). Figure 46 illustrates the bar plot for the diphthong distance of /ou/ and unambiguously shows that the lesbian-sounding speakers produce, on average, a less diphthongal /ou/ than the female straight-sounding speakers. This also appears evident from Figures 47 through 51 (below), which depict the articulation of the diphthong averages of each female speaker.
ANOVAs were also run to establish whether the difference in diphthong distance was due to height (i.e., $F_1$) or frontness (i.e., $F_2$) of either one of the elements of the diphthong. As no statistically-significant results were found, I conclude that the difference in the diphthong distance of /ou/ goes in no particular direction (or the straight-sounding women simply produce this diphthong with a longer distance without consistently, across speakers, fronting or raising either the element /o/ or the element /u/).

The results only minimally support the hypotheses that lesbian-sounding speakers produce shorter diphthong distances than straight-sounding female speakers, as only one diphthong, that is, /ou/, presented a shorter diphthong distance for the lesbian-sounding women than for the straight-sounding women. The rest of the diphthongs did not substantially differ between the two groups.
Figure 47. Diphthong charts for lesbian-sounding speakers: Het.W.5 (SR: 2.95)

Figure 48. Diphthong charts for lesbian-sounding speakers: Het.W.6 (SR: 3.40)
Figure 49. Diphthong charts for straight-sounding female speakers: L.W.3 (SR: 4.95)

Figure 50. Diphthong charts for straight-sounding female speakers: L.W.1 (SR: 5.30)
4.4.5. Stop release

Stop release, another possible indicator of hyperarticulated/hypoarticulated speech, was investigated. The results are reported below.

4.4.5.1. Stop release – Hypotheses

As already hypothesized in Section 3.3.2, gay-sounding speakers might release more stops than straight-sounding male speakers, as gay-sounding males may have more hyperarticulated speech. On the contrary, lesbian-sounding speakers are hypothesized to have more hypoarticulated speech than straight-sounding female speakers. Perhaps, consequently, lesbian-sounding speakers release fewer stops than straight-sounding
female speakers. It is also expected, on the basis of what was observed by Byrd (1993, 1994), that women release more stops than men. These hypotheses are tested in the next section.

4.4.5.2. Stop release – General results

The two-way ANOVA run for stop release showed no statistically-significant results for gender, perceived sexuality or the interaction between the two. As my study is the first to investigate stop release as a possible feature relating to perceived sexuality, there is no previous research to call upon for comparison. Nevertheless, part of this finding is unexpected as Byrd’s (1993, 1994) studies found that female speakers release their stops more often than men. Perhaps the dialect of American English spoken in Hawai‘i is responsible for this situation. Byrd claimed that stop release is not related to dialect variation. However I believe there were no speakers from Hawai‘i\textsuperscript{25} included in her corpus. Further

\textsuperscript{25} I listened to all the speakers from the Western accent region and, to my ear, none of them sounded like they were from Hawai‘i.
ANOVAAs were performed with /t/ and /k/ as separate, dependent factors, but these also yielded no statistically-significant results.

Table 42 (above) summarizes the results for gay-/lesbian- and straight-sounding speech.
5.1. Preliminary observations

In analyzing the interviews conducted with the speakers, I report only on those who were unambiguously recognized by Group 1 listeners as sounding straight or gay/lesbian, regardless of their placement in the SR scale. These are the same individuals who were selected for the rest of the study. The speakers I interviewed brought a variety of experiences to this dissertation. Some were acquaintances, while others I had not previously met. They had attended public or private schools or a combination of both (as is common in Hawai'i). A few (almost exclusively straight-sounding speakers) expressed opinions about Hawai'i Creole English, or what is commonly known in Hawai'i as 'Pidgin', which at times contrasted with Standard American English. Most demonstrated some degree of effort in controlling their voice and speech, despite also claiming to have no interest in doing so. In my interview analysis I consider these preliminary observations to answer the questions: 'Why would a person choose,
consciously or unconsciously, to defy or reproduce heteronormativity?" 'To what extent does this person challenge or uphold heteronormativity?'

The Chapter is organized as follows. Section 5.2 explains the two frameworks I employ for analyzing the interviews, the way I structured the interviews and how the three questions I used for all speakers were generally answered. In Section 5.3, I analyze my interviews with the male speakers. Section 5.4 focuses on interviews with the female speakers. Finally, my conclusions are drawn in Section 5.5.

5.2. Interview process

5.2.1. Constructionism and queer linguistics

In linguistics the traditional purpose of interviews was to obtain the data itself (e.g., Labov's work), but it has progressively changed to become a means for assessing language attitudes and identity issues of speakers. Increasingly, interviews have been examined as discursive events that are co-constructed between the researcher and the researched. This more contemporary understanding of the interview tool is helpful to my study in that it links well to per-
formativity, and sees individuals as social actors, rather than passive enactors of identities. The co-construction of personas during an interview embodies the process of performances and emphasizes the relative freedom of the interviewer and interviewee in their performances.

My interview approach follows constructionism. This theoretical framework concerns itself with how both interviewer and interviewee ‘actively create meaning’ (Silverman 2006:129). In this perspective, interviews do not need to follow any predetermined structure. The ‘skills involved [...] in a successful interview are [...] shared by both interviewer and interviewee’ (Silverman 2006:129), as explained by Rapley (2004). Constructionism neatly accommodates the queer concept of performativity and its underlying concept that speakers are social actors who actively participate in the construction of their identity. Interviewees actively co-construct their performance with interviewers. The performance itself is the center of the analysis. Interviewers can analyze this performance by reflecting upon its co-construction, that is, by looking into both what they and the interviewees bring to the table (i.e., their identities, attitudes, biases, etc.) during the interview. The way interviewees see themselves, how
they react to others’ perceptions, and whether or not they understand or are aware of other's perceptions are (among others) all fundamental aspects to take into account when analyzing an interview. But so are the ways that interviewers position themselves toward the interviewees, their own preconceptions and stances toward the subject matter, and how they perceive being seen by the interviewees. In my interview analysis, I consider these aspects of co-construction through queer linguists Mary Bucholtz and Kira Hall’s (2004) ‘tactics of intersubjectivity’. These are descriptions of how individuals perform in relation to their audiences. Intersubjectivity makes the subject both agent and patient of social processes: ”'Intersubjectivity” emphasizes that identification is inherently relational, not a property of isolated individuals. Thus, tactics of intersubjectivity may position the self, the other, or (most often) both’ (Bucholtz and Hall, 2004:492).

Bucholtz and Hall propose three pairs of tactics:

1. Adequation vs. distinction

2. Authentication vs. denaturalization

3. Authorization vs. illegitimation
For each pair, the first tactic refers to the ‘positive polarity of identity relations’, whereas the second is related to the ‘negative polarity of identification’ (Bucholtz and Hall, 2004:494). The purpose of creating polarizations in this framework is to reflect the way dichotomies are widely used in theories of self-identification, but at the same time to provide a continuum of identities which may fall anywhere between the two opposites. This continuum aims at reflecting social reality. The first pair of tactics deals with ‘difference’ (Bucholtz and Hall, 2004: 494). The tactics are defined as follows:

- **Adequation**: ‘establishes what might be called ‘sufficient similarity’.’

- **Distinction**: ‘is the production of social differentiation.’

  (Bucholtz and Hall, 2004:495)

An example of adequation is of gay and lesbian conversations about tropes alluding to stereotypes about gay men and lesbians. Distinction, instead, can be exemplified by African-American drag queens using ‘white’ language to distance themselves from other African-American gays (Barrett 1999). The second pair of tactics ‘works off the ideological perception of realness and artifice,’ (Bucholtz and Hall, 2004:498) and is presented thus:
- Authentication: ‘concerns the construction of a true and veridical identity.’

- Denaturalization: ‘foregrounds untruth, pretense, and imposture in identity positioning.’

(Bucholtz and Hall, 2004:498)

As an example of authentication, Bucholtz and Hall report on Hall’s (1995) article relating to phone sex workers. The ability of these individuals to imitate several accents allows them to be heard as, for example, African American (or even as another gender). As callers believe that they are talking to real African Americans, they authenticate the phone workers’ performativity. One example of denaturalization offered by Bucholtz and Hall involves Bucholtz’s (2001) study on teenage language. Here, two ‘nerdy’ girls discuss how a mutual friend, formerly part of their group, has lost her status because of a sexual relationship with a boy. As being sexually active is not deemed by them to be part of a nerd’s identity, the girl is denaturalized. Finally, the third pair places power relations at the forefront:
Authorization: 'is the use of power to legitimate certain social identities as culturally intelligible.'

Illegitimation: 'is the revoking or withholding of such validation from particular identities.'

(Bucholtz and Hall, 2004: 503)

Authorization is explicated by Bucholtz and Hall through Celia Kitzinger's (n.d.) study involving the off-hours calls to doctors by their patients' friends or family members. These doctors are not the patients' physicians. There is an assumed authorization of normative heterosexuality between doctors and callers. In fact, when a patient's partner calls, both the doctor and the caller invariably assume that the patient and the partner form a 'nuclear, biological, cohabiting, legally recognized, and heterosexual' family (Bucholtz and Hall, 2004:503).

Finally, as an example of illegitimation, the authors use an excerpt from Livia's (2002) research that delves into the personal ads section of a French magazine dedicated to lesbians. Therein is an ad which excludes masculine lesbians as possible partners. The magazine itself encourages lesbians not to discriminate against masculine women, and yet it publishes this type of illegitimating ad.
As a final note, the tactics 'may work together or against one another as dis-
course unfolds, creating an ever-shifting matrix of identity relations – both impos-
sed and chosen, both deliberate and accidental – in specific sociocultural con-
texts' (Bucholtz and Hall, 2004:506). In other words, interviews are not smooth
discussions between individuals with a fixed identity. Rather, they are an ongo-
ing, at times chaotic and contradictory, negotiation between social actors whose
identities continuously change. This is reflected in the interviews with my
speakers, as shown below.

5.2.2. Interviews with the speakers

As already pointed out, interviewers play an active role in the co-construc-
tion of interviewees’ performances. Thus, I consider my role, as an active par-
ticipant in the interviews with my speakers, to be as a Caucasian woman from
Europe, in my mid-30s, a linguist, etc. Although constructionists recommend not
structuring interviews, I preferred to provide some aspect of organization in
mine, as I made sure all speakers answered the following three basic questions,
1) 'How would you describe your voice or the way you talk? Do you think it sounds interesting, warm, rude, silly etc.? Why?'

2) 'Have you ever been given any hard time because of your voice or the way you talk? If so, can you tell me about it or give me an example about it?'

3) 'Have you ever experienced any benefit/advantage thanks to your voice? If so, can you tell me about it or give me an example about it?'

The reason I looked for a response from all participants to these questions was that they were broad enough to grant me a better understanding of how my speakers perceived their own voices. I was strongly interested in learning whether or not they have thoughts about sounding straight or gay/lesbian – that is, how they feel about their performances. Thus, I was concerned about whether or not they might have positive or negative feelings about how they sound.

From a constructionist (and queer linguistic) perspective, sexuality is a scalar (rather than a binary) construct that people perform at varying degrees. Through interview analysis of the speakers, it is possible to see how they discursively construct their sexualities (that is, how they orient themselves to their sexual...
identities, whether they have resistance toward being positioned as gay/lesbian, whether they accept being judged as sounding straight, etc.). This underlines the importance of determining how conscious their 'choice' to uphold or challenge heteronormativity was (and to what degree they reproduced or defied heteronormativity). I reasoned it would be easier to discover this by not questioning them directly about whether sounding gay/lesbian or straight is a benefit or a disadvantage. Specifically, I omitted asking any questions related to sounding straight or gay/lesbian, as I thought that a combination of other factors would determine whether or not they wished to express opinions about sounding gay/lesbian or straight. In my mind, the most prominent factor was to let the issue naturally surface if indeed the speakers had any sentiments about it. However, this is arguably tied to how comfortable the speakers were with me (and to any judgments they may have had toward my sexuality, correct or incorrect). If they had any views about sounding gay/lesbian or straight, they might have chosen to offer or withhold them, depending on how well they knew and/or trusted me. Finally, it is possible that the speakers are aware of some sociolinguistic markers that index their perceived sexuality. As explained in Chapter 3,
speakers may or may not be aware of these markers. Thus, the speakers' consciousness or lack of it about these markers contributes to the discussion on why (and to what extent) the speakers reproduce or challenge heteronormativity.

In response to the first question, almost all speakers focused on their voices, rather than their speech. Many speakers negatively commented on their own voices, while only a very few had completely positive thoughts. When answering the second and third questions, most speakers related stories about being praised or criticized because of their voices. All claimed they adjusted their voices depending on the situation or to whom they spoke, although not all of them were able to explain how they were able to make those changes.

Finally, in the analysis of my interviews I report on selected passages, that is, only those that seem to be the most meaningful for understanding the speakers' thoughts.

5.3. Male speakers

Of the male speakers whom I interviewed, Het_M_1 and Het_M_2 are slightly more than acquaintances and participate in activities with me at a local gym.
They are fraternal twins. Three of the speakers (i.e., G_M_3, Het_M_3, and Het_M_5) are acquaintances. One speaker, that is, G_M_4, is G_M_3’s partner. I did not know him before our interview. The remaining speakers are friends of acquaintances or were unknown to me prior to this study.

I foresaw that the responses received from these speakers would differ in relation to how well they knew me, our gender differences, and our sexualities. I am an Italian lesbian and though English is not my first language, my fluency approaches the native level\textsuperscript{26}. It is likely that both my acquaintances and slightly-more-than-acquaintances felt more comfortable talking to me than the rest of the speakers. It may be that talking to a woman about the possibility of sounding gay could have created discomfort for some straight men – regardless of the fact that I did not ask questions relating to sexuality, they all knew the topic of my dissertation at the start of their interviews. I believe that the gay men may have sensed a common bond with me, in that we share the same sexu-

\textsuperscript{26} I am not a native speaker of English. However, I believe this has minimally influenced the interviews. I have lived in the United States for approximately 6 years, during which time several native speakers of English have mistaken me for one of them. I did not tell the vast majority of my participants that English is not my first language, nor was I questioned about it. It is likely that they were concentrating more on other aspects of the study, such as my dissertation’s purpose, how they would be rated and, perhaps, my sexuality.
alitv (I was 'out' to them all). Perhaps, they volunteered information about experiences in sounding gay (or straight) to which a straight researcher might have been less privy without some kind of encouragement on her/his part. In fact, most gay men openly relayed their feelings about sounding gay or straight without my asking (as was planned), and without being presented with any specific series of questions which, incidentally, might have steered them toward that direction. Furthermore, no straight men volunteered information relative to this. I was not officially 'out' to any of the straight men, including my slightly-more-than-acquaintances. Thus, it is reasonable to expect that the straight male speakers might have assumed I was 'within the norm', or straight.

Keeping this in mind, I can formulate two hypotheses for why the straight men did not overtly consider the possibility of sounding gay or not. The first relates to the fact that sounding straight is the norm – that is, to heteronormativity. Therefore, they might not have felt the need to think about possibly sounding gay. For instance, Het_M_2 stated that in the past he had a high-pitched voice with a whiny sound. He additionally claimed having 'intonations' that were used depending on whether he wanted to sound 'cute' or 'excited'.
These characteristics could be associated with sounding gay (the listeners from Group 1 indicated the voices belonging to gay men had ‘a variety of tones’, ‘extra drama’, ‘a broad pitch range’, and other similar expressions). However, he did not analyze himself this way. The second hypothesis relates to myself as a person. It may be that the male speakers may have perceived me as straight, which could have caused them to conceal any opinions they had about possibly sounding gay. Therefore, perhaps Het_M_2 did actually have some thoughts about sounding gay (he said that his ‘relief [was] that [his voice did not] sound as high-pitched as it used to be’), but chose not to personally disclose them to me.

5.3.1. Straight-sounding men

There were two self-identified gay men, that is, G_M_1 and G_M_4, who were judged as sounding straight. G_M_4 was the least straight-sounding man (together with Het_M_2), and G_M_1 was the third-straightest-sounding man. Both speakers analyzed their voices largely in terms of perceived sexuality without any prompting from me. In particular, they showed an acute awareness toward how they and other people perceived their own voices (i.e., as sounding gay or
not). Thus, they were probably strongly aware of specific markers for gay-sounding speech. Both men claimed to have sounded gay at a younger age, but that the situation had changed. Importantly, G_M_4 stated that ‘[people] don't think [my voice] sounds gay at all’, although he believed that at times he did sound gay, and particularly so after listening to recordings of himself. G_M_1, instead, said he no longer heard himself as sounding gay, and that he ‘had a few people telling [him] that they could tell, and then a lot of people who said they couldn’t tell’.

Additionally, both speakers pointed to strategies used when younger for preventing social problems associated with sounding gay, and both claimed no interest in further monitoring themselves. These strategies clearly refer to the tactic of illegitimation, as both wished to negate within themselves the possibility of sounding gay (i.e., they provided no legitimating to gay sexual identity). However, presently these speakers had ‘authorized themselves’ to sound as they wished, although I believe that this authorization relates to sounding straight. In other words, it is possible these speakers were able to sound straight (i.e., they found a way to make themselves sound straight enough, thus enabling the tactic
of adequation to straight-sounding identity). When I asked G_M_4 why his voice no longer sounded gay to him, he simply replied that 'it just changed', and that he did not observe the way he sounded. This was in contrast to his earlier years when he would control his voice more often, due to fear of social repercussions.

He explained himself as follows:

G_M_4: Not really 'cause I was worried that people would know I was gay, 'cause I thought that people could tell already, I just didn't want people to go \{3 sec.\} “oh... that gay is walking over there”. \{1 sec.\} That's when I was younger.

FP: You don't care anymore now?

G_M_4: No.

G_M_4 did not elaborate on his lack of concern about sounding gay or straight. Similarly to the description of G_M_4's younger years, G_M_1 pointed out the following:

G_M_1: When I was growing up, I hated my voice, I thought it sounded gay.

[...]

27 In my transcriptions, an open square bracket indicates overlap in speaking between a speaker and me. Two square brackets with three dots inside (i.e., [...]) signify omitted text. Two square brackets flanking a string of text mean that the exact words were modified (for the sake of clarity). Text between slashes (e.g., /laughs/) indicates an action by the speaker. Pauses are shown as follows: \{x sec.\}. Finally, italics identify words pronounced with emphasis.
G_M_1: I sounded too much like a girl. It was in my mind, mostly.

FP: Were you given any hard time because of this?

G_M_1: No hard time because of the way I sounded, I was just really self-conscious about it.

[...]

G_M_1: I don't think I sound gay anymore. At the time it was internalized homophobia and self hate. I don't know how to explain it, I just thought it sounded gay. I tried to using breathing techniques or different areas of my throat, like lower... {1 sec.} I smoked at the time, and that contributed to lower my voice.

[...]

FP: So you don't think it's gay anymore, you said, right? Or you just... [don't care?

G_M_1: [Huh... Now, no {1 sec.}. I just {1 sec.} don't care. Yeah. {2 sec.} It's like, yeah, I'm gay, so... whatever. /laughs/

Finally, both men briefly described their voices at a younger age to explain why they sounded gay. Both claimed that their voices previously had a high pitch, but G_M_4 did not explain how he managed to change it. He said that it changed on its own. However, he described his voice now as 'monotone' and
with a low pitch, which, for men, are possibly characteristics associated with 
sounding straight (Group 1 listeners indicated a 'monotone' or 'flat tone' as cha-
acteristics of straight men's speech). G_M_1 tried to change his voice by con-
sciously lowering its pitch through 'breathing techniques or different areas of 
[his] throat', and even by smoking. At the time of the interview, G_M_1 simply 
described his voice as 'loud', which does not necessarily relate to perceived sex-
uality (one of my gay male listeners used the term 'loud' to describe the voices 
of straight men and two of my straight male listeners referred to the same word 
for characterizing the voices of gay men). My own assessment of G_M_1's voice is 
that it has relatively little pitch variation, and its pitch is in the low range. Both 
these characteristics were offered by several listeners to describe straight-
sounding male voices. In conclusion, both G_M_1 and G_M_4 seem to have at 
least two features that could be associated with straight-sounding men.

To summarize, both G_M_1 and G_M_4 say they sounded gay at a younger 
age, and protected themselves from possible social consequences by controlling 
their voices (i.e., illegitimation of gay-sounding identity) in ways that suggest 
they wanted to sound straight (i.e., adequation to straight-sounding identity).
However, they stopped worrying about sounding gay as they matured into adulthood (at the time of the interview, G.M.1 was 24 and G.M.4 was 27). As a result, they now believe that they exert little control over their speech. From the point of view of these speakers, it appears that sounding straight was an important tool used at a younger age for avoiding discrimination and potential physical violence (G.M.4 stated that he was ‘afraid of [his] surroundings’). Importantly, G.M.1 did not mention he looked stereotypically gay, which does not reveal whether he believes he looks gay or straight. However, if my observation is correct, and assuming that he did not wish to look gay when he was younger, it seems that, in order to ‘pass’ as a straight young man, he merely needed to change his voice. Conversely, G.M.4 stated that ‘people could tell already’ that he was gay. It is therefore plausible to hypothesize that he thinks he looks gay.

Perhaps, then, he changed his voice to limit the ‘damage’ that his appearance inevitably created. And so, sounding straight was for both young men a protec-

28 A case could be made that G.M.4 and G.M.1 used illegitimation against two different identities. G.M.4 might have used this tactic against the identity of sounding gay. As he was recognized as being gay, not sounding gay was a tool (maybe, the only tool) he had at hand to deal with discrimination. Instead, perhaps G.M.1 used this tactic against the identity of being gay. As he was possibly mistaken for a straight young man, he only needed to ‘learn’ how to sound straight. That would potentially protect him from social consequences.
tion against societal problems. Perhaps, they reached for a specific voice, characterized mostly by a low pitch, and were able to attain it due to physical maturation, at which point, they simply retained it. Perhaps, then, to these men sounding straight is a byproduct of prior conscious efforts which may no longer hold much importance (at a conscious or an unconscious level). Another plausible interpretation is that both men are currently satisfied because their voices are recognized as heteronormative -- whether or not they are aware of their sentiments. Whichever the interpretation, it seems clear that both men are well-aware of sociolinguistic markers that index sounding gay, and are able to successfully avoid them.

The three self-identified straight men who were judged as sounding straight were Het_M_1 (i.e., the straightest sounding), Het_M_5 (or the second straightest sounding) and Het_M_2 (the fourth straightest sounding). None of these speakers considered the possibility of their sounding gay, but all of them shared common perceptions related to sounding standard in Hawai‘i through the tactic of illegitimization. In particular, Het_M_1 claimed:
Het_M_1: A gay person speaks to a local person, and they speak properly, do they... {1 sec.} The local person thinks, either they're gay or they're haole.

/laughs/

The term *haole* (cf Pukui and Elbert 2003) previously meant 'foreigner' in Hawaiian, but has changed to mean 'white' and to indicate a Caucasian, since Americans colonized the Islands. This word has some residual negative connotations derived from that time. As a result, calling someone a *haole* can be insulting, although many local Caucasians use this term to refer to other Caucasians without derogatory intentions. Het_M_1 clearly associates 'speaking properly' or speaking Standard English with being a Caucasian, but also with being gay. The illegitimation of the gay and the *haole* identities are apparent, although it gets even more complex than this. The remaining two speakers did not make any connections between being gay and being Caucasian, but claimed to have grown up speaking Standard English whenever possible. Het_M_1 and Het_M_2, who are twins, conveyed that their father did not want them to speak Pidgin, and they both complied – an obvious instance of adequation. In particular, Het_M_1 communicated his fondness for good enunciation and 'proper' English by recounting
stories about his preparing for school and also how he experienced his return to Hawai‘i after attending a mainland university:

Het_M_1: I concentrated on speaking properly. I took pride in myself in the fact that I could speak clearly and everybody could understand me.

Although they both included that they now seldom monitor themselves, it is likely that having a written material from which to read influenced them toward speaking with their best standard pronunciation, that is, they performed a persona who is competent in speaking 'proper' English. In fact, when asked about whether he used any Pidgin, Het_M_2 claimed the following:

Het_M_2: Usually I try not to sound like it, particularly if I'm reading something.

FP: So, what did you sound like when you read the passage?

Het_M_2: I just kind of went into my normal reading voice. I tried to identify what text I would use normally. When I found a passage that probably I wouldn't say, I just went into my reading mode.

Het_M_5 mentioned his parents were English professors, and so he grew up speaking 'proper English' (again, an example of adequation to the social construct of speaking a standard language), although they did not discourage him from speaking Pidgin.
Het_M_5 had very few thoughts to relay about his own voice or speech (his interview was the shortest of all the speakers, both females and males). He described his voice as 'little-pitched' and himself as 'kind of quiet'. I was hoping for more feedback from him and when I asked whether he monitored himself about his voice, he replied, 'No'. I asked him why he did not control his voice and was given a quizzical look accompanied by a shrug of the shoulders which I interpreted to mean that to him his voice was simply something he used to talk with and that was all he understood about it. Certainly, it may be that he had never thought about controlling his voice. To clarify this matter, I asked if he thought his voice was just something he was born with, to which he answered, 'Pretty much'.

It appears that the straight men who were rated as sounding straight were concerned with speaking Standard English, particularly so for the straight-sounding twin brothers. None of the three speakers indicated concern about sounding gay or straight. I believe that they were aware of sounding straight enough to be able to dismiss any thoughts of sounding gay, and wanted only to communicate effectively by using Standard English. If this is correct, then these
speakers are possibly unconsciously aware of the sociolinguistic markers indexing sounding straight. After all, heteronormativity protects them from worrying about sounding gay.

In conclusion, it appears that both the gay and straight men in this study who were rated as sounding straight are at the present time unconcerned about sounding gay or straight. These gay men were worried about it when younger, but are not any longer, possibly because they know that their voices are 'within the norm', and as such are not socially problematic. The straight men seem to have never concerned themselves about sounding gay, possibly because (at least to themselves) they have never sounded gay. They suggest that their main interest was to speak a grammatically-correct and well-enunciated English.

5.3.2. Gay-sounding men

Three self-identified gay men were rated as sounding gay. The focal point of the interviews with these speakers centered on the importance of preserving the integrity of their own identity. This desire underlies the tactics of authentication and denaturalization. Of these men, G_M_3, or the gayest-sounding speaker, seemed to have the most fatalistic attitude toward his own voice. He was quite
aware of sounding gay (that is, he was well acquainted with the sociolinguistic markers that stereotypically index gay-sounding speech), and of people's reactions toward his voice, as he stated the following:

G.M.3: When you hear someone like me, heads turn, because it's like, "Wait, you're out of place."

He defined his voice like this:

G.M.3: I don't judge myself, it's just the way I talk. I think my voice is unique.

To me, it's just the way I talk.

[...]

G.M.3: To me, [my pitch] is high. I don't care about it, because I can't help it, it's the way I speak.

Despite claiming that he could not help the way his voice sounded, he understood that one can change one's voice (that is, he grasped the concept that individuals are social actors with some freedom of choice). However, he found it pointless, as it takes an effort he was not willing to make (i.e., denaturalization):

G.M.3: If you're changing your voice, then you have to think, 'cause... you have to think to the whole process, so you have to think, "oh... {1 sec.} it's kinda
high, so I have to go back lower", so. {1 sec.} If you wanted a low voice, you'd have to keep it low.

[...] I don't think people should discriminate you because of your voice, because it's your vocal cords, it's what you got.

It appears that to G_M_3 this effort involves projecting a preconceived image of himself related to negative stereotypes about gay men. This is something he definitely wants to correct:

G_M_3: I'm out to people, but I'm not technically out to those I don't know. So, when I go for an interview or stuff like that and when they call me... {1 sec.} I don't want them to think "oh, he's gay, let's not hire him, 'cause he's gay." So when I go one-on-one I can tell them personally this is who I am, instead of letting them assume.

Possibly, then, G_M_3 thinks that, despite individuals being able to change how they talk, he personally cannot in an honorable way change his voice, as it would imply inauthenticity.

The third-gayest-sounding speaker, that is, G_M_5 also expressed that he knew he sounded gay:

G_M_5: On voice alone, I would guess that people would discern that I'm gay.
Just as with G_M_3, G_M_5 mentioned disinterest in making an effort to change his voice:

G_M_5: I guess you can change [the way you sound], but [It would take] too much effort. I look [at my voice] as a way for effective communication.

Finally, G_M_6, or the second-to-last gay-sounding man, did not express thoughts about sounding gay or straight. His sole complaint was about having an odd voice, due to ‘raspiness’. After unsuccessfully trying to change it, he no longer gave it any consideration:

G_M_6: I think the way I talk it's kind of raspy.

[...]

G_M_6: I don't really want to control the raspiness, 'cause I kind of gave up on that. It used to bother me when I was a kid, they would always tell me I had a funny voice.

[...]

G_M_6: Right after high school, I thought about kind of change it, but I decided not to. I was trying to figure out, I'm gonna be some kind of a professional, but then I was like, screw it. I'm gonna be myself. So what if it's raspy, I can't change it.
G_M_6 also appeared quite resigned to the way he sounds. The only difference from the other gay men who sounded gay is that G_M_6 did not connect the way he talks to his sounding gay, but to the 'raspiness' of his voice.

To summarize, all three gay-sounding gay men share the idea that one's voice can be modified but at the price of compromising one's identity. This is a sacrifice they are unwilling to make. To G_M_3, his identity is strongly connected to being gay. For the remaining two speakers, it probably is not the case – perhaps because they sound less gay than G_M_3.

Two straight men were judged as sounding gay, that is, Het_M_3 and Het_M_4. Neither raised the possibility of sounding so, which may be due to their not sounding gay in general. However, both had previous experience with speech or acting classes, which likely caused them to switch into acting voices while reading the octopus text. This might have caused the listeners to judge these speakers' voices as sounding gay. Het_M_4, or the second-gayest-sounding man was concerned about sounding monotone, and claimed to overtly control his pitch, particularly after taking speech classes. One of his class assignments
was to act as a Japanese female character. Consequently, he gained a new perspective on how people can sound:

Het_M_4: Some say I speak fast, [to me] my voice sounds monotone, like very boring. But sometimes I can be animated, depending on what I'm talking about.

I think pitch variation is very important.

[...]

I had to do a [Japanese female character].

FP: Hmmm, and what did you do?

Het_M_4: I went like... /raises his hand well above his head/

FP: Did you raise your pitch a lot?

Het_M_4: Yeah. It didn’t hurt my throat, because it came from my stomach. I think it’s a stereotype thing, like, if you [speak with a high pitch, they think you are feminine]. After I took speech, I stopped having stereotypes... (2 sec.) It’s just my character.

Importantly, in the last passage Het_M_4 connected the generalities made about sounding feminine to the perceptions of others, but dismissed them as stereotypes and something he could simply let go of. This shows a strong degree of self-confidence and agency. Het_M_4 expressed nothing about looking or sound-
ing gay, possibly because he was not something that had occurred to him. Perhaps this was because others do not see him as looking or sounding stereotypically gay, or because his self-confidence left him without concern. However, I believe that his performance when reading the octopus text slanted toward animation and frivolity (or humor). He commented to me about found the text very entertaining, thus he likely felt inspired to engage his acting voice while reading.

His voice did have pitch variation as he read the text, and he was clearly smiling throughout the reading, which may have triggered the listeners to believe he was gay (most listeners signified pitch variation as indicating a gay voice).

Het_M_3, or the least gay-sounding man, had reservations about his voice, as he found it to be ‘too thick’ (rather than gay):

Het_M_3: When I hear myself, like, talking, it sounds normal. But when I hear recordings, it sounds maybe too deep... {1 sec.} maybe, too thick, it's a better word. I think when I hear other peoples' voice, they sound more direct, like they reach my ears directly. When I hear my voice, it sounds stuffier. {2 sec.} If my voice could be described as part of the environment, it would be like a sound coming from all around, instead that direct. If that's how other people hear my voice, it bothers me.
The listeners might have heard his voice as sounding 'thick', but they mostly heard it as sounding gay. I believe that the reason for this judgment lies in the following statements:

Het_M_3: I used to be into acting.

[...] 

I think I'm more careful talking to adults. Adults have told me that compared to lots of people of my age, that I was a better speaker. [I try to be] careful about pronunciation. And if I talk to my friends, I just let it come out as soon as it comes to my head.

[...] 

I sing karaoke every once in a while, and they said I was a pretty good singer. My friends used to tell me I had a higher-pitch voice that it was useful to work in theatre.

It seems that Het_M_3, just like Het_M_4, donned his acting voice to read the octopus text. It is possible that he was 'careful about pronunciation', as he might have had in mind a theatre audience comprised mostly of older adults rather than his younger peers. Regardless of the instructions I gave him, he might have interpreted the text as if he was reading from a script.
To summarize, both straight men who were rated as sounding gay seem unconcerned about potentially sounding gay. However, they may have read the octopus text like an acting script, which could have given the impression to the Group 1 listeners that they were gay.

To conclude, the gay-sounding men are split along sexuality lines in their motives for sounding gay. The gay men from this group are interested in preserving their identity through speech, whether it is related to being gay (G_M_3), to communicating effectively (G_M_5) or to simply being genuine to oneself without giving specifics about it (G_M_6). The straight men, instead, have some acting experience, which may have affected their reading performances, giving the listeners the impression that these speakers were gay.

5.4. Female speakers

Of the female speakers, I was acquainted with only Het_W_1 and Het_W_5. The rest were unknown to me.

It may be that all the women felt at ease with me insofar as we share the same gender, although my two acquaintances may have been slightly more
relaxed than the women I was unfamiliar with. Notably, the lesbians asked me before conducting the interview whether or not I was a lesbian. My 'forced outing' could have created an increased moment of solidarity giving them more of a comfort level with me than I had with the straight women (including my acquaintances). It is likely that the straight women assumed I was straight, as I did not mention my sexuality to them, nor did they enquire about it. Therefore, it is quite possible that their general ease with me was sufficient to communicate freely. Importantly, no woman talked about the possibility of their sounding lesbian. Instead, most focused (more or less outspokenly) on whether they sounded feminine or masculine. This indicates a lack of a strong stereotype related to sounding lesbian or straight, as confirmed by the general inability of the listeners to indicate clear characteristics of lesbian speech, and by the fact that few female speakers were unmistakably recognized as sounding lesbian or straight. I believe that my presence did not influence their responses insofar as their feelings toward sounding lesbian or straight, as none of the women I interviewed seemed to be concerned about whether or not they sounded lesbian. Rather,
most of them described their voices and speech in terms of sounding feminine or masculine.

5.4.1. Straight-sounding women

Two lesbians were rated as sounding straight, that is, L_W_1 (or the second-straightest-sounding woman) and L_W_3 (i.e., the least straight-sounding woman). Both explained their voices in terms possibly relative to sounding feminine or masculine. L_W_3 talked about her ability to make her voice sound more or less feminine or masculine according on the situation. This exemplifies adequation and shows a strong level of agency (although it is mitigated toward the end of the passage):

L_W_3: There are times when my niece or nephew say, "oh, you sound like a man" and then sometimes it would be like "oh"... {1 sec.} so I think sometimes I could... I could sound really feminine or even masculine, yeah.

FP: Can you describe that?

L_W_3: I guess... maybe... {1 sec.} more masculine is more monotone and firmer and louder as opposed to more feminine, it's a little more softer and... not, not as firm, if you will.

[...]
I don't really think about it, but I guess that's what sounds like, I mean, according to my... little... nephews. If I'm mad at them, if I'm scolding them, it's louder, harsher. As opposed to that, one of them fell and scraped their knee, then of course it's more soothing, cuddly...

It is likely that L_W_3 used her feminine voice when reading the octopus text. Perhaps she viewed it as a fairy tale to read to a young niece or nephew, more than to friends. The listeners may have heard a storytelling quality in her reading of the text and then associated it with femininity (some listeners used the term 'motherly' to describe the voices of straight-sounding women).

L_W_1 did not directly refer to her voice as sounding feminine or masculine, but she did describe it in a manner that I believe connects to perceptions of femininity (again, adequation comes to mind):

FP: How would you describe your voice or the way you talk?

L_W_1: Some people say it is too soft.

[...]

I think that soft is perceived as not as aggressive.

[...]

I don't see myself as aggressive.
One of the reasons that I don’t want to come through as aggressive is that a lot of my students don’t know Standard English... and, if you are perceived to be aggressive, that’s not helpful to them to learn.

Having a soft, unaggressive voice stereotypically evokes being feminine, as was confirmed by my listeners. In fact, most of them offered the following terms to describe the voice of a straight-sounding woman: ‘girlie’, ‘lacking assertiveness’ and ‘soft’. It is possible that this speaker read the text as if she was reading it more to her students than to her friends. Perhaps, though, being a teacher trained her in reading carefully and clearly. Therefore, she may have automatically assumed her teaching persona when reading the text even with her friends as the audience in mind. Either way, she definitely sounded feminine to the listeners in her performance.

In summary, both lesbians who sounded straight described their voices in adequation terms, that is, as feminine or masculine, although L_W_3 did so more decisively than L_W_1. Both may have used a feminine persona when reading the octopus text, and the listeners may have heard their performances as an index to sounding feminine and, thus, sounding straight.
The voice of Het_W_1, or the straightest-sounding female speaker, was explicitly (and without my solicitation) described to me by most listeners as being strongly recognizable as straight, because she sounded extremely feminine. Some of these listeners referred to her voice as belonging to a 'valley girl'. Het_W_1 had her own thoughts about sounding feminine:

FP: How would you describe your voice or the way you talk?

Het_W_1: Sometimes I think I talk too much... just chattering.

[...]

I think sometimes, like, with strangers, it gets low.

FP: Ohhh, and what about with your friends?

Het_W_1: I guess I'm louder.

FP: So, the more comfortable you are, the louder you get?

Het_W_1: I guess.

Arguably, Het_W_1's 'chattering' is closely associated with being feminine (at least one listener used the expression 'verbose' to describe straight-sounding female voices). Perhaps, lowering the volume of one's voice with strangers might also be considered feminine, as a quieter voice indicates shyness, which is possibly a stereotypical indicator of sensitivity and, as a result, of femininity (some
listeners claimed that straight women have ‘breathy’ voices, which suggests soft-ness in speech).

In summary, all the women who were rated as sounding straight saw their voices as sounding feminine or masculine (that is, they appeared to be aware of the sociolinguistic markers that index sounding feminine or masculine). One of them made a very direct claim about this, while the other two suggested the same by describing their voices in terms related to sounding feminine or masculine. It is likely their performances were all heard by the listeners as indicative of sounding feminine, thus creating the connection to their sounding-straight judgments.

5.4.2. Lesbian-sounding women

Remarkably, the only two women who were judged as sounding lesbian were straight. They were Het_W_5 and Het_W_6. As with the straight-sounding female speakers, both Het_W_5 and Het_W_6 described their voices as sounding feminine or masculine (or, to be precise, less feminine). They also appeared to think they had little choice about how they sounded (another example of authentication as
opposed to denaturalization). Het_W_5, or the most lesbian-sounding woman,
talked about her voice as follows:

Het_W_5: A couple of my friends usually come to me with problems, because
one, they find comfort in me, and that could be kind of because of the way I
speak. ‘Cause I'm very mild-mannered, you know, when it comes to speaking,
I'm not really loud, I don't yell or anything, I'm not really soft. So, it's sort of an
authoritative voice, I suppose.

[...] I've had a lot of people, when I was in high school, they wanted me to announce
events... They said “you have a strong voice”, and I was like “ok, if you'd like
me to”, but you never think about it until people say something like that.

Het_W_5 did not assess her voice as sounding feminine or masculine. How-
ever, an 'authoritative' and 'strong' voice can relate to masculinity (and listeners
did characterize the voices of lesbians as ‘masculine’ and ‘assertive’), and as such
recalls the tactic of adequation to a masculine identity. Perhaps she perceives
her voice as a part of herself that simply exists and over which she has little con-
trol (again, authentication surfaces), as evidenced in particular by the second
passage. Het_W_6 was a great deal more obvious about sounding feminine or
masculine:

Het_W_6: I think I speak in a kind of a low register... {1 sec.} for a female.

[...] I think I speak low and not feminine sounding.

[...] I've noticed that my voice has gotten deeper as I got older. In my head... {2 sec.} But it could also be related to allergies, so it's not resonating the same. It sounds deeper to me.

Notably, Het_W_6 seemed to avoid using the word 'masculine', preferring to say 'not feminine sounding' (thus providing her own illegitimation tactic). She almost appeared apologetic, as is reflected by the last two lines, where she offered an explanation for why she sounded more deeply voiced (i.e., because of her older age or allergies). I believe that this strategy indicates that she thought she had no control over her voice (again, authentication is utilized). Therefore, to Het_W_6, her voice was just a part of who she was.

To summarize, both Het_W_5 and Het_W_6 appear to think of their voices as masculine (or not feminine) and as part of their identities, and seem to be aware
of the sociolinguistic markers that index femininity as opposed to masculinity (or non-femininity). Although Het_W_6 does not make a direct link between her 'strong' and 'assertive' voice and masculinity, arguably such a link does exist, and possibly the listeners interpreted her voice as sounding lesbian, having made the same connection – in fact, some listeners were very explicit about it.

5.5. Conclusion

Of all the speakers, regardless of gender, it looks as though only some gay men were concerned about issues of heteronormativity. The gay men who were judged as sounding straight had worried about sounding gay while younger, but overcame their fears, possibly because they were aware of sounding straight to others. Therefore, they presently reproduce heteronormativity, and seem content with it, perhaps because it shields them from social consequences. The gay men who, instead, were judged as sounding gay seem to be conscious of having an identity to preserve, one that is reflected in their voices and their speech. Only one gay man, that is, G_M_3 directly relates this identity to being gay, possibly because he knows he sounds extremely gay and thinks it is unavoidable. Impor-
tantly, the gay-sounding gay men appear to link their identity to being gay by how gay they sound – or perceive they sound. In fact, the second-gayest-sounding gay man only indirectly seems to relate his identity to being gay and the least gay-sounding gay man does not make an explicit connection of this type. To these men, defying heteronormativity does not seem to be a matter of choice.

The rest of the speakers, both women and men, have no apparent concern about sounding gay/lesbian or straight. It appears that the straight men who were judged as sounding gay are unaware of it, and it may have been the use of their acting voices when reading the octopus text that triggered the listeners’ judgments. The straight men who were rated as sounding gay are, it would seem, only interested in using a ‘correct’, mostly standard speech, which, it can be argued, signals their lack of concern about reproducing heteronormativity – it is likely they feel confident enough about sounding straight to not give it any thought.

The female speakers appear to be completely detached as to whether or not they sound straight or lesbian – or sound heteronormative or not – which reflects the general inability of the listeners to provide characteristics of lesbian
speech. Instead, most seem to be concerned about whether or not they sound feminine, which supports Zwicky's (1997) suggestions that women see themselves as part of a united community. There are only two women who were judged as sounding lesbian, and both are straight. They appear to share a similar viewpoint with the gay men who were rated as sounding gay in that they consider their voices to be part of their identity. Both women appear to see their voices as sounding feminine or masculine, although they give the impression of tiptoeing around the issue. Het_W_6, in particular, expressed an overt concern about sounding 'not too feminine', which could indicate her desire to conform to heteronormativity. The lesbians who were evaluated as sounding straight frame their voices within the perspective of sounding feminine or masculine, although not always in a clear-cut manner. It is likely that both were rated as sounding straight because they used specific reading voices that I argued might have made them sound feminine to the listeners. I believe both are at ease with their voices, as they express how flexible they are with them, depending on the circumstances, particularly L_W_3, who stated that she can sound feminine or masculine depending on the situation. To these speakers, then, sounding feminine or mas-
culine is likely not an issue. The same seems to be true of Het_W_1, or the sole straight woman who was judged as sounding straight. She does not address her voice as being feminine or masculine, although she does describe it in terms related to femininity. I believe that she, like the straight men who were rated as sounding straight, feels enough ‘within the norm’ to completely ignore the norm itself.

To summarize, the individuals who defy heteronormativity (e.g., those who sound gay/lesbian) do so for different reasons and with varying levels of consciousness. The straight men who sound gay seem to be unaware of it. Thus, they challenge heteronormativity without realizing they are doing so. However, it is possible that their sounding gay is connected to the use of an acting voice while reading the octopus text. If so, these men might sound straight on most occasions, which would shelter them from discrimination associated with sounding gay -- and from considering the possibility itself that they may sound gay. The gay men who sound gay appear for mostly to be conscious of it, although in differing degrees, according to SR. Their challenging of
heteronormativity seems to be rooted in an identity which they do not wish to change, as doing so would imply dishonesty.

The women who resist heteronormativity (e.g., women who sound lesbian) seem to be aware of it, although they appear to categorize their responses in terms of sounding feminine or masculine, rather than lesbian or straight. Like the gay-sounding gay men, these women (all self-declared straight) attribute the way they sound to being who they are. Unlike the gay-sounding gay men, they did not claim that changing their voices would mean being untrue to themselves. One of these women showed some uneasiness about not conforming to the norm. It is possible that these speakers have concern about sounding unfeminine relating to how it might affect their relationships with straight men.

The individuals who conform to heteronormativity (e.g., those who sound straight) seem to be generally unaware of sounding straight. Although this might seem obvious, as being within the norm should not call for attention, the situation is all but clear-cut. The gay men struggled with their voices when younger to avoid discrimination. They presently sound straight enough (both to their own and to others’ ears) to altogether ignore the possibility of sounding gay. The
straight men who sound straight, instead, have no concern about sounding gay, but instead focus on sounding sufficiently standard. These speakers have likely never even questioned their upholding of heteronormativity through speech.

The lesbian-sounding women and the straight-sounding women alike seem to be more interested in sounding feminine or masculine than sounding lesbian or straight. Of these women, it is the lesbians who express an ability to switch from a feminine to a masculine voice at will. It is, perhaps, their backgrounds (one as an aunt to young children and one as a teacher) that made them sound feminine while reading the text. It appears that to these speakers changing their voices is a matter of being able to express themselves as the situation arises, rather than being in conformance to or defiance of heteronormativity. Perhaps, these women are indifferent to heteronormativity because they associate themselves primarily with the women's community which, as previously pointed out, tends to be inclusive to all women. Finally, the only straight woman who sounds straight may not give any consideration to challenging heteronormativity, as her voice is quite acutely recognizable as sounding straight (and has likely always been so).
CHAPTER 6.

DISCUSSION AND CONCLUSION

6.1. Testing the hypotheses

6.1.1. The quest for phonetic cues related to perceived sexuality

My dissertation follows Smyth et al.'s (2003) approach to the study of language, gender, and sexuality in identifying phonetic features that convey perceived sexuality. The general hypotheses that gay-sounding speakers have more hyperarticulated speech than straight-sounding male speakers, and that lesbian-sounding speakers present more hypoarticulated speech than straight-sounding female speakers were not substantiated. In fact, the features that possibly were related to the hyperarticulation/hypoarticulation dimension of speech, that is, vowel space dispersion, diphthong distance, and stop release generally did not yield results in terms of hyperarticulation or hypoarticulation.

Some of the findings on vowel production aligned themselves with Pierrehumbert et al. (2004) and/or Munson et al. (2006). These researchers claimed that gay men and lesbians do not attempt to pattern their speech after the opposite gender, but instead selectively adopt features from it. This suggests
positive social traits associated with either gender, rather than with the gender itself. Specifically, Pierrehumbert et al. argued that their lesbian speakers used backness of their back vowels to suggest 'social identity' (Pierrehumbert et al. 2004:1908), rather than masculinity. In fact, these speakers did not use the articulatory reduction generally employed by men, as reflected in the lesbian speakers' expanded vowels spaces. Munson et al. found that their listeners were more likely to rate a woman's voice as sounding lesbian if her low vowels had a lower F₁, her back vowels showed a lower F₂, and her vowel space was less expanded. Their study did not suggest reasons for lesbian-sounding women using these features. Instead, Munson et al. followed their own finding where the women judged as sounding lesbian were also perceived to be taller than those who were rated as sounding straight. According to Munson et al., lesbians believe that sounding taller is a positive characteristic commonly associated with men and thus they appropriate it.

6.1.2. On making assumptions on speech – The value of interviews

My dissertation had a secondary purpose: to explore reasons why an individual would, consciously or unconsciously, challenge or uphold heteronormativity.
To attain this goal, I interviewed the speaker participants. Rather than imposing preconceived interpretations on their motivations (conscious or not), I suggested observing only the speech itself of individuals, and then verifying with the speakers themselves the extent to which they intended to sound straight or gay/lesbian (or masculine/feminine, as appears to be the case for the female speakers in this study). Of course, individuals make choices about their speech they may not fully understand, but I think that their feedback is crucial to analyzing their speech. This was the fundamental reason for interviewing my speakers.

6.1.3. Summary of findings

In my study I formulated several hypotheses. In this Section, I again include them along with the results.

1. Female speakers articulate longer vowels than male speakers.

   This hypothesis was not confirmed.

2. Gay-sounding speakers use longer vowels than straight-sounding male speakers.
This hypothesis was not confirmed, which suggests that speech rate is not a marker of perceived sexuality for males.

3. Lesbian-sounding speakers employ shorter vowels than straight-sounding female speakers.

This hypothesis was also not confirmed, which suggests that speech rate is not a marker of perceived sexuality for females, either.

4. Gay-sounding speakers present a more expanded vowel space than straight-sounding male speakers.

The hypothesis was not confirmed, though some differences occurred in individual vowel qualities. Specifically, the gay-sounding speakers fronted their high vowels /i/ and /u/, and, possibly, lowered their /a/.

5. Lesbian-sounding speakers have a smaller vowel space than straight-sounding female speakers.

The hypothesis was not confirmed, although some differences occurred in individual vowel qualities, with the lesbian-sounding speakers producing a more backed or rounded /a/ than the straight-sounding female speakers.
The fact that hypotheses 4. and 5. were not confirmed suggests that the differences in vowels are not a simple expansion vs. contraction of the vowel space.

6. Gay-sounding speakers articulate their diphthongs with a longer distance (i.e., more quality differentiation between the diphthong's two targets) than straight-sounding male speakers.

This hypothesis was not confirmed.

7. Lesbian-sounding speakers articulate their diphthongs with a shorter distance (i.e., less quality differentiation between the diphthong's two targets) than straight-sounding female speakers.

The hypothesis was not confirmed, although the lesbian-sounding speakers produced their /ou/ with a shorter diphthong distance than the straight-sounding female speakers.

8. Female speakers release their stops more often than male speakers.

This hypothesis was not confirmed.

9. Gay-sounding speakers release their stops more often than straight-sounding male speakers.

The hypothesis was not confirmed.
10. Lesbian-sounding speakers release their stops less often than straight-sounding female speakers.

This hypothesis also was not confirmed.

Regarding stop release, it was found that the female release data went against Byrd's (1993, 1994) data. The female speakers who participated in this study did not release their stops more frequently than the male speakers, as Byrd's female speakers had done.

On the basis of these results, it appears that these markers of hypoarticulated and hyperarticulated speech do not, in a general way, create the impression of straight-sounding speech as opposed to gay-sounding speech, or of lesbian-sounding speech as opposed to straight-sounding female speech. Like pitch differences (Gaudio, 1994, etc.), they may be part of a considerably oversimplified stereotype. Differences in individual vowels may contribute to gay- or lesbian-sounding speech in contrast to straight-sounding speech.

Further, my results do not correspond to those of other studies. This may be due to the different dialects observed (e.g., Hawai'i English in my study, the dialect spoken in the Chicago area in Pierrehumbert et al.'s article, and Minneso-
tan varieties in Munson et al.), and particularly to the variety of perceived sexuality markers existing in dialects.

Other important results were the absence of 'gaydar' – at least phonetic gaydar, and the general inability of the listeners to recognize lesbians' speech.

6.1.4. Discussion

Various speaker groups appear to have been employing distinct phonetic features to convey specific identities. All speakers shared the usage of back vowels in communicating their identities. The gay-sounding speakers showed more fronted /u/ and, to some extent, lower /a/ than the straight-sounding male speakers. The lesbian-sounding female speakers presented a more backed or rounded /a/ and a shorter diphthong distance for more monophthongal /ou/ than the straight-sounding female speakers. As has been shown, it is possible to employ backness of back vowels to indicate a specific social identity. For example, Habick (1991) describes how some adolescents back their /u/ to suggest belonging to a group with a tough attitude. Pierrehumbert et al. (2004) also claimed that their lesbian speakers used back vowels (e.g., less fronted /u/ and /a/) to signify their identity, and that gay men used an expanded vowel space.
(caused mostly by low vowels) to distinguish their speech from that of straight men. Further, Munson et al. (2006) stated that low and back vowels were involved in the listeners' judgments on whether an individual, regardless of gender, sounded gay/lesbian or straight. It can be argued, then, that the gay-sounding speakers in this study used those back monophthongs to convey an identity that was perceived by the listeners as sounding gay.

As for the female speakers in this study, they may have wanted (consciously or not) to convey a feminine or masculine identity through the specific back vowels indicated above. Perhaps, using a less-diphthongal /ou/ and a backed /a/ might give the impression of masculine speech, although both of the features were not evident in the speech of my straight-sounding male speakers. Therefore, either these features do not relate directly to sounding masculine (but others do and this study has not considered them), or the lesbian-sounding speakers effectively employed the features to suggest masculinity through a particular system. The use of /a/ backing (or rounding) may suggest a larger vocal
tract, thus implying masculinity\textsuperscript{29}. It is probably no coincidence that Habick (1991) found backing in the ‘tough’ group. Further, the gay-sounding men in this study suggested their perceived sexuality (consciously or not) by fronting their vowels\textsuperscript{30}. Perhaps the lesbian-sounding speakers almost monophthongized their /ou/, which is consistent with the local Hawai'i English accent (see Odo, 1970). This would give the impression of being masculine, as it fits the stereotypical image of the tita, or a strong and assertive local woman. As seen previously, I suggested that all the speakers sounded on the rude side to the listeners, possibly because of the speakers’ standardized accent. However, it may be that the listeners overlooked this one feature (i.e., a quasi-monophthongized /ou/) when judging the lesbian-sounding female speakers as sounding rude-cum-standard. Alternatively, the listeners may have heard this diphthong pronounced with a local accent and thus associated it with the idea of being a tita. Either way, both less-diphthongal /ou/ and backed or rounded /u/ may have been used by the lesbian-sounding female speakers to convey traits, such as assertiveness, commonly associated with masculinity.

\textsuperscript{29} Vowels with lower F\textsubscript{2} are used in onomatopoeia to convey greater size (compare ding and dong or peep and roar).

\textsuperscript{30} This may be a coincidence, however it is worth noting.
6.1.4.1. Further results

The present study focused on the issue of constructing, for each gender, a scale of voices ranging from 'sounding definitely homosexual' to 'sounding definitely heterosexual', and identifying phonetic features in relation to perceived sexuality. The scales were built from the judgments of a listener group, equally divided by gender and self-identified sexuality (e.g., gay/lesbian or straight). On the basis of these scales I investigated phonetic cues relevant to perceived sexuality for both genders.

The results show that the speech of individuals can be mismatched to their actual sexuality, and that a number of phonetic features (mostly back vowels) appear to be responsible for these incorrect judgments. I argued that this line of research, pioneered by Smyth et al. (2000, 2003), allows us to more precisely account for those cases in which gay or lesbian speakers sound straight (and vice versa).

My findings show that the notion of gaydar, or the ability to detect gay/lesbian individuals, is weak to nonexistent, at least on the basis of phonetic cues alone. This was particularly true for the lesbian speakers. For example, the
gay male listeners correctly identified only 3 gay male speakers out of 6, and, collectively, the straight speakers were unable to identify a single lesbian speaker. This confirms the importance of considering how speech is perceived – studying gay-/lesbian-/straight- sounding speech, rather than simply the speech of self-declared gay/lesbian/straight individuals.

Both the male and female speakers who were rated as sounding gay/lesbian used specific characteristics of some low and back vowels. This articulation (possibly along with other cues which I did not consider) sets them apart from both the male and the female speakers who were judged as sounding straight. I also measured other phonetic factors that did not appear to be predictors of perceived sexuality, these factors being: vowel space dispersion (contra Pierrehumbert et al. 2004, but in accordance with Munson et al. 2006), vowel duration (in accordance with both Pierrehumbert et al. 2004 and Munson et al. 2006), and stop release. Diphthong distance was also studied, and, as mentioned above, the results were statistically significant only for the diphthong /ou/ as pronounced by the lesbian-sounding speakers in contrast with the female straight-sounding speakers.
Importantly, the female speakers did not release their stops any more frequently than did the male speakers. This finding sheds some light on the dialect of Hawai'i English and contradicts Byrd (1993, 1994). In Byrd's account of stop release from TIMIT, a corpus including various dialects of American English from all major linguistic regions of the United States, it is claimed that women release their final-sentence stops more often than men, regardless of their dialect. However, this corpus does not include Hawai'i English, and my results appear to contradict that study.

Additionally, I explored other possible constructs that relate to sounding gay/lesbian or straight by having another group of listeners judge the voices of the same speakers. These listeners did not give ratings on perceived sexuality, but did so on other parameters, that is, 'rude/polite', 'feminine/masculine', 'dumb/intelligent', 'serious/frivolous' and 'educated/uneducated'. My findings show that, independently of their gender, most speakers were considered to sound rude, possibly because of their generally-standardized accent which, in the Hawaiian Islands, can have the connotation of being uptight (cf. Peppo's Pidgin to da Max 1981). My results show that, for the male speakers, sounding gay
corresponds to sounding intelligent and educated. Sounding definitely gay also relates to sounding frivolous and feminine. Sounding straight, instead, connects to sounding uneducated. The listeners exhibited resistance to classifying a male voice as sounding feminine or frivolous.

For the female speakers, the judgments were less clear-cut. All the female speakers were judged as sounding educated, feminine, intelligent, serious and rude. There was, particularly, a general resistance to rating any female speaker as masculine. However, to all listeners, the lesbian-sounding speakers sounded less feminine than the straight-sounding female speakers. But to the lesbian listeners, the lesbian-sounding speakers sounded less rude than the straight-sounding female speakers.

As a secondary issue I explored reasons that an individual might decide (intentionally or not) to defy heteronormativity by sounding gay/lesbian or to reproduce it by sounding straight. The interviews with my speakers revealed that, among all speakers, only some gay men were concerned about sounding gay and, therefore, with challenging heteronormativity. Of these gay men, those who were rated as sounding straight had, while younger, a negative perception
about sounding gay. At the present time, they seem unconcerned about sounding or not sounding gay. This may very well be due to their sounding straight, which potentially could shelter them from social repercussions. The gay men who instead were rated as sounding gay have grown to accept their voices as an integral part of themselves which cannot be changed. They do not seem to attribute their going against heteronormativity as being bothersome. The straight men, regardless of how they were rated, do not even slightly consider the possibility of sounding gay, but do wish to convey socially-positive characteristics with their speech.

The female speakers generally have no apparent concern about sounding lesbian or straight. Rather, they see themselves in terms of femininity and/or masculinity. Only straight women were rated as sounding lesbian, and they either describe their voices in terms of assertiveness, which can be related to masculinity, or as sounding ‘not too feminine’. They also seem to relate the way they sound to their identity, much as the gay men who were assessed as sounding gay. The female speakers who instead were judged as sounding straight describe themselves in feminine/masculine terms, either directly or indirectly (for
instance, by stating they sound ‘unaggressive’). All of them (the straight woman and the two lesbians) seem absolutely uninterested in whether or not their voices conform to heteronormativity – or they simply do not think that there is a homosexual vs. heterosexual ‘norm’ for female voices. It is possible that the straight woman lacked interest in this matter because she sounds so recognizably straight she can easily ignore how she sounds – or, alternatively, she has no idea that lesbian and straight women might sound different. Perhaps, the two lesbians instead think they can exercise some control over how they sound by using at will either a masculine or a feminine voice.

6.2. Looking ahead

6.2.1. Further questions and research

There are further questions raised by my study which are worth pursuing. For instance, there is a need to consider possible interactions between dialectal differences and phonetic markers of perceived sexuality needs. Secondly, I noted that the backing or fronting of vowels suggests variation in vocal tract size, which relates to perceived masculinity or femininity. This might imply authority
as opposed to powerlessness. It would be informative to explore whether vowel backing/fronting is used elsewhere, such as in other languages, contexts, and/or for other purposes. Finally, a question can be raised about vowel space expansion as a criterion for hyperarticulation. Let us suppose that a back vowel like /u/ is fronted. The numbers could then make it seem that the vowel space decreased (because of the collapse of one of the 'corners' of the vowel space), even if other vowels were more extreme. It is therefore advisable to consider this kind of possibility for more accurate results.

In my search for additional phonetic cues that distinguish the speech of gay/lesbian-sounding individuals from straight-sounding individuals, I will study the speech of individuals within various countries. I will begin my investigations with Italy, as it is where I was born and raised. This will allow for a comparative study between some of the dialects of American English and Italian. If certain phonetic features (such as the manipulation of back vowels) are used in all of these dialects to convey social identity (cf. Habick 1991 and the present dissertation), this study could potentially indicate features that might be used in various
world locations to perform identities. This result would then call for further exploration.

As a complement to the issues I have focused on, I believe that examining the speech of individuals in the process of sexual transitioning may shed even more light on the subject of sounding gay/lesbian or straight. As transsexuals live in a liminal, in-between-gender world, they might have access to both conforming, in speech, to what is expected of the gender they are planning to embody and to sounding like what their sexuality 'demands'. Some transsexuals might want to sound straight. Yet, others might defy heteronormativity (cf. Bell 1993, where an individual transitioning from man to woman reacted in an extremely agitated manner when she realized her speech trainers assumed she wanted to sound straight, rather than lesbian, her self-declared identity). Regardless of their dispositions toward heteronormativity, it will be fascinating to investigate how transsexuals use their speech to express identity, and how listeners respond to their speech.

Finally, there is the area of bisexuality – a sexuality that thus far has been vastly neglected in sociophonetics. Pierrehumbert et al. (2004) and Munson et
al. (2006) observed the speech of bisexuals and then conflated it with that of gays and lesbians. As I have already explained, this grouping appears somewhat arbitrary. In my work, I will include bisexual individuals both as speakers and as listeners to explore whether sounding bisexual exists, and, if so, how it is perceived.

6.3. Conclusion

This study is limited in its number of speakers (and listeners). My need to select, for closer examination, the speakers whose speech was recognizable as sounding gay, lesbian or straight further lowered this number and particularly affected the study of the female speakers. However, that so few women were recognizable as sounding lesbian or straight is valuable in itself, as it indicates that lesbian-sounding speech may only differ subtly from straight-sounding female speech. Zwicky (1997) provided a possible explanation for the similarity in women's speech, regardless of their sexuality. He suggested that lesbians are usually not discriminated against by straight women, thus they have no real need to be divisive among themselves. My dissertation indicates that the women
interviewed had concerns about sounding feminine or masculine, rather than sounding lesbian or straight, thus supporting Zwicky's suggestion. In respect to gay men, Zwicky hypothesizes that some may react to widespread intolerance from straight men by using a speech that they identify entirely as their own. My study's findings do not fully reflect Zwicky's proposal in this case. In fact, the gay men who were rated as sounding gay report that they have no control over how they sound. The notion of performativity contrasts with these claims, as it sees individuals as social actors with a degree of freedom. These responses call into question the degree to which the performance of an identity is conscious. The speakers say they do not control their speech, but this does not necessarily mean it is actually the case.

Of course, additional speakers (and interviews) would provide a more comprehensive picture of the reasons behind the decision (again, be it deliberate or not) to challenge or reproduce heteronormativity. This will be a subject I will explore in my future research, both within the United States and in other countries. The blending of cultures shapes individuals in so many ways, thus a wide variety of responses can be expected. Ultimately, I believe, patterns will emerge.
In general, these may progressively trend toward healthy changes in how gay men and lesbians are perceived on a global level, especially as new liberties are acquired and they become a more visible part of society.
APPENDIX A

THE OCTOPUS TEXT

Line 1: “Life at the bottom of the ocean can be tough, especially when you are not at the top (/a/ #1)

Line 2: of the food chain. It’s even worse when big fish float around you, and seek (/l/ #1)

Line 3: to turn you into an octopus soup (/u/ #1).

Line 4: You can only escape or hide. Or you can pretend you are something else.

But you can’t

Line 5: certainly poke (/ou/ #1)

Line 6: those fish in the eyes or stop (/a/ #2)

Line 7: them with a tentacle chop! I hate (/et/ #1)

Line 8: this... I wish I could find a better way to cope (/ou/ #2)

Line 9: with it (/t/ stop #1, end of sentence, before a C)…”

Line 10: This – we like to imagine – is what an octopus thought (/a/ #3)
one day as, once again, it was mistaken for a rock by a huge octopus-eating fish. That certainly saved its life. "But disguising only works so much,"

the octopus pondered as it sat (/æ/ #1)

"and it does not get you around." The octopus felt safe (/ɛ/ #2),

but could only move a little. When you live in an area with very few hiding points, you cannot be at peace (/i/ #2).

As soon as you move away from your post (/ou/ #3),

those spread-out tentacles give it away. Some big, stout (/au/ #1)

fish passing by might spot (/ɑ/ #4)

you, get ready for a nice octopus soup (/u/ #2)

and sink its huge, fat (/æ/ #2)

horrible teeth into you, just like that (/t/ stop #2, end of sentence, before a C).

You cannot put up a fight (/ɑɪ/ #1)

with this monster. If you are in its sight (/ɑɪ/ #2),
Line 24: you must quickly play your usual trick (/k/ stop #1, end of sentence, before a C).

Line 25: You stop (/æ/ #5)

Line 26: in your tracks, flop down, wrap yourself tight (/æt/ #3)

Line 27: in your own tentacles, and hope (/ou/ #4)

Line 28: you will not become its favorite soup (/u/ #3)

Line 29: If you are fast (/æ/ #3),

Line 30: it works, but our octopus friend must have gotten tired of it (/t/ stop #3, end of sentence before a C).

Line 31: Here it is, pondering: “I wish I could just hover around without worrying about all those fat (/æt/ #4)

Line 32: predators. But hovering puts me at risk. On the other tentacle, the rock trick keeps me safe (/et/ #3).

Line 33: Yet, on the third tentacle, if I am a rock, I am pretty much stuck (/k/ stop #2, end of sentence before a C).

Line 34: Certainly, I need to find a way to be safe (/et/ #4),

Line 35: and I am not safe like that (/t/ stop #4, end of sentence before a C).”
Line 36: Just then, we like to imagine that a piece of rock rolled by, bumped into our octopus friend, rolled over the bottom of the ocean for quite a few feet (/i/ #3),

Line 37: then stumbled onto a bigger rock, floated up and around it, and kept going. That greatly inspired the octopus. “So, rocks can move around... I don’t have to be a dumb, unmoving rock (/k/ stop #3, end of sentence, before a C)!

Like 38: That’s right! I can be a smart, mobile rock (/k/ stop #4, end of sentence, before a C)!

Line 39: Maybe I found a way to fool those fat (/æ/ #5)

Line 40: fish...” That said, the octopus tried out its new strategy. It gazed around, then lifted up six tentacles and wrapped them tight (/aɪ/ #4)

Line 41: around its body. Next, balancing on its remaining two tentacles, it tentatively raised itself up. Water helped its efforts, and the octopus could, sort of, stand up. Delighted, it thought:

“I’m gonna shout (/au/ #2)

Line 42: out loud! It works! This is great (/t/ stop #5, end of sentence, before a C)!

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Line 43: Now, since there is no fish in sight (/a/ #5),

Line 44: I will try to scoot (/u/ #4)

Line 45: off...". The octopus quickly propelled itself out of its post (/ou/ #5),

Line 46: and was able to “run” for a couple of feet (/i/ #4),

Line 47: uncertainly balancing on its two tentacles. “I can walk (/k/ stop #5,
end of sentence)!

Line 48: Yes! Ouch!”, the octopus cheered, and then got surprised, as it unexpectedly fell on its face (/et/ #5).

Line 49: “Ops... I guess I was running against the current... I should go South
(/au/ #3):

Line 50: that’s the direction of the current.” That said, it rose on its two, hmm,
feet (/i/ #5),

Line 51: scooped up the other six, and set out. Its improvised walk was not very
elegant, but it was incredibly effective. Going with the South (/au/ #4)

Line 52: current helped it balance on its walking tentacles. Wrapping its other
tentacles around its body still made it look like a rock. The octopus was
delighted. As it was heading to its house (/au/ #5),
Line 53: it ran into a big predator. The fish looked at the octopus, the octopus blinked for half a second, but kept playing the walking rock, and the fish swam away. Hurray! No more octopus soup (/u/ #5)

Line 54: for the big fish!
APPENDIX B

SPEAKER SEQUENCE

1- Het_M_1 2- L_W_1 3- G_M_1
4- L_W_2 5- G_M_6 6- Het_W_1
7- Het_W_2 8- G_M_2 9- Het_M_2
10- Het_W_3 11- Het_W_4 12- Het_M_3
13- Het_W_5 14- G_M_3 15- Het_M_4
16- Het_M_5 17- L_W_3 18- L_W_4
19- G_M_4 20- Het_W_6 21- Het_M_6
22- L_W_5 23- G_M_5 24- L_W_6
Instructions

Please read this form carefully and in full before listening to the recordings. It is important that you acquaint yourself with the form before proceeding. If you have any question, talk to Fabiana immediately.

The form is divided into three parts, and consists of 6 pages. The first two parts are mandatory, but the third is not. Part I (pages 1 – 5) contains a set of ratings which you will use to judge several speakers' voices. Part II (page 6) presents a brief question asking you to explain what you listened for when giving your judgments. Finally, Part III (page 6) encourages more comments.

After reading and understanding the form, press the ON button on the CD player. Please, DO NOT interrupt the recording or play back any part of it. You will listen to a sequence of 24 speakers' voices. Each voice will playback for about 30 seconds, and will be followed by 15 seconds of silence. During each silent stretch, please complete the appropriate section of Part I by following the

---

31 All speakers were included in the form. Further, space was provided for the listeners to write their remarks under Part 2 and Part 3.
order of speakers indicated. Once you have completed the task for all 24 voices, please press STOP on the player, and proceed to Part II. Finally, complete Part III, if possible.

Once you have completed the whole task, please call Fabiana.

Thank you for your cooperation ☺

Part I

For each speaker, please indicate your rating in terms of sexual orientation and your confidence level in your judgment by clearly circling the appropriate number. The sexual orientation rating goes from 1 ('sounds totally gay/lesbian') to 7 ('sounds totally straight'). The confidence level scale works in the same fashion. See the following example:

**Speaker 0**

<table>
<thead>
<tr>
<th>Sounds totally gay/lesbian</th>
<th>Sounds totally straight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  2  3  4</td>
<td>5  6</td>
</tr>
<tr>
<td>Not confident at all</td>
<td>Very confident</td>
</tr>
<tr>
<td>1  2  3  4</td>
<td>5  6  7</td>
</tr>
</tbody>
</table>

297
In the example, you judged Speaker 0 as sounding totally straight (7), and you gave your confidence level as confident (4).

**Speaker 1**

<table>
<thead>
<tr>
<th>Sounds totally gay/lesbian</th>
<th>Sounds totally straight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  2  3  4 5 6 7</td>
<td>1</td>
</tr>
</tbody>
</table>

Not confident at all                Very confident

1  2  3  4 5 6 7

[...]

**Speaker 24**

<table>
<thead>
<tr>
<th>Sounds totally gay/lesbian</th>
<th>Sounds totally straight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  2  3  4 5 6 7</td>
<td>1</td>
</tr>
</tbody>
</table>

Not confident at all                Very confident

1  2  3  4 5 6 7
Part II

Please, answer the following question:

When judging a voice as belonging to either sexual orientation, what did you listen for?

Part III

Please provide any comments you wish (this part is not required, but Fabiana would greatly appreciate it if you could spend a little time on it ©).
APPENDIX D

GROUP 2 LISTENERS' RATING FORM

Instructions

Please read this form carefully and entirely before listening to the recordings. It is important that you acquaint yourself with the form before proceeding.

If you have any questions, talk to Fabiana immediately.

The form contains a set of ratings which you will use to judge several speakers' voices. The ratings are arranged in the following pairs: 'educated/uneducated', 'feminine/masculine', 'dumb/intelligent', 'serious/frivolous', and 'rude/polite'.

After reading and understanding the form, press PLAY on the CD player.

Please, DO NOT interrupt the recording or play back any part of it. You will listen to a sequence of 24 speakers' voices. Each voice will play for about 30 seconds, and will be followed by 30 seconds of silence. During each silence, please complete in full the appropriate section of the form by following the order of speakers indicated. Once you have completed the task for all 24 voices,

---

32 This form is shown in an abbreviated manner. All speakers were shown in the version that was presented to the listeners.
please press STOP on the CD player and call Fabiana.

Thank you for your cooperation 😊

Rate the speakers

For each speaker, please indicate your ratings by clearly circling the appropriate number. Each rating goes from 1 (’educated’ or ‘feminine’ or ‘dumb’ or ‘serious’ or ‘rude’) to 7 (’uneducated’ or ‘masculine’ or ‘intelligent’ or ‘frivolous’ or ‘polite’). Please give all five ratings for all speakers. See the following example:

**Speaker 0**

<table>
<thead>
<tr>
<th>Educated</th>
<th>Uneducated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5</td>
<td>6</td>
</tr>
<tr>
<td>Feminine</td>
<td>Masculine</td>
</tr>
<tr>
<td>1 2 3 4</td>
<td>5</td>
</tr>
<tr>
<td>Dumb</td>
<td>Intelligent</td>
</tr>
<tr>
<td>1 2 3</td>
<td>4</td>
</tr>
<tr>
<td>Serious</td>
<td>Frivolous</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

301
In the example, you judged Speaker 0 as totally uneducated (7), and slightly masculine (5). You were completely undecided (4) about the speaker's being dumb or intelligent. Finally, the speaker sounded to you serious and a little rude.

**Speaker 1**

<table>
<thead>
<tr>
<th>Educated</th>
<th>Uneducated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feminine</th>
<th>Masculine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dumb</th>
<th>Intelligent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Serious</th>
<th>Frivolous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Polite</td>
<td>Rude</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

[...]  

**Speaker 24**

<table>
<thead>
<tr>
<th>Educated</th>
<th>Uneducated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Feminine</th>
<th>Masculine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dumb</th>
<th>Intelligent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Serious</th>
<th>Frivolous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Polite</th>
<th>Rude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

INTERVIEWS WITH GROUP 1 LISTENERS

The following tables summarize the cues that each listening group claimed to follow in their ratings. The numbers in parentheses indicate how many listeners selected a specific cue as signaling sexuality. If only one listener offered a cue, no number appears. For each group, further relevant information follows each table, complete with the numbers of listeners who volunteered each piece of information as above. The tables appear in the following pages of this Appendix.
Lesbian Listeners

<table>
<thead>
<tr>
<th>Lesbian Speakers</th>
<th>Gay Speakers</th>
<th>Straight Female Speakers</th>
<th>Straight Male Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low pitch (x3)</td>
<td>Variety of tones (x4)</td>
<td>High pitch (x2)</td>
<td>Low pitch (x4)</td>
</tr>
<tr>
<td>Flat tone (x3)</td>
<td>High pitch (x2)</td>
<td>'Valley girl' sound</td>
<td>Flat tone (x5)</td>
</tr>
<tr>
<td>Confidence (x3)</td>
<td>Soft, breathy (x2)</td>
<td>Whiny and mothering at the same time</td>
<td>Lack of feeling (x4)</td>
</tr>
<tr>
<td>Relaxed</td>
<td>'s' sounds (lisp) (x2)</td>
<td>Lack of assertiveness</td>
<td>Confident</td>
</tr>
<tr>
<td>Smooth</td>
<td>Dramatic (x2)</td>
<td></td>
<td>Not very proficient readers (x2)</td>
</tr>
</tbody>
</table>

Click/cluck ('tsk')

Lively

Effeminate

Good readers

Campy
Further observations for lesbian listeners:

- Lesbians are hard to tell apart from straight women (x5)

- In the end, no one can really tell whether a person is gay/lesbian or not; further, I do not like to pigeonhole people (x5)

- It is much easier to tell a gay man from a straight man, probably because gay men are more visible than lesbians (x2)

- It is hard to tell the sexuality of a woman just from her speech; conversation topic, behavior and clothing would help (x2)

- Local accent makes everybody sound more feminine (i.e., it has more color, longer vowels, and softer consonants), therefore all men sound gayer than in the rest of the United States (x2)

- Some lesbians might sound like straight men, but gay men do not sound like straight women

- Some gay/lesbian speakers pattern themselves after straight speakers of the opposite sex, although not completely. The difference is biology: the vocal tract a person is born with allows for her/him to play around with her/his voice only to some extent
Local lesbians are difficult to identify because they might want 'to pass', as they are afraid they might lose their jobs or be rejected by their families.
### Gay listeners

<table>
<thead>
<tr>
<th>Lesbian Speakers</th>
<th>Gay Speakers</th>
<th>Straight Female Speakers</th>
<th>Straight Male Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low pitch (x5)</td>
<td>Extra-sibilant ‘s’ (x4)</td>
<td>High pitch (x2)</td>
<td>Low pitch (x2)</td>
</tr>
<tr>
<td>Confident (x3)</td>
<td>High pitch (x3)</td>
<td>Unassertiveness</td>
<td>Uncultured (x2)</td>
</tr>
<tr>
<td>Assertive</td>
<td>Broad pitch range (x3)</td>
<td>Short resonances</td>
<td>Poor articulation</td>
</tr>
<tr>
<td>Long resonances</td>
<td>Soft, breathy (x2)</td>
<td>Educated</td>
<td>Staccato</td>
</tr>
<tr>
<td>No drama</td>
<td>Extra drama (x2)</td>
<td>Breathy</td>
<td>Loud</td>
</tr>
<tr>
<td>Staccato</td>
<td>Click/cluck (‘tsk’) (x2)</td>
<td>Child-like</td>
<td>Confidence</td>
</tr>
<tr>
<td>Well enunciated</td>
<td>Precision in articulation of sounds</td>
<td></td>
<td>Lack of affection</td>
</tr>
<tr>
<td>Uneducated</td>
<td>Emotional</td>
<td></td>
<td>Casual</td>
</tr>
<tr>
<td></td>
<td>Educated</td>
<td></td>
<td>Monotone</td>
</tr>
<tr>
<td></td>
<td>Diffident delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Campy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Further observations for gay listeners

- It is very difficult to tell a lesbian from a straight woman (x4)

- Lesbian speakers pattern after straight men, gay men pattern after straight women (x2)

- I went by exclusion: if a man did not sound gay, then I judged him as straight (x2)

- It is hard in general to identify the sexuality of these speakers, because most of them did not conform to stereotypes (x3)

- It is easier to identify gay/lesbian people at the very extreme of stereotype, that is, butches for lesbians, and queens for gay men

- Seeing a person would help in identifying the sexuality of a person

- Local accent is characterized by over-pronunciation, so it makes all men sound on the gay side

- Gay men do not pattern themselves after straight women, although they sound slightly similar to them; also, lesbians do not pattern themselves after straight women, even though they share similarities in speech.
**Straight female listeners**

<table>
<thead>
<tr>
<th>Lesbian Speakers</th>
<th>Gay Speakers</th>
<th>Straight Female Speakers</th>
<th>Straight Male Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masculine (x2)</td>
<td>High pitch (x5)</td>
<td>High pitch (x2)</td>
<td>Monotone (x5)</td>
</tr>
<tr>
<td>Low pitch</td>
<td>Sing-song (x4)</td>
<td>Girlie (x2)</td>
<td>Lack of attention/Non-involvement/Carelessness</td>
</tr>
<tr>
<td></td>
<td>Dramatic reading (x3)</td>
<td>Gigglish</td>
<td>Grunting</td>
</tr>
</tbody>
</table>

Feminine/effeminate (x3)

Lisp (x4)

Over-enunciation (x3)

‘Valley-girl’ sound (x2)

Emotion

Soft voice
Further observations for straight female listeners:

- It is much harder to identify lesbians than gay men (x4)

- I assumed that everyone was straight, unless I heard some deviation from the 'norm' or the 'default'. When I was unsure, I would judge a voice as belonging to a straight person (x4)

- Local accent is characterized by a high pitch, so men sounded more feminine, therefore, gayer (x2)

- Seeing would help: it is difficult to judge the sexuality of a person from voice alone

- Gay men are often represented more than lesbians in movies and on TV, so people have a stronger stereotype about how gay men sound compared to lesbians

- Gay men's speech patterns after straight women's

- Lesbians do not pattern their speech after straight men; in fact, there is no real difference in speech between lesbians and straight women.
<table>
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</thead>
<tbody>
<tr>
<td>Low pitch (x3)</td>
<td>High pitch (x4)</td>
<td>High pitch (x2)</td>
<td>Low pitch (x5)</td>
</tr>
<tr>
<td>Little animation/Monotone (x4)</td>
<td>Great intonation (x5)</td>
<td>Fluctuation in pitch (x2)</td>
<td>Flat/monotone (x5)</td>
</tr>
<tr>
<td>Emphatic</td>
<td>Fast speech (x4)</td>
<td>Fast speech (x2)</td>
<td>Rough (x2)</td>
</tr>
<tr>
<td>Disinterested</td>
<td>‘s’ sound (lisp) (x4)</td>
<td>Motherly</td>
<td>Lack of emphasis or color (x2)</td>
</tr>
<tr>
<td>Masculine</td>
<td>Accentuation of words (x2)</td>
<td>Girlie</td>
<td>Disinterested</td>
</tr>
<tr>
<td></td>
<td>Effeminate (x2)</td>
<td>Fluid speech</td>
<td>Slow speech</td>
</tr>
<tr>
<td></td>
<td>Animated</td>
<td></td>
<td>Unintelligent</td>
</tr>
<tr>
<td></td>
<td>Soft/breathy (x2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Loud/flamboyant (x2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Click/cluck (‘tsk’)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emotional</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Further observations for straight male listeners

- Lesbians were much harder to identify than gay men (x5)

- I assumed that speakers were straight, unless something ‘different’ showed up (although it was much easier to identify gay men than lesbians) (x3)

- I listened for voices that sounded similar to my gay/lesbian friends/acquaintances (x2)

- Gay men pattern a little after straight women, but lesbians do not pattern after straight men at all

- There is a stronger stereotype for what gay men sound like than for lesbians, so it is harder to identify lesbians

- Word choice, clothing and behavior are better clues than a woman is a lesbian than speech alone

- Word choice is a good cue for gay men, but not for lesbians.
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