

Creaky voice: An interactional resource for indexing authority

by

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Bachelor of Arts (Hons.) in Linguistics, University of Victoria, 2014

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Supervisory Committee

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Abstract

This project explores the social meaning potential of creaky voice using a third wave variationist approach in order to uncover what motivates speakers to deploy this vocal quality. Intraspeaker variation in the use of creak is quantitatively and qualitatively examined in case studies of one male and one female individual who come from a similar social group. In recordings from a range of casual settings, both the male and female speaker are found to use creak at similar rates, for similar purposes. However, creak is found to vary across social settings: the greater the speakers' self-reported intimacy with their interlocutors, the lower the frequency of creak. This suggests that creaky voice is used for interactional functions, and is conditioned by conversational context. Qualitative discourse analysis of instances of creak further reveals that it has a high frequency of co-occurrence with linguistic features used for epistemic stancetaking. I suggest that creak is an interactional resource available for taking an authoritative position in interaction, especially in situations where speakers feel less intimately connected to their interlocutors.

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Transcription Conventions

<u>xxx</u>	- creaky voice
.	- falling intonation
,	- continuing intonation
?	- rising intonation
;	- slightly rising intonation
“ ”	- quotative voice (noticeably different from surrounding speech)
(.)	- pause
-	- truncated word
--	- truncated utterance
=	- latched speech (no pause between speakers)
/ /	- overlapping speech
{ }	- transcriber's comment
[]	- non-linguistic sound
< >	- backchannel
()	- uncertain transcription

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Dedication

To my mom and dad, to whom I owe my love of learning.

1. Introduction

Following in the footsteps of frequently discouraged and disparaged speech habits such as uptalk and “non-grammatical” uses of the word *like*, another linguistic feature has sparked the ire of social commentators. Creaky voice (also referred to in the literature as *vocal fry*, *glottal fry*, or *pulse phonation*) is claimed to be increasingly common among young women in North America (Yuasa, 2010, p. 317). The rhetoric is decidedly negative. From radio personality Howard Stern to celebrated feminist Naomi Wolf, scores of people are weighing in on this “mindless affectation” (Vuolo, 2012) that is purported to be infecting the speech of young women. The argument is that this is a new trend among millennials, ostensibly driven by the desire to emulate pop celebrities such as Katy Perry and Kim Kardashian. This brings to mind previous claims regarding *like*, believed to be a random vernacular element created and circulated via pop culture by Valley Girls, and thought to be used predominantly by young women. D’Arcy (2007) shows that the commonly held beliefs about *like* do not accurately reflect social patterns of usage: *like* has multiple functions in discourse, most of which predate the Valley Girl, and which are not conditioned by gender uniformly. Inconsistency between popular linguistic beliefs and reality is by no means a rarity (cf. Zwicky, 2005). As Cameron (1995) argues, media attention “[is] not a reliable guide to trends on people’s actual behaviour: [it is] a better indicator of changing norms and attitudes” (p. 176). The discourse surrounding creaky voice must therefore be subject to the same critical analysis as *like*. Such an analysis should probe the role of social meaning in shaping linguistic behaviour, and the role of linguistic behaviour in shaping social meaning—that is, what underlying meanings motivate speakers to use creaky voice?

The growing number of studies probing the social meaning of language variation constitutes what Eckert (2012) considers the third wave of variation study. In this approach, variables are not simply reflective of pre-defined, static social differences, but are also used by speakers to construct and reconstruct the social world by positioning themselves within it (Campbell-Kibler, 2009, p. 136). This process is enabled by the association of linguistic behaviour to social content in the minds of speakers and listeners—whether this social content involves identity categories, or situational stances

and speech acts. These associations are neither consistent nor monolithic. Central to a third-wave analysis is the potential of a linguistic variable to index a field of ideologically related meanings. A single feature may be used “to make ideological moves, by different people, in different situations, and to different purposes” (Eckert, 2008, p. 467). This field of meanings is constantly being reinterpreted as variables are used to index pre-existing social values, or to create new ones (Eckert, p. 464). This moment-to-moment process is done cooperatively by speakers and listeners. During the course of an interaction, speakers employ variables to construct meaningful styles which are associated with social personae, for example “Jock” and “Burnout” (Eckert, 1989), “Diva” (Podesva 2007), or even social characteristics such as “hardcore” (Mendoza-Denton, 2011). Listeners, in turn, come to notice the salient variables which constitute these styles (consciously or unconsciously), and can subsequently adopt or avoid these variables in their own identity construction.

Thus, in situated uses, the sociolinguistic variable takes on a more specific meaning as a component of a culturally intelligible style. This process of creating and interpreting styles is constant and iterative (Eckert, 2008, p. 456), and it extends beyond lexical and phonological variables. Findings from the field of sociophonetics have further shown that even fine-grained phonetic variation is used systematically for social means. As Hay and Drager (2007, p. 90) remark, “the phonetic realizations produced across different speakers and contexts are so layered with social meaning that it is amazing that listeners are even able to identify different tokens as having the same referent, especially given the subtlety of the variation.” Voice quality, in particular, is a rich phonetic resource available in all languages for conveying various types of meaning (Podesva & Callier, 2015, p. 173). Though voice qualities may be assumed to be innate or unconscious, speakers can and do adopt different ones at will (Couper-Kuhlen, 2003, p. 30). By doing so, speakers may construct socially meaningful personae, as well as affect and stances associated with those personae. As these voice qualities occur in situated discourse, they also gain new associations; they do not remain static. With such contextual variability, an exploration of the underlying meaning of creaky voice must be attuned to the moment-by-moment stylistic choices that speakers are making, and how these stylistic choices are interpreted in discourse. This requires a focus on specific

interactional and sociocultural contexts (as prescribed by Eckert, 2008, and Podesva & Callier, 2015).

Understanding the potential of creaky voice as a meaning-making tool dispels the notion that it is simply a “mindless affectation” that places young women at a disadvantage. The recent hyping of creaky voice is merely a variation on a theme, ‘the problem with women’s speech’, which, according to Cameron (1995), is both historically and culturally pervasive, despite being fundamentally misguided. There is an ingrained prejudice whereby women are scrutinized much more than men for how they speak. Women’s voices have long been characterized negatively as “shrill” and “swoopy”, and now it seems they are being stigmatized for exactly the opposite reason. The ‘problem with women’s speech’ rhetoric has very real consequences. Cameron (p. 205) argues,

As these ‘problems’ enter the repertoire of public discourse about gender, they provide one more pseudo-explanation for women’s ‘under-achievement’; one more excuse for the raw deal women get, and one more ingenious strategy for not tackling the root causes of women’s subordinate status.

In other words, it is a subtle form of victim-blaming which obscures entrenched sexism and frees the public from taking responsibility to advance gender equality. Instead, it puts the onus on young women to change their ‘problematic’ speech habits in order to be taken seriously.

The purpose of this project is to investigate the relationship of social meaning and linguistic behaviour in the use of creaky voice by assessing intraspeaker variation in a narrowly defined friendship group in Victoria, British Columbia. In so doing, it questions the notion that creak is simply a “mindless affectation” produced by young women by exploring its social meaning potential. This project adds to the body of work that contributes to the understanding of creaky voice and its various functions—both universal and local. There are far fewer studies of variation in voice quality than of variation in other aspects of language (Podesva, 2007, p. 478). According to Sicoli (2015, p.106), “such studies have value in helping us to understand the social and linguistic functions of the many voices we take up in our interactions, as well as the role that the framing of speech and social action with voice qualities may have in the evolution of human language”. More generally, exploring the meaning-making potential of a specific

voice quality builds our understanding of how a voice may be strategically manipulated and designed to achieve social meaning, and how this is constrained by popular ideology. That is, it reveals how social meaning shapes linguistic behaviour, and vice versa, which in turn can enhance our understanding of how humans, as social beings, perform the various and layered identities that constitute complex individual styles.

This thesis begins by reviewing the existing literature on creak in §2: how it is produced, how it patterns demographically, how it is perceived by listeners, and how it is used for different interactional functions by individual speakers. The direction and significance of this research is then discussed. In §3, the methods of data collection and analysis are presented. §4 details the results of the analysis, and in §5 these results are discussed with respect to the existing literature, key findings are summarized, and questions are provided to guide future inquiry in this area.

2. Background: What is creaky voice and what does it do?

Linguistic interest in creak goes back at least to the 1960's, with Catford's discussion of different phonation types in speech (Catford, 1964; as cited in Laver, 1980). Since then, it has received growing attention, especially in the field of phonetics, and more recently, in sociolinguistics. This section reviews published work on creaky voice, beginning with a phonetic description. Subsequent sections focus specifically on findings from sociolinguistic analyses—the ways that creak has been found to correlate with social categories, personae, and stances.

2.1. Articulatory and acoustic properties of creak

In order to examine the social meaning potential of creaky voice, a working definition of this vocal quality must be gleaned from the literature. In creaky voice phonation, there is high adductive tension, high medial compression, and low longitudinal tension. As a result, there is a longer duration of vocal fold adduction during the phonation cycle than in modal phonation, with only tiny bursts of air escaping between periods of adduction. In contrast, modal voice has moderate tension in all three areas (Gobl & Chasaide, 1992, p. 483), resulting in a relatively equal duration of vocal fold adduction and abduction during the phonatory cycle. The vocal folds are also relatively short and thick during creaky phonation, which contributes to a lowering of fundamental frequency, F0 (Laver, 1980, p. 123). Edmonson and Esling (2006) provide evidence that, during creaky phonation, ventricular folds cover the vocal folds, thereby further increasing vibrating mass and lowering the F0. When combined with low subglottal pressure (i.e. the air pressure below the vocal folds), the result is low, irregular vibration with very little air escaping (Gick, Wilson, & Derrick, 2013, p. 110). This irregular vibration (or, pulse-to-pulse irregularity) is in terms of both duration and amplitude, which results in greater jitter and shimmer, respectively (Drugman, Kane, & Gobl, 2014).

On average, the F0 during creaky phonation is around one quarter of a speaker's average speaking F0—too low for modal phonation to continue (Gick et al. 2013. p. 109). In fact, there is little overlap in the F0 ranges of modal and creaky voice (Hollien, 1972,

p. 9), and the low F0 of creaky voice distinguishes it from a similar rough-sounding phonation, harsh voice (Laver, 1980, p. 122). Based on previous studies summarized in Henton (1989), the typical modal F0 for U.S. English-speaking males is approximately 85-190 Hz, and approximately 140-270 Hz for U.S. English-speaking females. Blomgren, Chen, Ng, and Gilbert (1998) report that the average F0 of creaky voice, extrapolated from the literature, ranges from 20-70 Hz for both male and female speakers. In other words, although female speakers typically have an F0 range higher than that of male speakers in the modal register, there is little difference in creaky voice register (cf. Hollein & Michael, 1968, p. 602).

On the auditory level, creaky voice is perceived as a combination of a rough quality and continual, discrete taps in rapid succession, similar to the sound of corn popping, or, as described by Catford (1964) “a stick being run along a railing” (as cited in Laver, 1980, p. 122). These taps correspond to the tiny bursts of air between periods of adduction. Despite the rather tense, constricted laryngeal setting, creaky voice often has the auditory impression of being lax. As such, some prefer the term lax-creaky voice (Gobl & Ní Chasaide, 2013 p. 195).

Creaky voice may be a symptom of a voice disorder, as persistent creak is a “voice quality deviation” (Gottliebson et al. 2007, p. 703), yet as argued in Gottliebson et al. (2007), the concept of ‘voice disorder’ is difficult to exemplify, as it lacks a universally agreed upon definition. Moreover, creaky voice is a common feature of non-disordered voices (Hollien 1972, p. 9). For example, people often creak when they are tired, as the small amount of air escaping means less energy is required to breathe (Gick et al. 2013, p. 110). Because creaky voice tends to create a strained effect perceptually, certain researchers have speculated that continuous, long term use may be a hazard to vocal health (e.g. Wolk, Abdelli-Beruh, & Slavin, 2011; Gottliebson et al., 2007). However, considering the widespread use of creaky voice—linguistically, geographically, demographically, and stylistically—as outlined in the following sections, this concern seems unfounded.

2.2. Production of creak across populations

Creaky voice is a contrastive feature in multiple languages, such as several Salish and Wakashan languages (Esling, Fraser, & Harris, 2005; Bird et al., 2008; Bird, 2011) and

Zapotec languages (Sicoli, 2010; Esposito 2010). In addition to this linguistic work, creaky voice also does various kinds of social work in conversation. Though it has received much attention in the English language, it also exists as a social phenomenon in other languages (e.g. Japanese; Yuasa, 2010; and Chinese; see Callier, 2010; as cited in Podesva & Callier 2015).

Esling (1978)—perhaps the first to conduct a sociolinguistic analysis of voice quality—compares the speech of 52 male adults and children in Edinburgh. His findings indicate that creaky voice is a socially stratified variable in the Edinburgh speech community, as it indexes high social status. Predominance of creaky voice among male speakers in the UK is reported in Henton and Blandon (1988), with the additional observation that its use varies depending on which dialect of British English is spoken. In particular, it was more common among the speakers of the Modified Northern dialect than among speakers of Received Pronunciation.

A different trend has been reported in more recent work in the US, where studies have associated creaky voice not with men, but with women. For example, Yuasa (2010) examines the conversational speech of 33 relatively educated 20-30 year olds living in California, comparing the frequency of creaky voice in the speech of American women with that of American men and Japanese women. She reports that creaky voice is more frequent in the speech of young American women than it is among their male peers and Japanese women. Yuasa suggests that creak is a new type of female voice in California that is spreading across the continent (p. 331). Whether or not California is the provenance, creak is attested in the eastern US: Lefkowitz and Sicoli (2007; as cited in Sicoli, 2015) find the same gender trend among college students at a mid-Atlantic university. Podesva (2013) compares the use of creaky voice in conversation between male and female, African American and white speakers in Washington, DC. Similarly, he reports that women use creaky voice significantly more than their male counterparts, regardless of race, and with no age effect. Olivera et al. (2015) likewise report that creaky voice is present in the speech of both young and middle aged American women. These findings challenge Yuasa's assertion that it is a 'new' feature in women's speech; Podesva notes that creaky voice is the most common non-modal phonation used in conversation, comprising 19% of his speech data compared to less than 1% for other non-

modal phonations. The sum of these findings suggests that creak is neither novel nor exceptional. Claims that creaky voice is a new and pervasive phenomenon may be based on language perception rather than actual language behaviour. Both linguists and non-linguists may be subject to the Recency Illusion, where linguistic behaviour noticed recently is believed to be a recent phenomenon, and the Frequency Illusion, where linguistic behaviour noticed frequently is believed to be frequent (Zwicky, 2005). Zwicky argues these illusions are selective attention effects; in both cases, the facts of actual language use must be examined.

Abdelli-Beruh, Wolk, and Slavin (2013) examine the use of creaky voice by young American male speakers during a reading task, and compare these results to an earlier examination of creaky voice in the speech of young American women (Wolk et al. 2011). The female speakers in their sample use creaky voice four times as often as the male speakers. However, the authors point out that since both male and female speakers use creaky voice to some degree, differences in the use of creaky voice cannot be attributable to gender-related anatomical differences (Abdelli-Beruh et al. 2013, p. 188). In other words, as with other sociolinguistic variables, the patterns found in the use of creaky voice reflect the regular finding that differences between male and female speakers are not a matter of categorical usage, but frequency of usage (Labov 1990).

Creaky voice has further been associated with men who are perceived as gay (Podesva, 2007), yet precisely how creak indexes gender or sexuality remains uncertain (Becker, Kahn, & Zimman 2015). One reason for this is that relatively little work has been done with regard to the use of creak outside of heteronormative and binary gender categories. To address this gap, Becker et al. (2015) analyze a diverse sample of individuals with respect to sex and gender. They code speakers based on gender identity (man, woman, or non-binary), sex assigned at birth, and current hormonal status (that is, whether the speaker is on testosterone). They find that the highest users of creak in their data are cis women and trans men not on hormones, and the lowest users of creak are speakers who were assigned female at birth and are currently on testosterone. In other words, whether or not an individual has been exposed to testosterone is the best predictor of creak in their data, not gender or sex assignment at birth alone. Considering the many layers and intersections of social identities, attempts to describe associations of creaky

voice with any particular social group are highly complex. What can be concluded from the demographic analyses cited here is that, while higher frequencies of creaky voice are associated with different social categories in different communities, its use is not limited to these groups.

Quantitative analyses are useful for revealing widespread patterns of usage across a population, but they run the risk of implying that voice quality is a static characteristic of individuals that differentiates one group from another (Eckert, 2008, Podesva, 2013). In much of the research on creaky voice, there is a tendency to gloss over gender identity, race, and class in treating “American women” as a homogenous group, resulting in erasure of the predominantly white, heterosexual, middle-class nature of subject pools (see Sicoli, 2015). Lefkowitz and Sicoli (2007; as cited in Sicoli, 2015) find that, in addition to interspeaker variation, there is also intraspeaker variation in the use of creaky voice, where it is deployed as a register feature. Johnstone and Kiesling (2008, p. 6) argue that large-scale studies that generalize findings across a population need to be supplemented with approaches that capture the multifaceted and layered meanings of linguistic variables:

While it is often possible to find recurring semiotic relationships between linguistic variants and social meanings, the way in which a particular person will interpret a particular form is not determined by such larger-scale patterns. This is because different people experience the sociolinguistic world differently.

To uncover the full range of meaning potential for creaky voice, it is therefore necessary to dig deeper than these macro-level demographic categories into temporary roles and stances that unfold in the course of conversation (see, for example, Podesva, 2007). Large-scale quantitative studies are not sufficient for investigating the central questions of the present study. That is, To what ends may speaker choose to employ creaky voice? and What indexical associations does it have in the here-and-now as it is deployed in interaction?

A given feature may carry considerably different meanings across communities at the intersection of different identity categories. This is because, in addition to indexing social categories (such as gender or race) directly, voice quality can also index gendered

or racialized social personae (Podesva & Callier, 2015, p. 182), which are constructed within the speech community. Pennock (2005) studies the voices of three female actors—Gwyneth Paltrow, Renée Zellweger, and Reece Witherspoon—in roles that “embody positive stereotypes of femininity” in order to determine whether creaky voice is a culturally desirable feature of contemporary female speech (p. 414). He compares their portrayal of English and American characters, and reports that creaky voice is more prevalent for American roles than for British roles. He concludes that this reflects the observation that stereotypically young American women use creaky phonation more frequently than young British Women (p. 413), though no empirical evidence is cited for this observation. Moreover, the analysis examines only white women of similar ages, yet the study was framed as a comparison of American and British women in general. This assumes one hegemonic type of femininity in each locale. A final hypothesis that Pennock suggests is that these actresses, in serving as “role models” to American women, use creaky voice to enhance their desirability. He argues that desirability is dependent on cultural setting: creaky voice is a more desirable feature for women in America than in Britain.

For a former Chicana gang member from California, however, creaky voice is employed to index a persona fundamentally different from those observed for unspecified “American women”. Mendoza-Denton (2011) finds that creaky voiced is used to index a locally salient, counterhegemonic “tough girl persona”. This identity construction takes place in what Mendoza-Denton calls a “*locally defined* economy of affect” (p. 266; emphasis in original); that is, creaky voice has a meaning specific to this community, unemotional and tough, and individuals are aware of how the voice may be manipulated for emotional management. Mendoza-Denton also argues that it is the community-specific definition of creaky voice that accounts for its association with males in certain contexts and females in other contexts. One cannot, therefore, make any a priori assumptions about who uses creaky voice and how it is used in a given community based on findings from other locales. This motivates an examination of creak in a new social group, in a specific time and place.

2.3. Perceptions of creak

A fruitful and complementary avenue of research into the social meaning of linguistic variables is perceptual analysis. Exploring what different features mean for listeners may uncover the reasons that listeners, as stylistic agents, would then choose to employ or not employ a given feature in their own performances.

Gobl and Ní Chasaide (2003) asked Southern Irish speakers for their perceptions of a recorded voice that was digitally synthesized to have different voice qualities. The speaker and the message (which was in Swedish) were held constant across different qualities, and the authors report a high level of authenticity for their synthesized voices. They found that lax-creaky voice is rated as relaxed, bored, intimate, and content, and to a moderate degree, sad and friendly. These rather divergent results lead the authors to conclude, “a specific voice quality is multicoloured in terms of affect, being associated with a cluster of mostly, though not necessarily, related attributes” (p. 204).

In addition to temporary affect, creaky voice can cue various impressions related to the speaker’s sociocultural identity. Yuasa (2010) provided two samples from one of her female American speakers, one with creaky voice, and the other with minimal creaky voice, to 175 university students from California and Iowa. Participants were asked various questions regarding their impression of each sample. Results from a paired-attributes question indicate that creaky voice, when compared with the non-creaky sample, is perceived as educated, casual, and non-aggressive. Participants were also asked an open-ended question about their impression of the speaker from the creaky sample. The majority of answers evoked images of urbanity, as well as upward mobility.

While these results may reveal something about the social significance of creak, they should be taken with reservation, as the impressions are based on the speech of one woman. There may be any number of confounding features that feed into listener perceptions in addition to creak. Anderson et al. (2014) criticize Yuasa’s study both on this point, as well as on her choice to survey only university students. The results, they argue, are not generalizable. To remedy these gaps in their own study, Anderson et al. ensure as much consistency as possible between comparative recordings, and gather perceptions from a much larger and broader pool of individuals. Seven young female and seven young male speakers were recorded saying the same phrase, “Thank you for

considering me for this opportunity”, in both creaky and modal voice. In order to avoid confounding effects, the speakers were trained to accurately mimic natural sounding creaky voice. Voices were rated for attractiveness, competence, hireability, education, and trustworthiness. Overall, modal voice was strongly preferred over creaky voice for both male and female speakers, regardless of the gender and age of the listener, but female speakers with creaky voice were judged more negatively on trustworthiness than male creaky speakers. Anderson et al. find that trustworthiness has a significant influence on hireability; consequently, vocal perceptions have a larger effect on female job candidates than their male counterparts.

A question that the authors pose is that if creak is a negatively perceived feature, what is driving its increasing frequency in the speech of young women? They conclude that there must be some other kind of social benefit (unrelated to the labour market) that young women may be attempting to obtain. However, it is questionable whether a job-interview, and in particular the singular phrase used for analysis, is an appropriate and natural context for creaky voice to emerge. Negative perceptions may be due in part to the mismatch between the context and the style. Both Yuasa and Anderson et al. hypothesize that young women may be trying to compete with men by assuming a lower pitch, which presumably causes creaky phonation. These potential social benefits, and the contexts in which they are available, are the principle concern of the present study.

Perceptual analysis is a two-sided coin. On the one hand, listeners extrapolate social meanings and identity associations from phonetic cues, but on the other hand, phonetic processing is heavily influenced by listener expectations based on a speaker's gender, age and social class (Niedzelski, 1999; Hay & Drager, 2007). A perceptual analysis is therefore effective for drawing out linguistic ideologies in a speech community, as they can reveal commonly held associations (or stereotypes) of language and social identity. However, as the results from these studies are based on an average across individuals, they gloss over the variability within a community, and the different indexical form-meaning links that exist from individual to individual are obscured (Johnstone & Kiesling, 2008, p. 12). As this project is primarily concerned with situated practice, it is this variability in indexical association that is of primary interest. Previous findings of perception will therefore not be directly supported or contradicted in this

analysis, but will be considered inasmuch as they align with how and why creaky voice is deployed in different social contexts by individual participants.

2.4. Function and individual variation

Although research into the underlying meaning potential of variables is in its relative infancy, there have been a number of studies that analyze individual variation in the use of creaky voice. Speakers have been found to employ creaky voice for various functions: from organizing and managing conversations (textual functions) to communicating affect and performing contextually salient personae (interpersonal functions).

Generally speaking, creaky voice is predominant at the end of utterances (Laver, 1980; Wolk et al., 2011). This is not unexpected: at the end of utterances there is typically a falling intonation (a drop in F0) and the physiological effect of running out of breath (resulting in lower subglottal pressure). As outlined in §2.1, lower F0 and subglottal pressure are both involved in the production of creaky voice. This terminal creak is used as a floor-yielding cue in different varieties of English, such as Received Pronunciation (Laver, 1980) and American English (Wolk et al., 2011), and the same has been found for Finnish (Ogden, 2001). Recently, Lee (2015) has argued that creaky voice is also used to mark parentheticals. She suggests that this association is due to both being peripheral in nature: parentheticals are peripheral because of their tangential information; creak is peripheral because it is less voiced than modal phonation (p. 283).

Speakers have also been found to vary their use of creaky voice depending on language and task. Benoist-Lucy and Pillot-Loiseau (2013) examine creaky voice among six American women learning French, finding that creaky voice is more prevalent in spontaneous speech than in a reading task, and is also more prevalent when participants speak English than when they speak French. They hypothesize that the reduced frequency of creak in the reading task and while speaking French is due to additional cognitive weight, which creates “more vigilance for specific phonatory use” (p. 2398). They also suggest that creaky voice is more frequent in situations favouring expressivity, which accounts for its prevalence in spontaneous speech and in L1. This is supported by Podesva (2007), who finds that creaky voice contributes to the expressive performance of a diva persona by its phonatory contrast with falsetto voice, thus expanding the frequency

range from its lowest to highest register. Podesva finds that this expressivity occurs more frequently in casual contexts; thus, it is contextually conditioned.

While creak may contribute to expressivity, Laver (1980) argues that, perhaps paradoxically, when creak is used throughout an utterance, it signals “bored resignation” (p. 126). Ward (2006), in a corpus study of the contribution of voice quality to the contextual meaning of non-lexical utterances, also finds several instances of creaky voice indexing boredom. However, he finds that for the majority of tokens (38/56; 68%), creaky voice is used with non-lexical utterances to claim authority. Similarly, Lefkowitz and Sicoli (2007; as cited in Sicoli, 2015, p. 115) illustrate how a speaker of lower hierarchical status can employ creaky voice to assume an authoritative stance (for example, an undergraduate student in conversation with graduate students). Finally, several of Ward’s tokens indicate a momentary “stepping back” to take stock of a situation. This finding is further supported in Lee (2015), where parentheticals are considered not only in terms of textual information (that is, the organization of talk) but also in terms of stance. She finds that creaky voice is used by speakers to signal distance or detachment from talk, even when the utterance is not a textual parenthetical.

The body has also been found to be a predictor of creaky voice. Podesva et al. (2015) analyze the embodiment factors that correlate with creaky voice, reporting that creak is disfavoured for female speakers when they are smiling. For all speakers, creak is disfavoured when there is more body movement. An additional interactional factor is also noted: speakers creaky voice more frequently when they feel less comfortable. Podesva et al. argue that creaky voice communicates negative affect and disengagement, which supports the claims that it can be used to distance speakers from utterances.

Moving forward, we return to the question posed at the start of this discussion: what kinds of identities can be signalled through creaky voice, in what contexts, and by whom? The existing literature, while offering many insights into the social meaning of creaky voice, can answer these questions only in part. Due to the highly contextual nature of social meaning, no one finding can apply universally. Indeed, as cited in §2.2, findings from certain communities seem to contradict others (e.g. the association of creak with male speakers in the U.K. and with female speakers in the U.S.). Creaky voice is neither geographically nor linguistically constrained, and is used by different individuals to

diverse social ends (e.g. communicating “toughness” versus a “diva” persona). Exploring the functions of creak in individuals from a new, narrowly defined group of speakers may therefore expand the known social repertoire of creaky voice.

2.5. Current directions

Identity is by no means straightforward. Rather, it is complex and multilayered, encompassing “(a) macro-level demographic categories; (b) local, ethnographically specific cultural positions; and (c) temporary and interactionally specific stances and participant roles” (Bucholtz & Hall, 2005, p. 592). A large body of work in sociolinguistics addresses how an individual’s speech is comprised of multiple voices of identity (Tannen, 2007), for which some have adopted the term ‘heteroglossia’ from Bakhtin (1982). This concept will be applied here by looking beyond identity categories such as gender, race, class, and age, into the many other positions involved in the online performance of identity.

For this investigation, the search for social meaning potential is focused on the functional and identificational patterns of usage that exist in a community. That is, what is the social payout that is motivating speakers to use creak? To begin answering this question, analysis must delve into the relationship between creaky voice and situated identity construction. This requires a small-scale approach, which will enable close examination of intraspeaker variation across conversational contexts. The next section details the methodology employed to explore the question of creak and social meaning.

3. Methodology

3.1. Design

This project takes a third wave approach to variation. Creaky voice is not examined as a marker of the differences between pre-defined categories of speakers but rather, it is considered an interactional resource with social meaning potential in the construction of style. Coupland (2007, p. 24) argues that social meaning does not reside solely in linguistic forms, speech communities, or speakers' sociolinguistic experience, but that it is a situated achievement in spoken interaction. This study is therefore designed to enable a qualitative within-speaker analysis across different conversational contexts, noting the moment-by-moment shifts in use of creak and correlating contextual factors to uncover the underlying meaning potential. To yield appropriate data for this kind of analysis, a case study approach is operationalized. The case study approach is advocated by Podesva (2007), as it is useful for uncovering what motivates speakers to make stylistic choices (p. 498). As Schilling-Estes (1998, p. 55) writes:

... [previous case studies] have yielded invaluable insight into the use of stylistic variation as a means of projecting different personal identities (or facets of a single identity) at different points in a given speech event. Such insight would be obscured if the speaker under study had been grouped with a number of other speakers according to such catch-all categories as socio-economic class, gender, or ethnicity—rather than being viewed as an individual whose identity is dynamic and is constituted far more subtly than as the intersection of a number of demographic classifications.

A case study will therefore enable analysis of creaky voice as it corresponds with the “temporary and interactionally specific stances and participant roles” (Bucholtz & Hall, 2005, p. 592). Further, case studies can produce results that are generalizable, not in terms of revealing patterns of usage, but in revealing what is stylistically possible (Coupland, 2007, p. 28) in creating form-meaning associations. Thus, the case study approach allows a sensitive analysis of context, stylistic choice, and personal identity construction as the sociolinguistic world of the participants can be examined from their

own perspective. Such a situated, or phenomenological (Johnstone & Kiesling, 2008), approach will allow for complex and multifaceted meanings of creaky voice to emerge.

3.2. Participants

This study focuses on two individuals whom I have known quite well for the past 5 years, and whom I have observed to employ creaky voice to some degree in day-to-day life. I chose two subjects I know personally in order to provide detailed ethnographic information (see Hay & Drager 2007), and to aid in discerning conversational frames and contexts during analysis. The first participant, Chloe, is a white cisgender female in her late twenties. She is currently a Master's student at a seminary college in Vancouver. The second participant, Ivan, is a white cisgender male in his mid-twenties. He graduated several years ago with a degree in Mechanical Engineering, and is currently working in his field in Victoria. Both Chloe and Ivan have lived in Victoria for the majority of their lives, and have similar socioeconomic status and levels of education. They are extroverted, gregarious individuals who enjoy playful banter as well as intelligent and insightful discussion. Though they are not close friends, they are known to one another and have overlapping friend groups. To maintain confidentiality, pseudonyms are used for each participant (as well as for other interactants in the data).

Including both a female and male participant was important in order to avoid the "hall of mirrors" phenomenon described by Eckert and McConnell-Ginet (2003). This situation arises when gender differences in language are studied repeatedly, and the sheer mass of studies leads to the impression of robust findings, regardless of positive or negative results. Gendered linguistic stereotypes then become accepted as general (pp. 80-81). In other words, to add to the literature associating women and creak runs the risk of reifying the stereotype of young women and creaky voice, further fueling the policing of women's voices. Future work on this topic will be enriched by including a more diverse sample, for example in terms of gender, ethnic identity, and socioeconomic status.

3.3. Materials

The participants were each outfitted with a lavalier microphone and instructed to record audio onto their smartphones. Each had a short training session on best practices in

recording (e.g. controlling background noise, placement of the microphone). Chloe's data were recorded on an iPhone 5, and Ivan's on a Samsung Galaxy S5. Because the aim was to gather as naturalistic data as possible, the equipment needed to be unobtrusive and transportable: lavalier microphones are less obvious than headset microphones and easier to wear during meals, and smartphones are familiar and pocket-sized. The participants were also frequently in group settings where some degree of background noise was unavoidable. While this methodology does not result in pristine, laboratory quality audio recordings, the sacrifice in quality was necessary to access participants' unconstrained and unselfconscious stylistic performances as they occur online, in authentic conversational settings (see, for example, Podesva, 2007). In other words, it provides a window into real-life usage, which a laboratory setting is unable to do.

Sound files were converted to 16-bit uncompressed .WAV files. Recordings were transcribed using ELAN transcription software (Version 4.6.2, Max Planck Institute for Psycholinguistics, 2013).

3.4. Procedure

Participants were aware of the nature of the study—an investigation of the use of creaky voice. To counter any effect this knowledge might have had, I initially performed a series of pilot recordings meant to accustom the participants to the process as well as to check for sound quality. For data collection, each participant identified several upcoming events that represented a range of casual social contexts. This included family gatherings, conversations with friends, and group activities. Neither participant was able to provide a recording from a more formal, less casual context, yet the contexts varied in other respects (see §4). A sociolinguistic interview was also included, with myself as the interviewer, to provide a consistent condition between the two speakers. Aside from the interview, I was not present for the data collection. In other words, precautions were taken to ensure the interactions were as natural as possible. Consequently, contexts were not necessarily matched between participants. A total of ten events were recorded, five from each participant (see Table 1 and Table 2 in §3 for details). These individual recordings ranged from 10 to 55 minutes long.

The participants also completed a series of questions after each recording session in which they provided the following information: location, activity, relationship to

interlocutors, and personal self-assessment. The questionnaire was open-ended, allowing a broad range of responses. For the self-assessment question, several contrasting emotions were listed as examples, such as relaxed/uncomfortable, enthusiastic/bored, and engaged/distant. These were extrapolated from the previous findings cited in §2 (e.g. Laver, 1980; Gobl & Ní Chasaide, 2003; Ward, 2006; Podesva et al. 2015). Gathering this information from the participants' points of view allowed for more detailed and accurate understanding of the conversational contexts. These questionnaires also enabled comparison of contexts both within and across speakers, as the same questions were answered after each recording. The questionnaire can be found in Appendix A.

3.5. Analysis

During orthographic transcription in ELAN (Max Planck Institute for Psycholinguistics, 2013), instances of creak were identified auditorily, syllable by syllable. Criteria for identifying instances of creak were lower frequency and a rapid succession of discrete taps (§2.1). According to Hollien (1972), creaky voice can be reliably distinguished from modal voice perceptually, even by untrained listeners (p. 9), and in a study by Blomgren et al. (1998), listeners correctly identified creaky tokens 100% of the time (p. 2653). Indeed, in analyzing Chloe and Ivan's recordings auditorily, the majority of creaky syllables were clearly recognizable. Even so, I found some tokens more difficult to identify, either because of low amplitude or short duration. In these cases, which were relatively rare, I referred to the spectrogram on Praat (Boesma & Weenink, 2014). Instances of creak displayed a low fundamental frequency and irregular striations or glottal pulses. Figure 1 and Figure 2 provide the spectrogram and waveform for the word "yeah" produced in modal and creaky voice, respectively. Both are from Chloe's "Interview" recording. The striations (vertical lines in the spectrogram) and the pulses (vertical lines on the wave form), which are regular for modal "yeah" (Figure 1), are visibly irregular for creaky "yeah" (Figure 2). The pitch (horizontal blue line) is also lower for the creaky "yeah" than for modal "yeah". The voice quality in several syllables were also observed to be dynamic—modal at the beginning of the syllable and creaky at the end, or vice-versa. In these cases, because creak was present in the syllable, it was coded as creaky.

Though all instances of creak could have been identified using the waveform and spectrogram, this analysis is concerned primarily with instances of creaky voice that are perceptible to an interlocutor, as it is focused on the social meaning of creaky voice that arises during online interactions. Further, as mentioned above, the recordings were not all of sufficient quality to ensure accurate acoustic measurements. Auditory judgement was therefore preferable to using acoustic measurements.

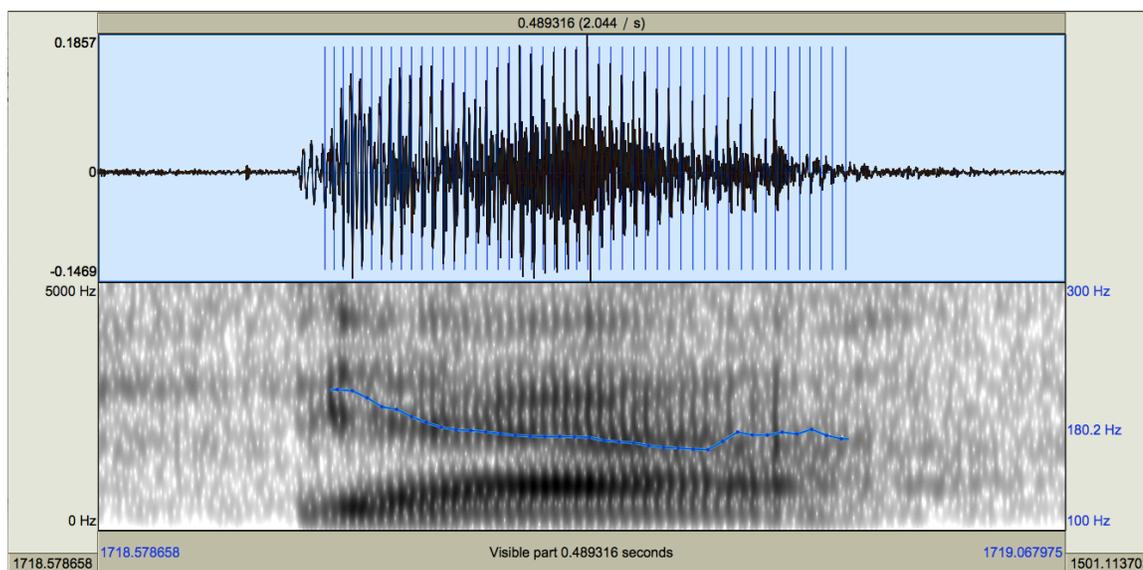


Figure 1: Spectrogram of modal "yeah" from Chloe/Interview

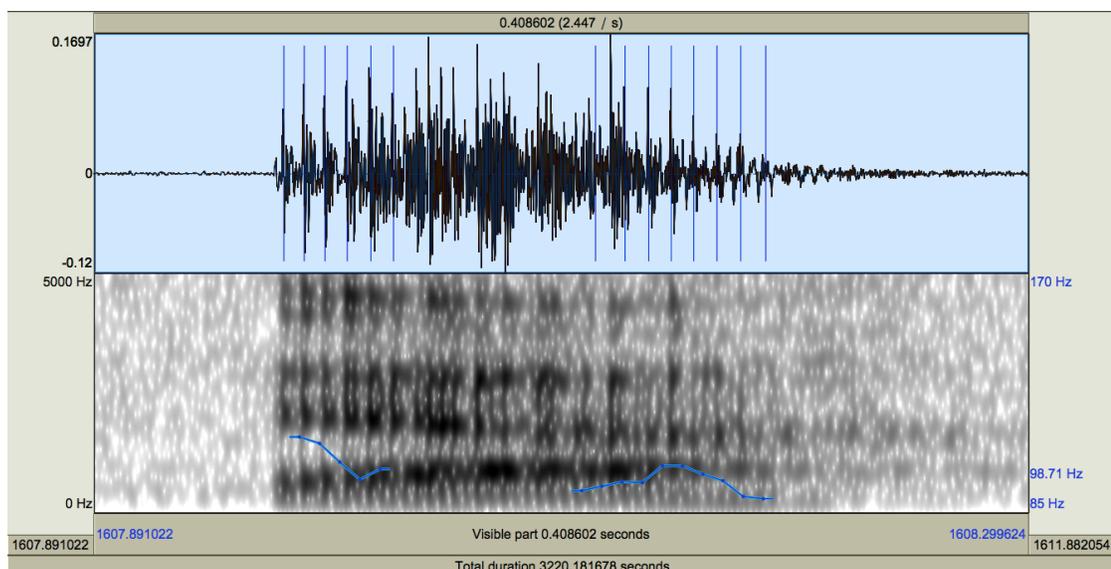


Figure 2: Spectrogram of creaky "yeah" from Chloe/Interview

Speech was next segmented into Turn-Constructional Units (TCUs), that is, where speech exhibits prosodic, syntactic, and/or pragmatic completion (Sacks, Schegloff, & Jefferson 1974). At the end of a TCU is a Turn-Relevance Place (TRP), where a transition in speakers is possible, though the current speaker may also continue to hold the floor. TCUs were coded as creaky if they contained extended creak (more than one consecutive creaky syllable), following Ogden (2001) and Lee (2015). A total of 1159 tokens of TCUs with extended creak were identified, 544 from Chloe and 615 from Ivan. A random sub-sample of these was then independently coded by another Linguistics graduate student. Inter-rater reliability was 87.5% accurate in identification of these creaky TCUs, exceeding the threshold of 80% prescribed by Clopper (2011, p. 190).

Creaky TCUs were then coded for predictability. Creak was considered predictable if it occurred at the end of a complete TCU or at a TRP, along with falling intonation, as in (1), where creak is marked by underlining. Based on findings in Laver (1980), Ogden (2001), and Wolk et al. (2010), the occurrence of creak in these instances is due to physiological factors or turn-taking conventions. Extrapolating from these findings, I also coded creak as predictable if it occurred at a transitional point in a narrative, as in (2), in a multi-syllable backchannel that is not an attempt to take the floor, as in (3), or where there was evidence of hesitation (4). Of the 1159 tokens of creak in the

dataset, a total of 268 tokens were coded as predictable, 132 from Chloe and 136 from Ivan.

(1)

1 Leah but it u-- it's not illegal to be (.)
 2 a sex /worker/
 3 Ivan /it's not illegal/ to be a sex worker
 <oh>
 4 → it's illegal to purchase sex .
 (Ivan/Girlfriend)

(2)

1 Sally I really wanna also go to Rhi-Rhi .
 2 Emily I wanna go /too/
 3 Jen /oh/
 4 Chloe /I and I ha-/
 5 Amanda w- bought a bunch of tickets for her
birthday ?
 6 Emily she d- /oh my god ;/
 7 Chloe / and s- / and she was like .
 8 "do you wanna come let me know by December
 third" ;
 9 and I was seriously thinking about it ?
 10 and then I just totally forgot .
 11 /and then December/ third rolled past ?
 12 → I was like .
 13 /"ah Rhianna" ;/
 14 Sally /that was a mistake ./
 (Chloe/Bachelor)

(3)

1 Scott {unclear} I wouldn't be surprised if I could
 actually call him up
 2 he's in he's in Hong Kong right now .
 3 Ivan→ that's cool .

4 Scott um h- and they they've done the whole
Southeast Asia thing
5 Vietnam Cambodia Thailand Philippines
Indonesia all of those places .
(Ivan/Old Friend)

(4)
1 Chloe I dunno I'm sure on the other end (.)
2 like I feel like that had more to do with what
I was doing ;
3 → and not the fact that I was l-- like in a (.)
4 Nicole /in a job .
yeah/
5 Chloe /field ?
6 you know/ ;
(Chloe/Interview)

Non-predictable creak is defined here as creaky TCUs that did not occur at a TRP, narrative transition, backchannel, hesitation or aside. For example, line 13 in (5) does not fit in any of those categories. The TCU is at the beginning of a turn which continues (though interrupted) through to line 26, and has a slightly rising intonation so it is not a TRP, a transition in the narrative, or a backchannel. It is addressed to all speakers present (as opposed to line 1, which is an aside to Mark), and shows no other evidence of hesitation. A total of 745 non-predictable tokens were identified, 338 from Chloe and 407 from Ivan.

(5)
1 Chloe {aside to Mark} oh what's that song that we
hate ?
2 Mark all of them ?
3 all of his songs ?
4 /I hate all of them ?/ [laughs]
5 Chloe /the one-/
6 Jo they're terrible
7 Chloe the one where he's like-

8 Mark every song I've heard
 9 they're catchy sometimes
 10 that {unclear} was really catchy though (.)
 11 Same Love=
 12 Chloe =Same Love
 13 → I really did not like that song ;
 14 cos like I stand behind the principles in it ;
 15 <yeah> a hundred percent .
 16 but I (.) /do not like that Macklemore/ is
 17 Jo /it just the way he does it/ [laughs]
 18 Mark /he's just like hey guys/
 19 Chloe /riding/ [laughs] on like this like –
 20 Mark /it's like it's like a different type of white
 saviour
 21 it's like a straight saviour
 22 it's straight saviour yeah/
 23 Chloe /“yeah ,
 24 I am the voice of the L-G-B-T-Q community” .
 25 it's a straight saviour ./
 26 yeah exactly .[laughs]

(Chloe/Dinner Guest)

Finally, 146 tokens, 74 from Chloe and 72 from Ivan, were coded as indeterminate, either because they were not clearly predictable or non-predictable, or because the utterances in which they occurred were incomplete. For example, several tokens occurred at a TRP where there was also an expression of stance (see §4.2). Because there was no way to determine whether the occurrence of creak was due to position or discourse function, these tokens were ambiguous. In the interest of providing a transparent, reproducible coding protocol, these tokens were not included in the quantitative analysis (§4). The creaky TCUs used for analysis thus comprised only the predictable and non-predictable tokens, which totalled 1013, 470 from Chloe and 543 from Ivan.

4. Results

The recordings from Chloe are outlined in Table 1, and those from Ivan are in Table 2. For each recording, details are provided regarding the social context, the interlocutors present, the relationship of the speaker to each interlocutor, and the speakers' self-assessment at the time of recording. The relationship and self-assessment details come from the questionnaires completed by Chloe and Ivan after each recording.

Table 1: Recordings from Chloe, with contextual information

Recording	Context	Interlocutors		Self-assessment
		Participants	Relationship	
Interview	A conversation with the researcher, a close friend of Chloe's, over Skype. Chloe is in her home.	Interviewer	Close friend	Safe Understood Relaxed Engaged
Parents	Parents are visiting from out of town, at Chloe's home before going out for dinner.	Mother	Close, but strained	Performative A bit frustrated
		Father	Close, but strained	Forced Casual Engaged
The Bachelor	Weekly hangout with close friends watching a reality TV show.	Jen Emily Sally	Close friends for the last 10 years	Safe Relaxed Animated Enthusiastic Engaged Cheerful
		Brad	Sally's boyfriend; friendly, not close	
Dinner Guest	A guest from out of town is at Chloe and Mark's house for dinner.	Jo	Distant but enjoyable friend	Obligated to host Tired Confident
		Mark	Husband, very close	Neutral (not good-humoured or irritable)
Life Group	Meeting of a community group who meet weekly to discuss life and faith.	Mark	Husband, very close	Performative Self-conscious
		Life group	14 individuals, ages 25-40 years old; some known well, others not	Tired Engaged Confident Good-humored

Table 2: Recordings from Ivan with contextual information

Recording	Context	Interlocutors		Self-Report
		Participants	Relationship	
Interview	A face-to-face conversation with the researcher at the researcher's kitchen table. The researcher's husband is in the adjoining room, but is not participating.	Researcher	Friend	Tired Relaxed Enthusiastic Nervous Good-humored
		James	Close friend; husband of researcher	
Girlfriend's House	Dinner at Ivan's girlfriend's house. A roommate is also present.	Alisha	Girlfriend; relatively recent relationship, somewhat tense at time of recording	Tired Relaxed Enthusiastic Engaged Nervous Good-humored
		Leah	Alisha's roommate; not well-known	
Old Friend	Catching up over a beer with Scott, an old friend who Ivan has not seen in some time, at Scott's house.	Scott	Old friend (the father of one of Ivan's friends from high school); close at one time but now distant	Tired Enthusiastic Engaged but distant
Family Dinner	A family dinner at Ivan's sister's house. Ivan and his family are all very close.	Mother	Very close	Animated Engaged Confident Good-humoured
		Father	Very close	
		Sister	Very close	
		Brother-in-law	Very close	
Roommate	Hanging out at home with Darcy, a roommate, at home after work.	Darcy	Close friend	Tired Emotional Relaxed Confident

As shown in the tables above, the recordings cover a range of casual contexts. All the interlocutors are familiar to Chloe and Ivan, though there are differing degrees of familiarity. Chloe and Ivan both reported a closer relationship with some interlocutors than others. There is also a range in the self-assessments reported after each interaction: for example, Chloe reported feeling tired, self-conscious, and performative in “Life

Group”, while in “The Bachelor” she reported feeling animated, safe, and relaxed. This variability is observed both within and across participants, and, as the next sections will show, it is not inconsequential.

4.1 Overall results

The overall results from each participant are shown in Table 3 and Table 4, where “Creaky TCUs” includes the predictable and non-predictable tokens. Results are displayed from highest rate of creak within a social condition to the lowest. The N column displays the total number of tokens per cell, and the % column displays the percentage of creaky TCUs out of the total number of TCUs in each recording.

The aggregate results reveal that Ivan had a slightly higher rate of creakiness overall than Chloe: 25.39% Ivan’s TCUs were overlaid with creak, while 20.71% of Chloe’s were overlaid with creak. This is consistent with findings in Podesva (2013), where creak is reported to occur 19% of the time. The kolomogorov-smirnov test was used to check that the data could be approximated by a normal distribution. Statistics were tested using an independent two sample two-tailed t-test; results were deemed significant for $p < 0.05$. Notably, the marginal difference between Chloe and Ivan’s overall frequency of creak was not found to be significant ($p = 0.15$).

Table 3: Chloe: Creaky TCUs across recordings

	Creaky TCUs		Total TCUs
	N	%	N
Parents	88	28.95	304
Life Group	58	27.49	211
Dinner Guest	115	21.30	540
Bachelor	110	21.03	523
Interview	99	14.52	682
Total/Mean:	470	20.71	2260

Table 4: Ivan: Creaky TCUs across recordings

	Creaky TCUs		Total TCUs
	N	%	N
Girlfriend	33	36.26	91
Interview	260	29.05	895
Old Friend	113	25.06	451
Roommate	75	22.06	340
Family Dinner	62	17.13	362
Total/Mean:	543	25.39	2139

The results in Tables 3 and 4 also indicate a range in the rates of creak across contexts. However, as discussed in §3.5, not all creak is the same: some tokens arise predictably due to physiological factors or turn-taking conventions, while others are not predictable. Given that the aggregate distributions conflate both kinds of creak, it is difficult to interpret the results much further. For this reason, Table 5 and Table 6 display the same results as above, but they differentiate between predictable and non-predictable creak. The % column displays the percentage of each type of creak out of the total TCUs in each recording.

Table 5: Chloe: Predictable/non-predictable creaky TCUs across recordings

	Predictable		Non-Predictable		TCUs
	N	%	N	%	N
Parents	24	7.89	64	21.05	304
Life Group	19	9.00	39	18.48	211
Dinner Guest	30	5.56	85	15.74	540
Bachelor	27	5.16	83	15.87	523
Interview	32	4.69	67	9.82	682
Total	132		338		2260
Mean±SD		5.84±1.88		14.96±4.18	

Table 6: Ivan: Predictable/non-predictable creaky TCUs across recordings

	Predictable		Non-Predictable		TCUs N
	N	%	N	%	
Girlfriend	7	7.69	28	30.77	91
Interview	64	7.15	201	22.46	895
Old Friend	26	5.76	87	19.29	451
Roommate	17	5.00	58	17.06	340
Family Dinner	22	6.08	41	11.33	362
Total	136		407		2139
Mean±SD		6.36±1.08		19.40±6.43	

Non-predictable creak is more frequent overall in this dataset, where it accounts for the majority of creaky voice tokens (745/1013; 73.5%). As shown in Table 5 and Table 6, this is reflected in the patterns of use for both Chloe and Ivan, who have a higher frequency of non-predictable creak across all social contexts. This difference is significant ($p=0.004$, $p=0.009$, respectively). Notably, the frequencies of predictable creak do not fluctuate greatly between contexts ($SD=1.88$, $SD=1.08$), nor is there a significant difference between participants. This consistency supports the claim that predictable creak is indeed a by-product of physiology and turn-taking, and is not tied to social context. The frequencies of non-predictable creak are also not significantly different between participants, though they are less consistent across contexts within participants ($SD=4.18$, $SD=6.43$). For example, the frequency of non-predictable creak for Chloe is 9.82% in “Interview” versus 21.05% in “Parents”, and for Ivan it is 11.33% in “Family Dinner” versus 30.77% in “Girlfriend”. This range of variation suggests that, unlike predictable creak, non-predictable creak may be conditioned by social context.

An examination of the social dynamics at work in the social contexts in which Chloe and Ivan used creak more frequently revealed another similarity between speakers: both used creak more frequently when they reported that they felt less close to their interlocutors (cf. Table 1, Table 2). Chloe’s highest frequency of creak occurs in “Parents”, around whom she feels “frustrated” and “performative”, and in “Life Group”, where there are several individuals that are not well known to her. Next is “Dinner Guest” and “Bachelor”, where her interlocutors are either “friendly” or “very close”. Her lowest frequency of creak occurs in “Interview”, where she is speaking with one interlocutor, the interviewer, with whom she feels “very close”. Correspondingly, Ivan’s

highest frequency of creak occurs in “Girlfriend”, where he feels “tense” with his girlfriend, and does not know the roommate well. Next are “Interview”, “Old Friend”, and “Roommate”, where Ivan reported to feel “close” to his interlocutors. Ivan’s lowest frequency of creak occurs in “Family”, where Ivan felt “very close” with all present. The parallelism of these results across the participants suggests that the frequency of creak has some relationship to the degree of intimacy between speaker and interlocutor(s), which supports the observation by Podesva et al. (2015) that speakers use more creak when they feel less comfortable. The next question, then, is what would motivate a speaker to use creak in these less intimate situations? To answer this requires an examination of the functions of creak in the data.

4.2 Functions of non-predictable creak

From this point forward, I restrict the discussion and analysis to the non-predictable uses of creak. The overall results reveal that Chloe and Ivan display similar rates of creak, and that they use it more frequently in some contexts than in others. Variable rates of creak appear to correlate with the speakers’ perceived level of intimacy (or comfort level) with interlocutors. But how exactly the social-psychological state of the speaker is connected to creaky voice remains unclear. This calls for examination of the interactional functions of creak: analyzing what Chloe and Ivan are achieving through using creak may reveal what motivates its use in less comfortable situations.

Several studies have noted the correlation of creaky voice with different kinds of stance (e.g. Mendoza-Denton, 2011; Lee, 2015; Grivicic & Nilep, 2004; as cited in Podesva, 2007). Broadly, stance is the expression of “personal feelings, attitudes, value judgements, or assessments” (Biber et al. 1999, p. 966). Du Bois (2007) explains that stance is a public action; it is something that you do with others, not something you have privately (p. 171). Stance unfolds collaboratively during communication as interlocutors call upon shared sociocultural values to evaluate objects, position themselves and others, and to align themselves with other stances (p. 163). This is achieved overtly through lexico-grammatical features, value-laden words, paralinguistic cues, or bodily gestures (Biber et al., 1999).

With this in mind, the non-predictable tokens were examined through a stancetaking lens. The following sections describe the three major types of stance that were observed to co-occur with creaky voice: epistemic, evaluative, and affective.

4.2.1 Epistemic stance

Examples (6) and (7) illustrate a recurring pattern in the data: creak tends to correspond with explanations or expressions of opinion or expertise. This is epistemic stancetaking, or the speaker's assessment of the status of the information (Biber et al., 1999, p. 966). In expressing epistemic stance, the speaker may communicate degree of certainty, actuality, precision, or limitation of the information contained in speech; or the source from which the information comes (p. 972). Biber et al. provide an inventory of common lexico-grammatical features used to express epistemic stance (e.g. *definitely, probably, sort of, in fact, I [don't] think, I [don't] know, might, may, must, according to, apparently, I've heard*, etc.). These, along with synonymous features, were used to code non-predictable creaky TCUs for epistemicity. Evidence of epistemic stance also included certain instances of reported speech (following Clift, 2006), tag questions (following Keisanen, 2007), generalizations (following Scheibmann, 2007) and evidentials. While some authors make a distinction between epistemicity (the speaker's commitment to the information in the proposition) and evidentiality (the source of information in the proposition), authors such as Chafe and Nichols (1986) and Biber et al. (1999) treat evidentiality as part of epistemicity, which I have followed. Biber et al. (1999) find that epistemic markers are the most common type of stance markers overall in written and spoken English.

Example (6) is from the recording "Old friend". Ivan is talking with Scott about a mutual friend, Sean, whom neither has seen in a long time. Earlier in the conversation, Scott was telling Ivan what Sean has been doing over the past several years (making documentaries), and Ivan responded with surprise, claiming that he "just never got" Sean. In this excerpt, Ivan describes how he can understand his other friends and the directions their lives will take, but he cannot understand Sean.

(6)

1 Ivan all of my good friends I could point
directions for them .

2 → you know I could say you're probably going to
go this way .

3 you might not ,

4 → but you probably are .

5 you know ?

6 but him I could ne-

7 I could not give him a direction .

8 → I had no clue what he was gonna do .

9 → and what his direction is ,

10 → and what he's tryna pursue ,

11 (I just don't know it .)

(Ivan/Old friend)

In line 1, Ivan claims that he can “point directions” for all of his friends; that is, he believes he can predict what kind of career paths they will take. Ivan conveys this with a sense of certainty—this claim contains no lexico-grammatical epistemic markers whatsoever, which is a common way of taking an epistemic stance of certainty (Keisling, 2005, p. 23). This first line is also overlaid with creak. Next, Ivan reiterates this knowledge claim in lines 2-4, though with less certainty. Ivan states he can predict the direction his friends (referred to by the generic “you”) will “probably” take (line 2). He adds a hedge which concedes that his friends “might not” follow the direction he has predicted (line 3), but he maintains that they “probably” will (line 4). Creaky voice overlays lines 2 and 4, where Ivan is expressing a limited degree of certainty with the adverb “probably”. Notably, his concession that his prediction may be wrong (line 3) is modal, not creaky. Line 3 is thus contrasted with lines 2 and 4 in terms of semantics (lines 2 and 4 claim knowledge, line 3 hedges this claim), and voice quality. In lines 6-11, Ivan explains that, unlike his other friends, he cannot predict the path Sean will take. He explicitly states a complete lack of knowledge in line 8 (“I had no clue”) of several aspects of Sean’s life: what he’s going to do (line 8), the direction his life will take (line

9), and the things that he is pursuing (line 10). These lines are also overlaid with creak. Thus, creaky voice is observed to co-occur with expressions of certain knowledge (line 1), limited knowledge (lines 2, 4), and complete lack of knowledge (lines 8-10).

Example (7) is from “Parents”, where Chloe and her parents are having tea at her house. Her dad has asked her to explain how to use an Aeropress coffee maker, which Chloe has recently acquired. Chloe proceeds to demonstrate the process for her mom and dad.

(7)

1 Chloe so this is an Aeropress filter ?
 2 Dad oh there we are
 3 Chloe and it goes in here ?
 4 → and then you pour a little bit of hot water
 through there to get it to stick ? <yeah>
 5 and then this is the Aeropress chamber ?
 6 and so what you do is (.)
 7 → you attach it like this ?
 8 um .
 9 → you put the coffee grounds in
 10 you pour hot water in
 11 you let it sit for hhh about two to three
 minutes ?
 12 and then so the coffee .
 13 this is--
 14 this doesn't--
 15 it doesn't leak down through there ? <oh
 okay>
 16 → because there's a stopper right there ?
 <yeah>
 17 → and the coffee sort of blooms ,
 18 and uh whatnot ,
 19 → and then after about two and a half three
minutes ?
 20 you (.)
 21 → this is stuck to this ? <mm-hm>
 22 I'll just waste it- one and show you .

23 → so you do that and it's stuck like there ?
 24 and so then the coffee's blooming ,
 25 → go like this ,
 26 and then over a--
 27 → you flip it like this ,
 28 and then you po- push down ? <oh>
 29 Dad so it makes a cup
 30 Chloe and it makes a--
 31 yeah it--
 32 usually a single cup . <oh yeah> <huh>
 (Chloe/Parents)

In Chloe's explanation of the Aeropress, her speech had noticeably more creak than in other parts of the recording: of Chloe's 30 lines in this sequence, 10 of these contained non-predictable creak. This was a markedly higher frequency than observed elsewhere in the recording. Throughout this sequence, a high degree of precision is indicated, as Chloe is physically demonstrating the process. The creaky tokens in the sequence co-occur with a general "you" (lines 4, 7, 9, 23, 25) and rising intonation (lines 4, 7, 16, 19, 21, 23), by which Chloe maintains a connection with her audience, acting as kind of expert guide. While the majority of the sequence conveys precision, in line 17, creak conversely co-occurs with a lack of precision: "the coffee *sort of* blooms". In both cases, increased precision or decreased precision, Chloe is communicating her assessment of the information that she is providing. Thus, creaky voice is observed to co-occur with epistemic stancetaking across the spectrum, whether the information expressed certain or uncertain, precise or imprecise.

Coding for epistemicity in this way (identifying lexico-grammatical features of epistemicity identified in existing literature) resulted in 341 tokens, 151 from Chloe and 190 from Ivan, which accounted for 45.77% of the number of non-predictable tokens.

4.2.2 Evaluative stance

Examples (8) and (9) display evaluative stancetaking, where "a stancetaker orients to an object of stance and characterizes it as having some specific quality or value" (Du Bois, 2007, p. 143). Example (8) comes from "Interview (Chloe)", when Chloe is describing

her experience at seminary. In the preceding conversation, she has negatively evaluated other participants in her discussion groups, though she stated she feels bad doing so.

(8)

1 Chloe I feel like there's one or two other people in
the group who are frustrated sort of alongside
me ? <mm>
2 but yeah .
3 there's yeah .
4 → like there's just some dumb people in my
discussion group and .
5 sorry . [laughs] <it's okay>
6 for saying that .

(Chloe/Interview)

Line 4 shows an evaluative word (“dumb”) being applied to an object (people in Chloe’s discussion group). A long stretch of creak overlays this negative evaluation, which is followed by a transition into modal voice in lines 5 and 6, where Chloe apologizes for her stance.

Not all instances of evaluation are negative, however. In example (9), from “Roommate”, Ivan and his roommate, Darcy, are looking at her OK Cupid account on her computer. Ivan is unfamiliar with the website, and Darcy is explaining how it works.

(9)

1 Ivan so how do you--
2 how do you fill this out
3 → this is fascinating ,
4 do you mind if I ask these questions ? [D:
laughs]
5 like do you just like fill in a list ?
6 Darcy um there was like sections ?
7 so .
8 hm (.) where's my profile ?

9 let's look at mine I don't remember what I
 wrote anymore .

(Ivan/Roommate)

In line 3, the evaluative term “fascinating” is used by Ivan characterize the process of setting up an OK Cupid profile. Once again, the evaluation occurs simultaneously with an instance of extended creak, while the surrounding talk is in modal voice. 131 tokens were coded as evaluative, or 17.58% of the non-predictable tokens.

4.2.3 Affective stance

A third type of stancetaking was observed in the data, shown in (10) and (11): affective stance. In taking an affective stance, speakers communicate specific aspects of their own feelings (Du Bois, 2007, p. 152). In these cases, there is overt expression of the first person subject, along with an affective adjective (e.g. *glad*, *upset*, etc.) or verb (e.g. *like*, *hate*, etc.). Biber et al. (1999) combine evaluation and affective stancetaking in an “Attitudinal” category, while Du Bois (2007) combines affect and epistemic into a “Positioning” category. Because each type of stancetaking could be independently defined, and there were sizable token numbers for each, they have been considered as separate categories in this analysis.

Example (10) is taken from “Dinner guest”. Chloe, her husband Mark, and their mutual friend Jo are discussing music, and Jo has been mocking a new album by the popular rapper, Macklemore. In the interaction preceding this excerpt, all three individuals have negatively assessed Macklemore, and in particular his lyrics, which Chloe has called “trite”. The following excerpt is a discussion of the song “Same Love”:

(10)

1 Chloe it's better than his ,
2 oh what's that song that we hate ?
3 Mark all of them ?
4 all of his songs ?
5 /I hate all of them ?/ [laughs]
6 Chloe /the one-/
7 Jo they're terrible

8 Chloe the one where he's like-
 9 Mark every song I've heard
 10 they're catchy sometimes
 11 /that {unclear} was really catchy though/
 12 Chloe /the one where he like markets/
 himself as an ally of gay people ?
 13 Mark Same Love=
 14 Chloe =Same Love
 15 → I really did not like that song ;
 16 cos like I stand behind the principles in it ;
 17 <yeah> a hundred percent .
 18 but I (.) /do not like that Macklemore/ is
 19 Jo /it just the way he does it/[laughs]
 20 Mark /he's just like hey guys/
 21 Chloe /riding/ [laughs] on like this like--
 22 Mark /it's like it's like a different type of white
 saviour
 23 it's like a straight saviour
 24 it's straight saviour yeah/
 25 Chloe /“yeah ,
 26 I am the voice of the L-G-B-T-Q community” .
 27 it's a straight saviour ./
 28 yeah exactly .[laughs]

(Chloe/Dinner Guest)

In line 15, Chloe explicitly states her feelings toward the song. The first person personal pronoun “I” and the affective verb “don’t like” position the subject, Chloe, along an affective scale regarding a specific object, the song Same Love, constituting an expression of affective stance (DuBois, 2007, 152). This position is intensified by adverb “really”. The last 4 words of the clause are overlaid with creak, even though this creak is not predictable: there is a slight rise in pitch, and Chloe maintains the floor, following immediately with an explanation for her opinion. After this statement, she switches into modal voice. Line 15, then, shows a correspondence of creaky voice and affective stance. Though line 2 also constitutes an affective stance—there is a subject, “we”, an affective verb, “hate”, and an object “that song”—this utterance is also an aside. Line 1 is directed at both Jo and Mark, while line 2 is directed just to Mark, departing from the group

conversation that precedes and follows it. This line was coded as a parenthetical, which is described in the following section.

Example (11) is taken from “Family”. Ivan, his parents, his sister, and his brother-in-law are talking after dinner, and Ivan tells them about recently watching the movie Tombstone.

(11)

- 1 Ivan oh I even watched this western movie recently
?
- 2 I'm really into western things right now .
<yeah ?>
- 3 and um .
- 4 my new favourite quote ?
- 5 <mm-hm?> is (.)
- 6 Bro {distortion} wait for it
- 7 Ivan is .
- 8 {growly voice} are you gonna do something
about it ,
- 9 or are you gonna stand there and bleed .
[laughter]
- 10 → I love that . <great>
- 11 yeah .
- 12 cos he there's this--
- 13 Dad where'd that come from ?
- 14 Ivan uh Tombstone .
- 15 {growly voice} Tombstone . [laughter]
- (Ivan/Family Dinner)

Affective stance taking is observed in line 10. The subject, “I”, is placed on an affective scale by the verb “love” with respect to an object, “that”, the referent of which is the quote in lines 8 and 9. The affective statement is overlaid with creak, which Ivan transitions into from the growly voice used for the quote (lines 8 and 9), and out of into modal voice for his explanation in line 12 (which is cut off by his dad’s question). Again,

a correspondence between creaky voice and affective stancetaking is observed. In total, 117 tokens were coded as affective, or 15.70% of the non-predictable tokens.

4.2.4 Parentheticals

Finally, there were a number of tokens that did not correlate with stancetaking moves. As reported in Lee (2015), creaky voice may be used to mark parenthetical information in talk. I identified the remaining tokens that co-occurred with parentheticals in which there was no expression of stance. Tokens included off-the-record comments, tangential or pre-emptive information, inner thoughts (following Lee, 2015), as well as asides. An example of a parenthetical TCU is in (12), where Ivan interrupts his narrative, temporarily departing from the reported speech in line 2 mid-sentence, to provide additional contextual information in line 3, that is, that he is relaying a conversation with Jack. This parenthetical utterance is overlaid with creak, as is the transition back into the narrative in line 4, which is a repetition of line 2 “I said”.

(12)

1 [sighs] I asked Jack Watson this question .
 {21 lines omitted}
 23 Ivan and uh
 24 and I said well I think you need some sort of
 um .
 25 → this is just my conversation with Jack ? <mm-
 hm>
 26 but I said (.)
 27 I think you need some sort of base um .
 28 similarities in regards to enjoying similar
 things in life . <mm-hm>
 29 you know ?<mm-hm>

(Ivan/Interview)

There were a total of 114 parenthetical tokens in the data, or 15.30% of the non-predictable creaky tokens. 4.3 Creaky voice as an interactional resource

The non-predictable tokens were coded as having functions that were epistemic (341/745; 45.77%), evaluative (131/745; 17.58%), affective (117/745; 15.70%), and parenthetical

(114/745; 15.30%). An additional 42 tokens were coded for functions that accounted for less than 1% of the non-predictable tokens, such as style of speaking stance, where the speaker comments on the communication itself (Biber et al., 1999, p. 975). These were combined and coded as Other. Also included in the Other category were tokens where more than one stance was expressed. The Other category is thus tokens that were clearly non-predictable (cf. Indeterminate), yet had a function that was too rare or ambiguous.

Table 7 and Table 8 display the distribution of non-predictable tokens by function for Chloe and Ivan, respectively. The recordings are each displayed in a separate column, with overall results for each function displayed in the rightmost column. The % rows display the percentage of tokens of each function out of the total number of non-predictable tokens for each recording (the bottom row). Recordings are ordered from highest to lowest frequency of non-predictable creak (from Table 5 and Table 6). Crucially, no significant differences were found between participants in the overall percentages any function: epistemic ($p=0.80$), evaluation ($p=0.17$), affect ($p=0.78$), parenthetical ($p=0.20$), or other ($p=0.44$). For the most frequent function, epistemicity, there is even a striking similarity in the range of frequencies, 39.76%-56.25% for Chloe, and 37.93%-57.69% for Ivan. Overall, Chloe and Ivan are using creaky voice at the same rates for the same purposes, despite their gender difference.

Table 7: Chloe: Functional distribution of non-predictable tokens across contexts

		Parents	Life Group	Bachelor	Dinner Guest	Interview	Total/Mean
Epistemic	N	36	20	33	35	27	151
	%	56.25	51.28	39.76	41.18	40.30	44.67
Evaluation	N	4	7	20	5	15	51
	%	6.25	17.95	24.10	5.88	22.39	15.09
Affect	N	7	2	13	24	8	54
	%	10.94	5.13	15.66	28.24	11.94	15.98
Parenthetical	N	15	7	14	15	11	62
	%	23.44	17.95	16.87	17.65	16.42	18.34
Other	N	2	3	3	6	6	20
	%	3.13	7.69	3.61	7.06	8.96	5.92
Non-Predictable	N	64	39	83	85	67	338

Table 8: Ivan: Functional distribution of non-predictable tokens across contexts

		Girlfriend	Interview	Old Friend	Roommate	Family Dinner	Total/Mean
Epistemic	N	14	93	43	22	17	189
	%	53.85	47.45	49.43	37.93	42.50	46.44
Evaluation	N	8	34	16	11	11	80
	%	30.77	17.35	18.39	18.97	27.50	19.66
Affect	N	2	39	8	8	6	63
	%	7.69	19.90	9.20	13.79	15.00	15.48
Parenthetical	N	0	19	15	14	4	52
	%	0.00	9.69	17.24	24.14	10.00	12.78
Other	N	2	11	5	3	2	23
	%	11.54	5.61	5.75	5.17	5.00	5.65
Non-Predictable	N	26	196	87	58	40	407

4.3.1 Creaky voice and epistemicity

While the gender of each speaker has no observable effect on the use of creaky voice overall in these data, what does appear to condition its frequency and function is social context (§4.1), which in turn reflects the social-psychological state of the speaker. The more relaxed the speaker is with respect to their audience, the less frequent the use of creaky voice, and vice versa. Yet within this overarching structure, discourse function also constrains creaky voice. The analysis of function, as shown in Table 7 and Table 8, reveals that across all contexts for both participants, epistemic tokens outnumbered all other tokens. Further, both Chloe and Ivan had a significantly higher frequency of epistemic tokens than any other function ($p \leq 0.001$), which reflects the finding that it is the most frequent type of stancetaking in general (Biber et al. 1999, pp 972-974). This is displayed in Figure 3 and Figure 4, which display the functional distribution of tokens in each recording, based on the percentages found in Table 7 and Table 8. The number and overall percentage of non-predictable tokens from each recording is also displayed (from

Table 5 and Table 6). Again, the order of recordings is based on the frequency of non-predictable creak, with the highest on the left and the lowest on the right.

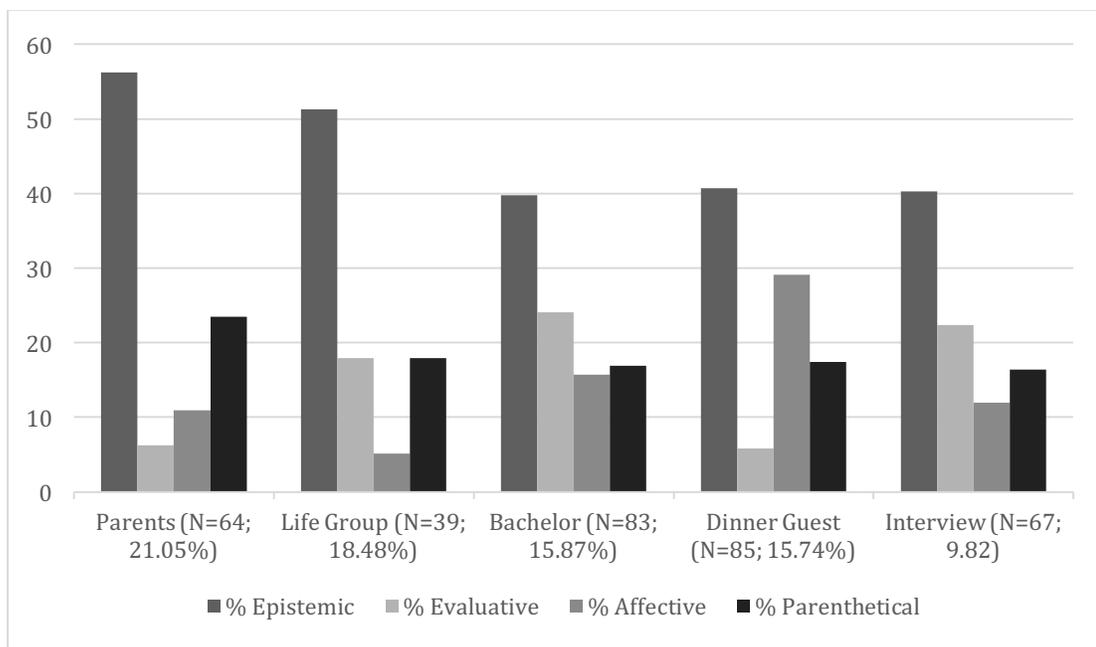


Figure 3: Chloe: Frequency of functions of non-predictable creak across contexts

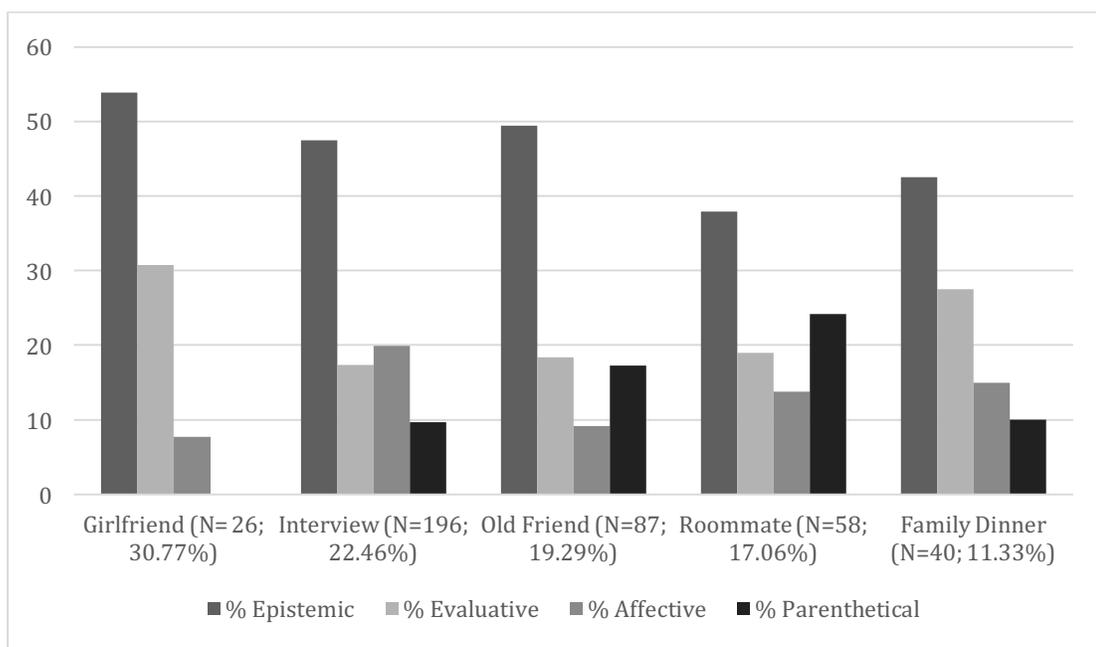


Figure 4: Ivan: Frequency of functions of non-predictable creak across contexts

The results in Figure 3 and Figure 4 show that epistemic tokens have the highest frequency for both speakers in all recordings. Even so, there is differentiation among contexts. The above figures illustrate that in social contexts where non-predictable creak was found to occur more frequently (e.g. “Parents” for Chloe and “Girlfriend” for Ivan) a higher proportion of this creak co-occurs with epistemic stancetaking (56.25% and 57.69%, respectively). Further, moving rightwards on each chart, as the frequency of non-predictable tokens decreases (and, correspondingly, the level of perceived intimacy increases), the proportion of non-predictable creak that is epistemic also tends to decrease. It appears, then, that the epistemic function is driving the overall frequency of non-predictable creak in each context.

The functional distribution of non-predictable tokens therefore suggests that creaky voice is an interactional resource, which is available for speakers to place themselves along an epistemic scale regarding the content of their speech. It is not creak alone that indexes stance, but rather a co-occurrence of features which, bundled together, create a linguistic style (Kiesling, 2005, p. 30). Creak has been observed to create a phonatory effect of peripherality, which enables its use as a marker of both textually parenthetical information and a speaker’s momentary detachment or distancing from talk (Lee, 2015, p. 280). Ward (2006) and Lee (2015) argue that creaky voice comes to index stance as it cues a speaker’s “stepping back” from talk in order to make some kind of assessment. This is indeed born out in the data: as seen in the examples in §4.2, creak can combine with adverbs, evaluative and affective verbs, tag questions, intonation, and other features which index a variety of stances. In particular, these features bundled with creaky voice indexed an epistemic stance.

For both participants, creaky voice co-occurs with epistemic stancetaking on both ends of the scale. That is, creaky voice is used as speakers present themselves as either more knowledgeable or more ignorant. Examples (13-16) come from the interviews from both participants, and the recordings with family members. A token of each reduced and increased epistemicity from each recording are provided.

Example (13) is from Ivan's "Interview". Ivan is describing his roommates, Karmen and James, who are a couple. Karmen is extroverted and James is introverted, a dynamic to which the interviewer attempts to relate:

(13)

1 Ivan I <hm> th- they're interesting
 2 cos they're very far ,
 3 um Karmen loves people ?
 4 and James (not so much)
 5 so ar- extrovert introvert . <mm>
 6 and=
 7 Int. =I feel that=
 8 Ivan =I d-
 9 + → yeah but I think she's more extroverted than you ; <mm> .
 10 so . <wow>
 11 - → maybe I don't know you ver- very well in that regard .
 (Ivan/Interview)

In line 9, Ivan marks his opinion with "I think", and expresses it with certainty. There is no hedge or limitation on this statement, and it co-occurs with extended creak. However, after a potential completion of his turn with a final "so" in line 10, he adds a hedge as an afterthought in line 11. Here, he states that perhaps he does not know the interviewer well enough to make this judgement. In this utterance there is a combination of a limiting term "maybe" with an indication of lack of knowledge, again with corresponding creak.

In example (14) from "Family Dinner", Ivan is describing a recent phenomenon in fast food. He is describing the extreme combinations of items that is becoming more and more popular in restaurants.

(14)

1 Ivan you know they have all these fast food things right now
 where they're kind of like ,
 2 not normal sort of thing ? <yeah>
 3 like they just (.)

4 + → put two things together you wouldn't normally think of
being together ?
5 sort of thing ?
6 Dad no I don't {unclear}
7 Ivan okay .
8 guess you don't know fast food restaurants enough
9 - → I don't really know about it either ,
10 but I just know it's a thing .

(Ivan/Family Dinner)

In line 4, as Ivan is attempting to explain the trend to his dad, the combination of rising intonation, the general “you”, and the adverb “normally” are used along with creaky voice to communication that what Ivan is trying to explain is general knowledge. When Ivan’s dad does not understand what Ivan is talking about (line 6), Ivan excuses this with a suggestion that his dad is not familiar with these kinds of restaurants (“guess you don’t know fast food restaurants enough”, line 8). Perhaps in a face-saving move, Ivan aligns himself with his dad, disclaiming knowledge of fast food restaurants for himself as well (line 9) with an explicit statement of reduced epistemicity, “I don’t really know”. This statement co-occurs with creaky voice.

Example (15), from Chloe’s “Interview”, comes from a discussion about having children (Chloe does not have any, but is planning to in the future). She has been discussing the fact that her parents (the referent of “they” in the excerpt) will be older than most grandparents if she has children when she plans to.

(15)

1 Chloe yeah like they're gonna like ,
2 they're probably gonna die when
3 their grandkid is like ,
4 - → I dunno like (.)
5 five .
6 if I don't have kids till I'm thirty-five , <right> .
7 and then th-- their grandkid's five when I'm forty,
8 they'll be (.)
9 eighty .

10 + → and like that's around the time that my dad's parents died ?
 11 so . <mm>
 12 who knows ?

(Chloe/Interview)

In line 4, creak overlays a statement that indicates a lack of precision: “I dunno” and “like” both suggest that the age “five” (line 5) is an approximation. In line 10, extended creak is observed again, this time with increased epistemicity as Chloe is explaining a situation she lived through (Kiesling 2005, p. 23).

The final example is from “Parents”. Chloe’s mom has asked her what kinds of things Mark (Chloe’s husband), is allergic to.

(16)

1 Chloe /no I think/ pine trees are fine ,
 2 I think the dirt is fine ,
 3 mostly just the like=
 4 Mom =animals
 5 Chloe animals and (.)
 6 + → the grasses and stuff /like that ./
 7 Mom /like chickens/ and stuff like that
 could (.)
 8 Chloe chickens might be fine ,
 9 - → don't know if he's ever spent much time around chickens .

(Chloe/Parents)

In line 6, creaky voice occurs as Chloe is telling her mom what Mark is allergic to: she lists “animals” (line 5), and “grasses” (line 6), and then a general extender “and stuff like that”. The general extender in this case is used to increase epistemicity: Chloe indicates that her mom knows the kinds of things that go along with animals and grasses when it comes to allergies, and in this way appeals to shared knowledge. In line 9, creak occurs again with an overt marker of lack of knowledge “don’t know”.

The above examples illustrate that creak is a device that speakers can draw upon to mark a subjective positioning towards information in general, that is, increased or

decreased epistemicity. Kiesling (2005) ties the creation of epistemic stance to authoritative positioning:

By authoritative, I mean that in some way the speaker is creating an epistemic stance in which the information that they are asserting is somehow presented in an authoritative manner, either because they have seen events, lived through them, or simply indicate that they are certain about what they are saying..." (p. 23)

This authoritative manner is observed in the data provided above and in §4.2.1. I would argue that this also applies to the instances where the speakers indicate they are less certain about what they are saying. In both cases, the speaker is relaying information to others, and by their epistemic assessment, are taking responsibility for the reliability of that information. Thus, there is an implicit request that interlocutors accept the speaker's assessment of the information, whether it be one of certainty or doubtfulness. The findings therefore suggest that, among its social repertoire, creak has the potential to serve as an interactional resource for taking an authoritative position.

There also appears to be contextual variability within speakers for the evaluative, affective, and parenthetical functions as displayed in Table 7 and Table 8 (e.g. for Chloe, evaluative stance tokens are 6.25% in "Parents" and 24.10% in "Bachelor"). However, many cells for these functions contain fewer than 10 tokens. While 30 tokens per cell is preferable for reliable observations and statistical testing (see, for example, Guy, 1980; Guy, 1993), if this cannot be attained, cells should contain at least 10 tokens. When tokens per cell dips below 10, there is a high likelihood of random fluctuation (Tagliamonte, 2016, p. 14). Hence, there is a promising avenue of inquiry regarding these other functions of creak, but more data is needed than what is currently available here.

4.3.2 Creaky voice and identity

The repeated use of creaky voice when taking an epistemic stance leads to its connection with an authoritative style. This process is described by Johnson (2007): "[P]articulate linguistic features available in a speaker's sociolinguistic environment can be used for stancetaking, and sets of co-occurring stancetaking features can come together as styles that index identities" (p. 55). This means that identity is not a static quality that exists outside of social interactions, but emerges through repeated stancetaking moves; that is, it

is an interactional achievement. As a speaker uses features to index stance in an interaction, speakers are cast into categories (both by themselves and interlocutors) that amount to identities (p. 52). In the case studies examined here, Chloe and Ivan repeatedly use creaky voice to “step-back” in order to take a stance towards their speech content. In combination with other features that index epistemicity, a style is created that indexes an authoritative style. This association between creaky voice and authority was also reported by Ward (2007) and Lefkowitz and Sicoli (2007).

The motivation for this authoritative positioning can be deduced by considering the contexts where it was most prevalent. As shown in §4.1, the frequency of creak is related to the level of intimacy that participants reported to have with their interlocutors. This explains why seemingly similar contexts produced quite different results for Chloe and Ivan: Chloe felt less intimately connected to her parents and more intimately connected to the interviewer than Ivan and thus, in the contexts involving family, Chloe had her highest frequency of creak and Ivan had his lowest, and in the interview context, Chloe had her lowest frequency of creak and Ivan had his second highest. Both Chloe and Ivan had more frequent creak when they felt less close (or, intimately connected) to their audiences. This corroborates findings reported in Podesva et al. (2015), where creaky voice is found to be more frequent when participants are less comfortable. Kiesling (2005) argues that “all linguistic patterns of use arise from decisions people make in interaction when they are talking to a real person and thinking about “who they are” in relation to that person or people” (p. 21). Having a lower level of intimacy with interlocutors means that Chloe and Ivan are less certain of “who they are” in interaction, and this uncertainty is mitigated by asserting an authoritative identity through epistemic stancetaking. This stancetaking has been shown to correlate with creaky voice.

Speakers will take different stances towards their interlocutors based on their relationship. The contextual variability of Chloe and Ivan’s speech highlights the argument that “there is no ideal speaker-hearer” (Kiesling, 2005, p. 34); that is, there is no neutral context where all speakers will behave in a similar manner. This has specific implications for results drawn from large-scale sociolinguistic inquiries. The object of many sociolinguistic investigations is the vernacular, or the most natural and least self-conscious speech of individuals. The sociolinguistic interview was conceived in order to

tap the vernacular in an artificial setting. Yet results here show that the interview setting did not affect speakers' behaviour in the same way. The results in Table 9 and Table 10 compare the frequency of non-predictable creak in the interview recording with the mean frequency of non-predictable creak across recordings.

Table 9: Chloe: Interview results compared to mean results

	Non-Predictable		TCUs
	N	%	N
Interview	65	9.53	682
Total	334		2260
Mean±SD	14.78±4.17		

Table 10: Ivan: Interview results compared to mean results

	Non-Predictable		TCUs
	N	%	N
Interview	201	22.46	895
Total	407		2139
Mean±SD	19.40±6.43		

The frequency of non-predictable creak in the interview recording and the mean are rather different for both speakers. For Chloe, the frequency of non-predictable creak is less in the interview than her overall mean, and for Ivan it is greater than his overall mean. Taking the results from the interviews alone, it would appear that Ivan uses a substantially higher frequency of creaky voice than Chloe does (22.46% compared to 9.53%, respectively). Yet, when the results were considered across contexts, no significant difference was found in the frequency of creak between the two speakers. Further, the topics of conversation were similar in each recording: both participants discussed their future plans, recounted experiences travelling, and shared their thoughts on relationships and family. As neither context nor conversational themes appeared to constrain the use of creak, the only apparent difference between the two speakers is how close they felt to their interlocutor, which in turn corresponds to how at ease each felt in the interaction. Since Chloe and Ivan reported a different level of intimacy with the

interviewer (myself), each had a different need to establish an authoritative position, which directly affected the rate of non-predictable creak.

Contrary to expectations then, the setting that was deliberately included to provide a consistent condition between the speakers proved to be one of the most inconsistent, interspeaker contexts. The fact that “perceived intimacy” would be a factor constraining creak was not foreseen during experimental design. This emphasizes the fact that the vernacular is not a monolith; natural speech varies depending on context and temporary identity constructions. To treat sociolinguistic interviews as an accurate and definitive reflection of an individual’s everyday pattern of speaking is therefore to ignore this contextual variability. Including an array of contexts for each speaker, where frequency of creak varied considerably, allowed for a more accurate representation of each speaker’s average frequency of creaky voice. Further, obtaining the subjective impressions of each participant after recordings allowed the sociolinguistic world to be observed from each participant’s point of view. These results reinforce the value of a case study approach for exploring how an individual’s speech varies across contexts, and what aspects of context are constraining that variation (cf. Schilling-Estes, 1998; Coupland, 2007; Podesva, 2007).

5. Discussion and Conclusion

A direct connection between ‘female’ and creaky voice was not observed in this analysis. The absence of any effect of gender, in the form of interspeaker differences in this case study, goes against both popular linguistic beliefs about creaky voice (as discussed in the introduction) and findings from several linguistic studies (e.g. Yuasa, 2010; Wolk et al. 2013). Despite the constrained size of the study, the similarity between the two participants was striking. No significant differences were uncovered regardless of how the data were configured: the frequency of overall creak, the frequency of predictable creak and non-predictable creak, and the overall distribution of functions were all similar between Chloe and Ivan. Such findings suggest that Chloe and Ivan’s use of creaky voice has less to do with their difference in gender, and more to do with their shared characteristics. They are in the same age group, of the same ethnic background, in the same socio-economic class, and from the same city. While they themselves are not close friends, they are known to each other and their social networks overlap. Further, this analysis revealed that both Chloe and Ivan use creak to establish an authoritative voice of identity in interaction—Bakhtin’s “heteroglossia” at work. As argued in Johnstone (2007, p. 54), identity may at times have a closer correlation to variation than other social factors like age, occupation, or residence. Thus, Chloe and Ivan’s similar use of creaky voice may also be explained by their common strategy of indexing an authoritative identity through their shared economy of affect (cf. Mendoza-Denton, 2011).

The results from this investigation thus highlight the problem of the a priori association between women and creak that is observed in several sociolinguistic studies. Analyses which start out with the observation that women “seem” to use more creaky voice than men, and then proceed to examine only women, implicitly add currency to misguided claims associating women and creak (Eckert and McConnell-Ginet’s “hall of mirrors” effect). What is more, they may overlook the stylistic potential that is available for all speakers. The findings here show that creaky voice is an interactional resource which can be deployed by speakers, regardless of gender, for epistemic stancetaking and the construction of an authoritative identity. Though no broad statements can be made

from this case study, the results provide a compelling point of departure for future studies: Is the criticism levelled at young women for the use of creaky voice based on actual phonatory use, or does it have more to do with how creak is being used? Future perceptual analyses of creak will benefit from examining how its interactional and identificational functions impact listeners' interpretations.

Because of the small scale of the approach employed here, results cannot be generalized across the community. Aside from their difference in gender, Chloe and Ivan are from very homogenous social categories, so it is unclear whether the patterns observed here are conditioned by age, ethnic identity, socioeconomic background, place of residence, sexuality, or some other demographic feature. To make any kind of statement on the use of creak in Victoria, BC, would require a larger, more diverse group of participants. Additionally, none of the recordings in this study came from highly formal situations, which would presumably have an effect on the frequency of creaky voice as it is used to take an authoritative role. Even so, the findings from this case study may serve as a useful stepping stone for future studies, which may explore the use of creaky voice in establishing authority among different speakers, in different communities, and in a broader range of contexts. Individuals from different communities may also use creak for completely different ideological purposes than authority (cf. Eckert 2008); further research in this realm could therefore add more depth and nuance to what is known of the indexical potential of creaky voice. The findings here further emphasize the importance of obtaining participant feedback in order to understand the sociolinguistic world of speakers. The effect of perceived intimacy with interlocutors was not anticipated in the experimental design, and would have been completely overlooked had the questionnaire not been included. In future work, questionnaires may be tailored to elicit more specific aspects of speaker social-psychological state depending on the research question at hand.

This thesis has taken a case study approach in analyzing creaky voice, examining the intraspeaker variation in its deployment across social contexts. Despite the limitations described above, the value of this approach in understanding sociolinguistic variation has been reinforced in this analysis. The benefits are twofold. First, a case study approach can be used to probe differences within a community and within speakers, often glossed over

by large-scale studies that generalize across social categories. Second, it can elucidate the role of the individual in linguistic variation, as it allows for close scrutiny of social contexts and the moment-by-moment interactional moves where speakers deploy linguistic variables to construct socially meaningful identities. The participants in this study displayed a similar pattern of linguistic behaviour, despite a difference in gender. For both Chloe and Ivan, predictable creak was found to be stable across contexts, while non-predictable creak was conditioned by social context, suggesting that non-predictable creak serves some social function. Indeed, the functional analysis of non-predictable creak revealed that it co-occurs most frequently with epistemic stance moves (which are themselves frequent in discourse). I have argued that this leads to the construction of an authoritative identity. Contextual variability in the use of creak is also reported in Mendoza-Denton (2011, p. 266): creaky voice is not used by her participant in all social contexts, rather, “it is reserved for situations that convey and construct a particular aspect of her persona.” In this investigation, both speakers were especially motivated to establish an authoritative voice of identity, and this occurs predominantly in situations where they felt less intimately connected to, or comfortable with, their interlocutors.

In sum, these findings reveal the reciprocal and iterative relationship between social meaning and linguistic behaviour. Speakers feel a greater need to take up an authoritative identity in interactions where their relational status is less certain, and they achieve this by taking stances of epistemicity. Creaky voice is employed as a phonation device which signals a speaker’s “stepping back” from talk in order to do epistemic stancetaking. Creaky voice then becomes part of the bundle of features that speakers may take up to index an authoritative identity, and an authoritative meaning becomes an underlying meaning that is part of the social repertoire of creaky voice. Thus, linguistic behaviour is observed to create social meaning, and social meaning is observed to constrain linguistic behaviour.

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**Appendix A:
Participants' self-report questionnaire**

Where were you during the time of recording? (e.g. in someone's home, at a restaurant, in the lunchroom at work, etc.)

What time of day was it?

What is your relationship to the people with whom you interacted (e.g. parents, coworkers, close friends, etc.) and how would you describe those relationships (e.g. close, distant, strained, neutral, etc.)?

Describe some of the emotions you felt during the interaction. Some examples are listed below to get you started; you may also add your terms.

Animated	Tired
Relaxed	Uncomfortable
Enthusiastic	Bored
Engaged	Distant
Confident	Nervous
Good-humored	Irritable
Cheerful	Glum
Other:	