Creaky voice or extreme vocal fry in young women

Jeremy Hornibrook, Tika Ormond, Margaret Maclagan

ABSTRACT

An extreme use of a voice feature with a lowered rough sound called vocal fry or creaky voice has become increasingly recognised in American, British and New Zealand English speaking young women. It is not regarded as an involuntary voice disorder, but rather as a volitional strategy. Intermittent vocal fry is recognised as a common voice feature, particularly at the end of a sentence. It occurs at the lowest range of a speaker’s F0 (pitch). We present evidence that vocal fry use is increasing in young New Zealand women. This article is to highlight the new phenomenon of extreme and sustained vocal fry as a vocal style, which is the first voice feature to have come to the attention of the general public through the news media.

Vocal fry or creaky voice is a type of voice production that seems to be becoming more prevalent and more popular within New Zealand, particularly among young women who apparently do not consider it to be a voice disorder as they do not present at voice disorder clinics. This is an interesting development as the voice is a reflection of personality and can reflect a person’s physical and psychological state. The majority of patients presenting to voice disorder clinics have vocal misuse issues with subtle visible signs in the larynx but no overt pathology. The predominant disorder is now called supraglottic constriction—an involuntary overuse of the so-called false vocal folds which impinge on the true vocal folds to effect a deterioration in voice quality. It is an indication for and will usually respond to voice therapy.

Modal voice register and vocal fry

Modal voice is the register used most frequently in speech and singing for vowels in most languages. Modal voice is the optimal combination of airflow and vocal fold tension that yields maximum vibration. Vocal fry (vocal creak, croak, glottal rattle) is produced by tight adduction of the arytenoid cartilages with reduced tension of the vocal folds with large and irregular vibrations and a low rough sound when air passes. It is not viewed as an involuntary voice disorder, but rather as a volitional strategy that has been mainly recognised as a feature of some styles of singing. Figure 1 shows the fragment of a longer utterance thing last night, so spoken by a young New Zealand woman born in 1982. Thing shows extreme vocal fry, last and night show slightly less extreme vocal fry and so shows modal voice with a pitch of 180Hz.

Vocal fry as a speaking voice phenomenon

Vocal fry in speaking voice became recognised in the 1960s. More recently the perceived increased prevalence of extreme vocal fry in young women has attracted the interest of voice scientists, particularly in the US and Britain. Because the studies we refer to do not make a distinction between biological sex and identified gender, we here refer simply to ‘males’ and ‘females’, ‘men’ and ‘women’.

In a study, 20 young and 20 middle-aged female Standard American-English speakers were tested using sustained vowels and standard sentences with perceptual and acoustic evaluations. Approximately two-thirds used vocal fry and it was most likely to occur at the end of sentences. In a further study, 40 American women were asked to describe all the steps in making a peanut butter and jelly sandwich and in doing laundry. All participants had at least one episode of glottal fry and it usually appeared at the end of sentences. Contrary to the hypothesis, there was no significant difference in the amount of vocal
Thirty-seven years old.

Twenty-two female and 18 male young American college students read a standard voice passage and were assessed by three expert listeners for glottal fry under different acoustic conditions. Female gender was associated with an increased occurrence. It was less likely to occur with the increased effort of talking above higher background noise, and therefore likely to be volitional.4

In a New Zealand study 36 speakers balanced for age, gender and ethnicity were recorded speaking for two minutes.5 Fifteen-second samples of their voices were analysed for creakiness and breathiness. Overall, Māori speakers had more vocal fry than Pākehā, women had more vocal fry than men and older speakers had more vocal fry than younger speakers.

The assertion that vocal fry is a new feminine voice quality for urban-orientated and upwardly mobile American women has stimulated interest from social commentators and journalists.6 There is evidence that in young women it is modelled from other users. In young adult female American English speakers engaged in dialogue, those who naturally used little or no vocal fry exhibited significantly more vocal fry when conversing with young women with substantial vocal fry.7

There is a paucity of non-laboratory studies on opinions on vocal fry. Online surveys are becoming increasingly employed and it can be argued that on sensitive topics they may elicit more frank responses than formal laboratory studies. An online survey of 800 listeners revealed that vocal fry is viewed negatively by the general public. Relative to a normal speaking voice, female vocal fry users were perceived to be less competent, less educated, less trustworthy, less attractive and less hireable. The negative perceptions were stronger for female voices than for male voices. The conclusion was that young American females should avoid using vocal fry speech in order to maximise their labour market opportunities.8

Vocal fry in New Zealand speakers

In order to check our perception that vocal fry was increasing in New Zealand we analysed young female speakers aged between 20 and 30 from the Canterbury Corpus, which is part of the Origins of New Zealand English archive held at the University of Canterbury.9 There were 10 speakers born between 1972 and 1976 and 10 born between 1980 and 1987. The speakers were recorded talking with a university student of a similar age. We auditorily analysed 10 minutes of conversation from each speaker. All the speakers used vocal fry, though the amount varied. The
average number of instances of vocal fry per speaker over 10 minutes in the older cohort was 51.3 (range 23–98); the average number of instances of vocal fry per speaker in the younger cohort was 146.7 (range 18–303). When the speaker with extreme vocal fry is excluded from the younger cohort, the average number of instances in 10 minutes drops to 129.3, still more than double the frequency for the older cohort.

**Media reactions to extreme vocal fry**

Academic authors have been quiet and cautious as to the origins and the true public perceptions of young women's vocal fry, a silence that has been filled by newspaper and online journalists and commentators, much of it speculation. Online links to websites and Youtube are abundant. On the website ‘Lexicon Valley’ by Mike Vuolo, it is described as a “much reviled phenomenon” and equated to the ubiquitous use of “like” originating in female ‘Valleyspeak’.10 Some interpret it as conveying a lack of confidence, or of overconfidence, or of a lowering of the voice to sound more authoritative.6 Others speculate that extreme use has been perpetuated by popular singer Britney Spears and media personality Kim Kardashian.11 New Zealand Journalist Rosemary McLeod says “I have tried to analyse why anyone would want to talk like this…it’s a new version of babbletalk”.12

**Vocal perceptions of masculinity, femininity and authority**

Most studies on listener perceptions of voice are performed as experiments in voice laboratories. It could be argued that they are not “ecologically valid” (natural), but they reveal interesting men’s and women’s notions about voice characteristics in regard to masculinity, femininity, attractiveness, authority, physical strength and fidelity. Such studies do not usually specifically consider vocal fry. However, since vocal fry occurs at very low F0 (pitch), studies that evaluate reactions to voice pitch can throw light on listener perceptions of vocal fry.

In general, heterosexual men prefer relatively high-pitched women’s voices.13–15 Men’s ratings of women's attractiveness are correlated with female voice pitch.13,16 These findings stand when women’s voices are manipulated to have a higher pitch compared with manipulations to a lower pitch.14,16–18 Women’s attractiveness judgements of men’s voices are negatively associated with men's voice pitch.19 Women also prefer experimentally manipulated lower pitched voices to higher pitched voices.20–23 Men who rated themselves high on physical dominance rated the voices of other men lower on dominance.24 In a study on F0, five vowels were recorded at four different F0 (low 185Hz, medium 224Hz, high 262Hz, very high 310Hz) and rated for attractiveness by men and for dominance by men and women. With lower voices were perceived as more dominant, and women were more sensitive to dominance cues in women's voices. The men rated female voices higher than 280Hz as less attractive and sounding babyish.15

Men prefer women with higher pitched voices as marriage partners.17 The preferences for low (masculine) pitch in men's voices are positively correlated to self-rated attractiveness in women who are using hormonal contraceptives, but negatively if not using hormonal contraceptives.22 Women rating artificially masculinised men’s voices considered such speakers to be more likely to commit infidelity than speakers with feminised women's voices. Men attributed infidelity to feminised women’s voices, but women did not.18

In an experiment on a hypothetical school board election, men and women listened to pairs of female and male voices differing only in pitch.25 Both men and women preferred females with masculine voices, but the men did not discriminate between male voices. In another hypothetical election experiment, 86 undergraduate students and 89 passers-by were asked to judge pairs of male and female voices as to who they would elect. Both men and women selected male and female leaders with lower-pitched voices.26 The manipulated pitch voice recordings of nine US presidents were played to 61 females and 61 males. Lower pitched voices were associated with favourable personality traits more often than higher pitched voices. The participants preferred to vote for politicians with lower-pitched voices.27 In the movie ‘The Iron Lady’ Margaret Thatcher has voice lessons after her colleagues criticised her voice as being “too shrill”.28 Analysis of ecologically valid speech from 792 male public company
CEOs concluded that CEOs with deeper voices manage larger companies, command higher salaries and enjoy longer tenures.29 Overall there is a paradox that men prefer women with higher voices but that both men and women interpret a lower pitch as sounding more dominant in both sexes. In 2008 the third author was quoted as saying that Pākehā females seemed to be using low pitch vocal fry more frequently than they used to.5 Ten years later this observation is still valid, and the rates of use of vocal fry seem to be increasing.

**Why mainly in young women?**

In linguistics or the formal science of language there is a well-accepted principle that middle-class young women lead linguistic change in new word expressions and speech sound changes.30 Eventually these changes tend to be adopted by young men. It could be postulated that the increasing prevalence of extreme vocal fry in young English-speaking women is an analogous voice phenomenon or fashion. It remains to be seen whether it becomes widely adopted by young men.

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Nil.

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**Author information:**

Jeremy Hornibrook, Department of Otolaryngology, Head and Neck Surgery, Christchurch Hospital; Retired Adjunct Professor in Communication Disorders at the University of Canterbury, Christchurch; Tika Ormond, Clinical Educator/Speech Language Therapist in Communication Disorders at the University of Canterbury, Christchurch; Margaret Maclagan, Retired Adjunct Professor in Communication Disorders at the University of Canterbury, Christchurch.

**Corresponding author:**

Prof Jeremy Hornibrook, Department of Otolaryngology, Head and Neck Surgery, Christchurch Hospital, 2 Riccarton Avenue, Christchurch 8011.

jeremy@jhornibrook.com

**URL:**


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