

Don't Fry This at Home! The effect of Vocal fry on Attitude toward the Advertised Product.

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Vocal fry, or the creaky voice register, is associated with certain stereotypes, especially among female speakers. While audiology, semiotics, and cultural studies have explored this vocal style with mixed results, the impact of vocal fry on consumer behavior has not been thoroughly studied. We integrated previous contributions with insights from qualitative interviews, and hypothesized a negative effect of vocal fry on consumer reactions. The results of two experimental studies confirmed that vocal fry negatively influences consumer attitudes toward advertised products and that this effect is mediated by perceptions of the speaker competence and elegance. We also found that consumer mindfulness plays a moderating role, affecting the intensity of the effect of vocal fry on consumer attitudes. This study advances the literature on auditory stimuli by clarifying how different vocal styles can influence consumer reactions, and emphasizing the need for careful selection of vocal styles in audio advertising.

Keywords: Consumer behavior; vocal fry; auditory stimuli; advertising; voice.

INTRODUCTION

In 2015, Ira Glass, host of the podcast "This American Life", released an episode titled "Freedom Fries" to address the rude complaints received about a previous episode featuring mostly female commentators. Instead of engaging with the content, listeners harshly criticized the commentators' "vocal fry" – the creaky voice register. Vocal fry occurs when the vocal cords activate a loose glottal closure with low airflow, "flapping" when the air pulses flow through the larynx's opening (Wallmark, 2022). The lowest range of fundamental frequencies characterizes vocal fry (Akita, 2021), as the pitch lowers so that the timbre seems grainy, sounding like "*bacon sizzling on a pan*" (Habasque, 2019, p. 4). Vocal fry is salient in women (Hollien and Michel, 1968), particularly in North American samples (Wolk et al., 2012). Acoustically, the tendency of female American-English speakers to "glottalize" when producing vowels explains this frequency (Chen et al., 2002).

As highlighted in "Freedom Fries", media commentators frequently debate vocal fry, often associating this vocal register with the stereotype of "Valley Girls", a subcultural and linguistic *trope* affecting upper-middle-class girls who exhibit "Valleyspeak", a dialect typical of communities in San Fernando Valley (Villarreal, 2016). In 1982, Time magazine promoted a satirical view of vocal fry, extending this register to any U.S. female speaker whose salient qualities are dumbness, carelessness, and a lack of interest in intellectual achievement. Some commentators speculate that the use of vocal fry as an affectation stems from the popularity of notorious "Valley Girls" like socialite Kim Kardashian, who are thought to modulate their vocal registers through uptalk (Stewart et al., 2024) to build their personas.

Several studies have investigated vocal fry from an acoustic (Blomgren et al., 1998; Proctor et al., 2022), semio-cultural (Borrie and Delfino, 2017; Gibson and Summers, 2021), and perceptual standpoint (Loss and Zold, 2014; Ligon et al., 2019), with mostly ambiguous results. The aim of this research is to evaluate vocal fry from a consumer behavior perspective, integrating the literature on auditory stimuli and consumer persuasion, to support marketers in the implementation of effective ads that use voice to convey meaning.

The remainder of this paper is organized as follows. First, we present a conceptual analysis combining insights from the triangulation of literature and findings of qualitative interviews, resulting in three research hypotheses. Second, we present the results of two experimental studies. Finally, we discuss implications for theory and practice and outline directions for future research.

CONCEPTUAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

While the consumer behavior literature lacks specific investigations on the effects of vocal fry, research from related disciplines tackled the topic, yielding conflicting results. Some studies suggest that vocal fry conveys casualness, informality, and intimacy (Yuasa, 2010; Chao and Bursten, 2021), enhancing perceptions of education and urban orientation in listeners. In this view, vocal fry helps women navigate hierarchical power dynamics by appearing stronger (Lefkowitz and Sicoli, 2007; Fraccaro et al., 2013) and empowered (Yuasa, 2010). However, other contributions suggest that this register leads to negative judgments towards female speakers, seen as socially undesirable even when fry results from a vocal disorder (Ligon et al., 2019). Authors found that the exhibition of vocal fry can harm young women's career prospects, making them seem less competent and educated (Anderson et al., 2014). Additionally, vocal fry evokes responses related to the erotic sphere, like sexual allure and, potentially, vulgarity (Shaw and Crocker, 2015; Wallmark, 2022).

Due to the fragmented and contradictory research on vocal fry, we began by using a qualitative approach to understand listeners' perceptions. We conducted 15 in-depth interviews on informants recruited through purposive sampling (8 women, 7 men, $M_{age} = 30$). The interview protocol included a phase where participants listened to a curated Spotify playlist containing podcast episodes, which we used to elicit attitudinal responses. We found that attitudes toward vocal fry were mostly negative. While a few interviewees described the vocal register as calm, sensual, and associated with upper-class lifestyles, most viewed speakers using vocal fry as less knowledgeable and competent, and also considered it a sign of inelegance, lack of class and moral shortcoming. Triangulating the literature (Anderson et al., 2014) and insights from qualitative interviews, we deem competence and elegance as the two potential mechanisms driving the negative effect of vocal fry. Therefore, we propose that:

- H1:** In audio advertising, the presence (vs. absence) of vocal fry in an announcer's voice has a negative effect on attitude toward the advertised product.
- H2a:** The announcer's perceived competence mediates the negative effect of the presence (vs. absence) of vocal fry in an announcer's voice on attitude toward the advertised product.

H2b: The announcer's perceived elegance mediates the negative effect of the presence (vs. absence) of vocal fry in an announcer's voice on attitude toward the advertised product.

Furthermore, the informants with the harshest opinions on vocal fry described themselves as mindful consumers who carefully curate their possessions and are present-oriented. Accordingly, we consider the moderating role of consumer mindfulness. Mindful consumers are interested in finding meaning in themselves and demonstrate greater empathy (Leary and Tate, 2007). Wilson and Bellezza (2022) highlighted that mindful consumers prioritize identity-enhancing possessions over displaying material goods. Recently, consumer mindfulness has garnered increased scholarly interest due to its growing relevance in modern life and the emphasis on deliberate, meaningful consumption (Vaid et al., 2023; Shukla et al., 2024).

We predict that consumers with higher levels of mindfulness will have a negative attitude toward a product advertised by an announcer using vocal fry, as this vocal style is often linked to loudness and conspicuousness. In contrast, for consumers with lower mindfulness, who tend to purchase goods without emphasizing intrinsic value, the negative effect of vocal fry will be weaker or even turn positive. Formally:

H3: Consumer mindfulness moderates the effect of the presence (vs. absence) of vocal fry in an announcer's voice on attitude toward the advertised product. Specifically, for higher levels of consumer mindfulness, the effect of the presence of vocal fry in an announcer's voice on attitude toward the advertised product is negative. For lower levels of consumer mindfulness, the effect of the presence of vocal fry in an announcer's voice on attitude toward the advertised product is less negative (or even positive).

We tested our predictions in two experimental studies involving an audio advertising setting.

EMPIRICAL EVIDENCE

We conducted two experimental studies in which we manipulated the presence (vs. absence) of vocal fry in the voice of a speaker in a fictitious audio advertisement promoting a more utilitarian product (a blender - Study 1) and a more hedonic product (a perfume - Study 2). In both studies we tested the mechanisms of the proposed effect, which are perceptions of the announcer's competence and elegance. In Study 2 we also investigated the moderating role of consumers' mindfulness.

Study 1

Method. We recruited 200 participants via Prolific Academic ($M_{\text{age}} = 36.59$, female = 40%). We recorded two versions of a blender ad in a professional studio. The speaker was provided with academic materials (e.g., Dallaston & Docherty, 2020) and pop culture examples (e.g., The System podcast by Kim Kardashian) about vocal fry. In the "no vocal fry" version, the actress used her natural, more guttural tone with a higher pitch. In the "vocal fry" version, she adopted a nasal tone coming from the diaphragm, with lower pitch and creaky emphasis on final syllables, resulting in reduced airflow and a distinctive creaky sound.

Measures. After exposure to the ad, participants rated their attitude toward the advertised product with a single item: "Please indicate how much you liked the blender

in the audio ad" (7-point scale, 1 = "not at all," 7 = "very much"). Perceived competence was measured using two items adapted from Ohanian (1990): novice/expert and unknowledgeable/knowledgeable (7-point scales). Perceived elegance was measured with two items adapted from Ohanian (1990): not classy/classy and not elegant/elegant (7-point scales). Since reliabilities of both scales were high ($\alpha > .88$), we calculated their mean score. Finally, participants read a definition of vocal fry and rated the extent to which the speaker's voice exhibited vocal fry on a 9-point scale.

Results. The vocal fry manipulation was successful ($M_{\text{Fry}} = 5.30$, $M_{\text{NoFry}} = 4.37$, $t(198) = 2.98$, $p = .003$). To test H1, we conducted a t-test on product attitude, revealing that participants in the no vocal fry condition liked the product more than those in the vocal fry condition ($M_{\text{NoFry}} = 4.54$, $M_{\text{Fry}} = 4.14$, $t(198) = 2.19$, $p = .030$), supporting H1. Mediation analyses showed that vocal fry had significant negative effects on perceived competence ($b = -0.64$, $p < .001$) and perceived elegance ($b = -0.61$, $p = .004$). Both competence ($b = 0.43$, $p < .001$) and elegance ($b = 0.17$, $p = .008$) were positively linked to product attitude. The direct effect of vocal fry became non-significant when controlling for competence and elegance ($b = -0.02$, $p = .876$). The indirect effect vocal fry \rightarrow competence \rightarrow attitude toward the product was negative and significantly different from zero (IE = -0.27, 95% Bootstrap CI [-0.51, -0.09]). Similarly, the indirect effect through elegance was also negative and significant (IE = -0.10, 95% Bootstrap CI [-0.23, -0.001]). These results support H2a and H2b.

Study 2

The aim of this study was to extend Study 1's results by considering a more hedonic product, a perfume, and to assess the moderating role of consumer mindfulness (H3).

Method. We recruited 207 female participants via Prolific Academic ($M_{\text{age}} = 35.98$). We replicated the procedure of Study 1, adding the measurement of consumer mindfulness with three items adapted from Wilson and Bellezza (2022). Cronbach alpha was .86, therefore we computed a mean score of consumer mindfulness.

Results. The vocal fry manipulation was successful ($M_{\text{Fry}} = 5.36$, $M_{\text{NoFry}} = 3.78$, $t(205) = 5.30$, $p < .001$). A t-test on attitude toward the perfume revealed that participants in the no vocal fry condition reported higher liking for the perfume than those in the vocal fry condition ($M_{\text{NoFry}} = 4.64$, $M_{\text{Fry}} = 4.17$, $t(205) = 2.16$, $p = .032$), offering further support to H1. In the mediation analyses, vocal fry had significant negative effects on perceived competence ($b = -0.74$, $p < .001$) and perceived elegance ($b = -1.02$, $p < .001$). Both competence ($b = 0.43$, $p < .001$) and elegance ($b = 0.25$, $p = .005$) were positively associated with attitude toward the product. When controlling for competence and elegance, the direct effect of vocal fry on product attitude was no longer significant ($b = 0.09$, $p = .601$). The indirect effects through competence (IE = -.32, 95% Bootstrap CI [-.58, -.12]) and elegance (IE = -.25, 95% Bootstrap CI [-.51, -.04]) were negative and statistically different from zero, supporting again H2a and H2b. To test H3, we used a moderation model where consumer mindfulness moderates the relationship between vocal fry and attitude toward the advertised product. The interaction between vocal fry and consumer mindfulness was negative and significant ($b = -0.69$, $p < .001$). Using the Johnson-Neyman technique, we found that at low levels of consumer mindfulness (up to the 9.18th percentile), the effect of vocal fry on attitude toward the product was positive and significant. However, at higher levels of

mindfulness (above the 38.65th percentile), the effect of vocal fry became negative and significant. These findings support H3. Finally, we estimated a moderated mediation model, which indicated that competence and elegance mediate the effect of the interaction between vocal fry and consumer mindfulness on attitude toward the product.

GENERAL DISCUSSION

Our investigation of vocal fry began with the recognition that consumer behavior literature has largely overlooked this vocal register, while related disciplines showed mixed results. Insights from qualitative interviews revealed predominantly negative attitudes toward vocal fry, with most informants viewing this vocal style as diminishing speaker's perceived competence and elegance. Two experimental studies confirmed that vocal fry in audio ads negatively affects consumer attitudes toward the product, due to the announcer being perceived as less competent and elegant. Also, consumer mindfulness moderates this effect: highly mindful consumers react more negatively to vocal fry, while less mindful consumers may even respond positively to vocal fry.

This study contributes to the literature on auditory stimuli and extends insights from audiology to the field of consumer behavior. Previous research explored how vocal cues shape listeners' mental imagery, emphasizing their role in reinforcing stereotypes (Berry, 1992; Yarmey, 1993; Yamada et al., 2000). Our research contributes to this research stream by examining how the vocal fry register influences consumer reactions, furthering the understanding of the influence of voice in marketing contexts.

Our research demonstrates that using an announcer with vocal fry in audio advertising can negatively impact brand investments, a trend observed across different product categories. Additionally, we show that consumer mindfulness plays a moderating role, offering valuable insights for brands aiming to target different consumer segments based on mindfulness levels.

This study has limitations that future research could address. First, this study paves the way to a broader investigation of the effects of other vocal registers (e.g., modal, chest) on consumers' responses. Second, since we used brief audio tracks, future studies could explore how vocal fry affects listeners over longer formats, like podcasts. Finally, additional research should examine other personality traits that might influence or even reverse negative perceptions of vocal fry.

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