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Perceptions and Practices Surrounding Vocal Fatigue Among
Professional Voice Users and Their Collaborators: An Exploratory
Study Incorporating a Research-Informed Educational Guide.

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Project Proposal

1. Project Title

Perceptions and Practices Surrounding Vocal Fatigue Among Professional Voice Users and Their Collaborators: An Exploratory Study Incorporating a Research-Informed Educational Guide.

2. Research question

How do professional voice users and those who work with them perceive, identify and manage vocal fatigue, and how might an educational guide influence and contribute to their understanding and professional practice?

3. Context and Position

This project will explore how professional voice users and those who work alongside them perceive, identify and manage experiences of vocal fatigue within their daily professional practice. This study adopts an experiential position, focusing on participants' self-reported perceptions, experiences and interpretations of vocal fatigue rather than clinical measurements. The study will be situated within professional performance and training contexts in which use of the voice is central to practice. Vocal fatigue can be defined as:

The perceived measurable symptom that influences vocal task performance and is individual specific; it is a multifaceted concept integrating self-perceived vocal symptoms and/or physiologic deficit, which may be a result of high “vocal demand response”, high “vocal effort”, or neuromuscular deficit.

(Hunter *et al.*, 2020, p. 518)

The study will examine how participants recognise and interpret vocal fatigue, the symptoms and contributing factors they associate with the experience, and the strategies used to manage or prevent the condition. Participants will include professional voice users such as musicians and musical theatre performers, as well as students undertaking professional training for these professions. The study will also include collaborators who work closely with professional voice users, including professional musical directors and music producers. The study will explore professional contexts, analysing how they may shape perceptions and responses to vocal fatigue. Exploring these contextual influences may provide a more nuanced understanding of why individuals adopt particular strategies, and how professional environments may either support or constrain management of vocal fatigue.

Following initial data collection, participants will be provided with a research-informed educational guide addressing vocal fatigue, including commonly discussed symptoms, contributing factors,

management strategies and preventative considerations. This guide was developed prior to the present study and is incorporated into the current research as an educational resource (Howley, 2026). Participants will then reflect on whether the guide informed their understanding, provided new perspectives, identified areas of uncertainty, or highlighted potential implications to their professional practice.

While previous research has examined the prevalence of vocal fatigue within specific professional voice-user populations (Welham & Maclagan, 2004; Carroll *et al.*, 2006; Joseph, Joseph & Jacob, 2020), comparatively less attention has been given to how professional voice users and their collaborators perceive their own experiences of vocal fatigue, including their own interpretation, gaps in knowledge and responses to vocal fatigue in practice. This study therefore aims to explore these perceptions and identify areas of uncertainty surrounding the recognition, management and prevention of vocal fatigue.

4. Justification

Vocal fatigue is one of the most common conditions affecting professional voice users (Solomon, 2008). My professional experience as a vocal coach has further motivated me to explore how individuals recognise and respond to vocal fatigue within real-world professional contexts. Although professional voice users may be aware of vocal technique, maintenance, and prevention strategies, high workloads and performance demands may affect their ability to implement these approaches consistently. This study therefore seeks to explore these challenges within professional contexts and considers how an accessible, research-informed educational guide may support greater understanding of vocal fatigue among both professional voice users and their collaborators.

5. Intended Impact

This study aims to provide valuable insight into how professional voice users and their collaborators understand, recognise and respond to vocal fatigue, including perceived gaps in knowledge, areas of uncertainty and contextual factors that may influence both management and prevention. The findings may support greater professional reflection and contribute to understanding how vocal fatigue is experienced within different professional contexts.

Some participants will engage with a research-informed educational guide, allowing them to reflect on their existing knowledge and consider whether the information presented provides new perspectives or potential applications to their professional practice and lifestyle. The study does not seek to establish whether the guide produces behavioural or clinical changes; the study aims to contribute to improved collaborative practice and communication, inform the design of future training programs, and support the development of educational resources that facilitate effective management regarding vocal fatigue for professional voice users.

6. Individual Learning Outcomes

- Further develop my skills in qualitative research methods, including data collection, coding, and analysis.
- Continue to deepen my understanding of vocal fatigue, its aetiology, underlying mechanisms, related symptoms and potential management strategies.
- Strengthen my ability to translate research findings into practical guidance and educational resources for professional voice users and their collaborators.
- Explore reflective models further to strengthen my critical thinking and reflexive practice.

7. Outlined Intention

A predominantly qualitative exploratory approach will be used, complemented by descriptive quantitative data to identify patterns across demographics and participant groups.

1. Literature Review

- A narrative review of existing research surrounding vocal fatigue, its aetiology, potential symptoms, management strategies, underlying mechanisms and perceptions among professional voice users and within collaborative practice.

2. Questionnaire

- A questionnaire will be distributed to professional voice users and those who collaborate with them via Google Forms.
- The questionnaire will include both closed and open-ended questions.
- Participants will be given the option to participate in a focus group and/or individual interview.

3. Focus Group

- Multiple focus groups will be conducted via Zoom, with participants potentially grouped according to their roles, where appropriate.
- Groups will be audio/video recorded and transcribed using the service provided by Zoom.

4. Individual Interviews

- Semi-structured interviews will be conducted via Zoom.
- Interviews will be audio/video recorded and then transcribed using the service provided by Zoom.

5. Field Notes

- Brief notes may be made during focus groups and interviews where relevant, to record interactions, gestures and physical responses used by participants to illustrate their descriptions.

[illegible]

9. Ethics and Insider Research

This study involves several ethical considerations. Discussing vocal fatigue may cause emotional or psychological distress, particularly for participants who have experienced difficulties with their voice. All participants will therefore be briefed on the study's content, with information on appropriate professional support services available if needed.

As some participants may be my current clients, my professional position places me as an insider researcher. Insider research offers advantages such as trust, rapport, and strong communication; however, it can also present challenges, including potential bias, role conflict, and other ethical issues (Mercer, 2007; Saidin & Yaacob, 2016). A dual relationship with clients may also create power imbalances or influence participants' responses. To mitigate these risks, I will maintain a reflexive approach throughout the research process, considering how my professional position may influence participant responses, data interpretation and analysis. Semi-structured questions will provide consistency, while clear boundaries between my professional and research roles, participant confidentiality and voluntary participation will be maintained.

Practical considerations, such as participants' time constraints and availability, will also be addressed. Focus groups and interviews will be scheduled at convenient times, and flexibility will be offered, where possible. The study will adhere to the ethical guidance of the University of Wales Trinity St David (UWTSD), maintaining professional standards throughout and ensuring research integrity remains central to the project.

Project Report

1. Introduction

Vocal fatigue is one of the most commonly reported conditions experienced by professional voice users (Kwok & Eslick, 2019; Düzenli-Öztürk *et al.*, 2026). Its prevalence has been identified across a wide range of professional contexts, including musical theatre performers (D'haeseleer *et al.*, 2022), professional CCM (Commercial Contemporary Music) singers (Cobb, 2022), classical singers (Gomes, Moreti & Behlau, 2024), and occupational voice users such as lawyers, teachers, presenters and journalists (Zhou *et al.*, 2025). Despite its widespread occurrence, vocal fatigue is frequently normalised as an inevitable consequence of prolonged voice use (Gaskill & Hetzel, 2017) rather than recognised as a complex physiological condition that requires greater pedagogical consideration. Solomon (2008) describes vocal fatigue as an “*invisible disorder*” (p. 263), highlighting its subjective and often underestimated nature.

To date, existing literature within the professional voice field has predominantly focused on the identification of symptoms and the effects of vocal loading (Hunter & Titze, 2009; Ilomäki *et al.*, 2017; de Oliveira Lemos *et al.*, 2025), with previous research also exploring the prevalence of vocal fatigue within specific populations (Welham & Maclagan, 2004; Carroll *et al.*, 2006; Joseph, Joseph & Jacob, 2020), while less is known about how professional voice users individually understand, identify and respond to vocal fatigue in practice. However, reducing vocal fatigue to a simplistic consequence of vocal ‘overuse’ overlooks the complex biophysiological mechanisms underlying its development, alongside individual anatomical and physiological differences that shape the experience of the condition (Berardi, Whitling & Hunter, 2025). Whilst physical manifestations of fatigue in other areas of the body are often visibly recognised and responded to, vocal fatigue is often managed reactively, particularly among professionals for whom sustained voice use is essential (Sandage, 2018).

This raises questions about whether vocal fatigue should be considered an inevitable aspect of professional voice use, or whether improved understanding and management strategies may reduce its impact (Welham & Maclagan, 2003). Furthermore, limited attention has been given to those who collaborate with professional voice users, including vocal coaches, musical directors and music producers, who may have varying levels of specialist training surrounding vocal health (Flock *et al.*, 2025). This highlights the need for greater exploration of how vocal fatigue is understood and supported across professional voice environments.

This research is also informed by my own practice as a professional vocal coach working across multiple fields of professional voice use. Discussions surrounding vocal fatigue arise consistently, reinforcing both the prevalence of the condition and highlighting gaps in education surrounding its identification, understanding and management. This study will also build on my previous research and the development of a research-informed educational guide addressing the underlying

mechanisms, identification and management of vocal fatigue (Howley, 2026). The artefact has been revised to reflect current research developments since the previous iteration, while findings from this project will contribute to its continued development. The study further aims to explore participants' responses to the guide, including its potential to support greater awareness of vocal fatigue among professional voice users and their collaborators, whilst encouraging reflective thinking and research-informed vocal maintenance.

1.1 Research Question

How do professional voice users and those who work with them perceive, identify and manage vocal fatigue, and how might an educational guide influence and contribute to their understanding and professional practice?

2. Literature Review

2.1 Current Understanding of Vocal Fatigue

Vocal fatigue has been an ongoing area of study within the field of professional voice since the 1800s. In 1891, Mackenzie described *"fatigue of the voice"* as *"a sense of weakness and inability to sound the voice"*, while recognising that *"the mental distress is sometimes very great"* (Mackenzie, 1891, p. 202), highlighting that vocal fatigue has long been understood as involving both physiological and psychological experiences. Despite over a century of research, uncertainty still remains surrounding the definition and nature of the condition (de Oliveira Lemos *et al.*, 2025). Although contemporary research often prioritises objective and subjective measures of vocal fatigue, the emotional and psychological impact of the condition can also influence both its development and the recovery process (Gray, 2018).

Hunter *et al.* (2020) proposed one of the most widely adopted contemporary definitions of vocal fatigue, which is frequently cited in recent literature on the condition (Nanjundeswaran & Shembel, 2022; Berardi, Whitting & Hunter, 2025). As this definition reflects the multifaceted nature of vocal fatigue, it is used as the working definition throughout this paper:

"Vocal fatigue is the perceived measurable symptom that influences vocal task performance and is individual specific; it is a multifaceted concept integrating self-perceived vocal symptoms and/or physiologic deficit."

Hunter *et al.*, 2020, p.518

2.2 Identification, Aetiology and Management

The human recognition system for illness follows a psychological structure, also known as the Common-Sense Model (CSM) of Illness Self-Regulation (Leventhal, Phillips & Burns, 2016). The

framework outlines a sequence through which perception can be considered: identity, cause, timeline, consequences, and control or cure, alongside emotional responses. The CSM offers a useful framework for understanding and managing vocal fatigue, as recognition of symptoms and beliefs surrounding its cause and management are likely to influence how professional voice users respond. This model enables consideration of aspects that may otherwise be overlooked when focusing solely on symptom recognition, including how individuals interpret their symptoms and perceive their causes and the potential consequences of vocal fatigue, which may influence their approaches to control and contribute to their emotional response to the condition (Bingaman, Mauger & Cantor-Cutiva, 2026). However, developing effective preventative behaviours extends beyond individual knowledge. Establishing a prevention culture requires changes in awareness, social environments, and supportive practices directly linked to wellbeing (Guerin, Okun & Schulte, 2014). Although literature on prevention culture remains limited, Zhou *et al.* (2025) demonstrated that occupational voice users' knowledge did not always translate into effective preventive practices, highlighting a disconnect between awareness and behaviour.

Vocal fatigue can be identified through a range of both audible and physical symptoms (Cho *et al.*, 2011; de Oliveira Lemos *et al.*, 2025), including increased vocal effort required during phonation, reduced vocal power and flexibility, lack of vocal control (Hunter *et al.*, 2020; Anand, Bottalico & Gray, 2021; Narasimhan & Sahana, 2026), laryngeal discomfort, neck or shoulder tension, and throat or neck pain (Nanjundeswaran *et al.*, 2015; Narasimhan & Sahana, 2026). The Vocal Fatigue Index (VFI) (Nanjundeswaran *et al.*, 2015) and Evaluation of the Ability to Sing Easily (EASE) scale (Phyland *et al.*, 2013) are commonly used measures of vocal fatigue and vocal function. The VFI is a standardised self-report measure designed to assess symptoms associated with vocal fatigue (Nanjundeswaran *et al.*, 2015), while the EASE scale evaluates changes in singers' current vocal function (Phyland *et al.*, 2013). However, while these tools provide valuable insight into individuals' perceived vocal experiences, the interpretation and implications of using scores require further consideration. Concerning scores may consequently cause anxiety and indicate the need for further assessment, although financial and professional barriers may prevent professional voice users from seeking support (Gilman *et al.*, 2009). Furthermore, self-report measures may also be influenced by psychological factors, as perceptions of vocal difficulties can be shaped by fear of judgment and individual interpretation of symptoms (Estes *et al.*, 2024; González-Sanvisens *et al.*, 2026). Cho *et al.* (2011) further demonstrated that vocal fatigue symptoms are not always detected by listeners or objective acoustic measures, highlighting a discrepancy between self-perception, listener perception and objective measures. Self-perception may capture how an individual experiences a condition, particularly in relation to sound and physical sensations, whereas listener perception and objective measures may not always reflect these subjective experiences. This suggests that relying on a single measure to identify vocal fatigue may overlook aspects of an individual's experience, reinforcing the importance of subjective experience and supporting qualitative exploration of how professional voice users recognise, interpret and respond to vocal fatigue.

Vocal fatigue has been associated with both physical and vocal demands, unsuitable environments, vocal hygiene and psychosocial factors (Kitch & Oates, 1994; de Oliveira Lemos *et al.*, 2025). In response to the variation in vocal fatigue symptoms across clinical, acoustic and physical measures, Shembel and Nanjundeswaran (2025) proposed five potential biophysiological mechanisms. **Neuromuscular mechanisms** suggest that repeated vocal demands may reduce the efficiency of both the intrinsic and extrinsic laryngeal muscles involved in phonation (Narasimhan & Sahana, 2026). Changes within this system may contribute to stiffness or discomfort within the laryngeal region (Shembel & Nanjundeswaran, 2025). **Metabolic mechanisms** relate to the energy required to sustain vocal production. An inefficient aerobic response may reduce the ability to meet increased vocal demands (Nesbitt, 2023), potentially presenting as an earlier onset of vocal fatigue, increased vocal effort, or a heavy sensation within the laryngeal region (Shembel & Nanjundeswaran, 2025; Narasimhan & Sahana, 2026). **Vocal fold cover mechanisms** relate directly to the superficial structures of the vocal folds, consisting of the epithelium and superficial lamina propria. Increased frequency, duration or intensity of voice use may temporarily alter the properties of these tissues, potentially contributing to reduced vocal efficiency and increased effort required to produce sound (Shembel & Nanjundeswaran, 2025). **Afferent mechanisms** relate to the sensory signals involved in voice production. Repeated or excessive use may increase receptor sensitivity, contributing to heightened perceptions of vocal fatigue or vocal effort, even when acoustic or perceptual assessments seem normal (McKenna *et al.*, 2019; Shembel & Nanjundeswaran, 2025). Finally, **central neural mechanisms** relate to the neural pathways responsible for coordinating vocal production and sensory processing. Maladaptation within these systems may occur when prolonged use or increased demands exceed the system's ability to maintain effective and efficient control. This may present as reduced vocal control for the voice user (Shembel & Nanjundeswaran, 2025). Taken together, the coexistence of these proposed mechanisms suggests that vocal fatigue may be experienced in a range of ways, depending on which mechanisms are most influential. These mechanisms may interact or influence vocal fatigue independently, contributing to variation in individual symptoms and experiences. Understanding these relationships may therefore support more targeted management and reinforce the importance of subjective measures when understanding individual experiences.

For the management of vocal fatigue, **semi-occluded vocal tract (SOVT) exercises**, particularly straw phonation, with and without water resistance (Nanjundeswaran & VanSwearingen, 2025), may improve symptoms (Nayebian *et al.*, 2025) by facilitating healthy vocal fold closure and increasing acoustic impedance (Ragan, 2018). **Hydration** is important for preventing and managing vocal fatigue through superficial methods such as steam inhalation and nebulisation, as well as systemic hydration through adequate fluid intake. Although superficial hydration methods may reduce vocal fatigue symptoms and improve voice quality (Vermeulen *et al.*, 2021), they cannot replace systemic hydration, which remains essential for maintaining optimal vocal function (Alves *et al.*, 2019). Hydration also forms part of broader **vocal hygiene practices**, alongside avoiding habits that may potentially exacerbate vocal fatigue, including irregular sleep, smoking, alcohol consumption, inadequate environmental factors and poor diet and nutritional consideration

(Ferreira *et al.*, 2019). **Laryngeal massage** is another intervention that focuses on reducing tension in the peri-laryngeal and laryngeal musculature. It may reduce muscle tension within structures including the sternocleidomastoid and supralaryngeal musculature, potentially providing immediate relief from discomfort associated with vocal fatigue (Jain & Ravu, 2024). **Voice rest** is also commonly recommended to support recovery. Absolute rest involves complete silence and is typically reserved for those recovering from vocal injury, allowing adequate time for the mucosa to heal; however, prolonged absolute voice rest is discouraged due to the potential risk of muscle deconditioning. Relative voice rest is often more appropriate for professional voice users, involving reduced unnecessary voice use while maintaining efficient phonation and technique whenever voice use is required, allowing recovery while reducing further vocal overload (Sataloff *et al.*, 2019). Finally, **vocal technique** is an important consideration in managing vocal fatigue, as developing efficient technical voice strategies may reduce unnecessary vocal effort and support vocal longevity during periods of increased demand (Gaskill & Hetzel, 2017). Similarly to the understanding of vocal fatigue, its management must be considered individually, with prevention emphasised over reactive management (Rosenberg, 2022). Many of the strategies discussed above are commonly implemented once vocal fatigue has already developed, rather than being used proactively to reduce the onset of the condition. Murali and Boominathan (2026) propose 'The Voice Eruption Volcano Model', which, although developed for teachers, may be relevant to other professional voice users because it illustrates how multiple environmental, lifestyle, and occupational factors may contribute to voice-related issues. However, the specific factors and demands experienced by teachers may differ from those encountered by musical theatre performers, musicians and students, meaning the model may require adaptation for use in other professional contexts. Nevertheless, the structure and metaphorical nature of the model, using a volcanic eruption to represent the accumulation of external factors that may contribute to a voice-related problem, could be used to reflect an individual's experience of vocal fatigue. This further reinforces the importance of recognising and addressing these factors prior to the condition occurring, rather than relying on a reactive response.

2.3 Vocal Fatigue in Professional Voice Users and Their Collaborators

The field of professional voice is vast and spans several specialised genres and subcategories (Sataloff, Sataloff & Hawkshaw, 2015). Vocal effort refers to the exertion required of a professional voice user in response to a given environmental or situational context (Hunter *et al.*, 2020). This can be understood as the interaction of vocal demand and vocal demand response. Vocal demand refers to the "*vocal requirement for a given communication scenario...independent of the vocalist's physiology, production technique, or perception of the scenario*" (Hunter *et al.*, 2020, p. 515), while vocal demand response describes how an individual responds to that demand (Hunter *et al.*, 2020). In professional contexts, high vocal effort can arise from a range of different performance demands. For example, musicians performing in smaller, crowded venues with limited amplification may experience increased vocal effort (Hoffman-Ruddy *et al.*, 2001). Similarly, session singers may be required to produce demanding vocal qualities across multiple takes (Qin & Xuejie, 2025),

while musical theatre performers may sustain intensive schedules, including eight to nine shows per week, alongside rehearsals, potentially requiring a consistent use of high vocal effort (Phyland *et al.*, 2013; Thomas & Alexander, 2025). Due to the intense vocal demands often placed on professional voice users, their vocal effort is often substantially higher than standard vocal expectations (Van Overmeiren *et al.*, 2019). These sustained high levels of vocal effort may consequently increase an individual's susceptibility to vocal fatigue (Solomon, 2008), a relationship that has been recognised since Mackenzie's (1891) recommendation that "*on days when great and sustained vocal efforts have to be made, absolute rest should be observed*" (p. 150), an approach explored in the management section of this review.

Although vocal fatigue is experienced by the individual voice user, it often occurs within wider professional contexts involving collaborators and creative teams. Musicians may work with producers to develop sync tracks or record top-line vocals without necessarily selecting the production team themselves, unlike when producing their own work (Martin, 2026). Similarly, musical theatre performers work alongside musical directors in production environments, whom they may not have previously worked with (Graham, 2022). Unlike vocal coaches, who are often engaged with separately for specialist support, collaborators remain part of the performer's working context and may influence schedules, demands and the working environment (Flynn, 2025). However, research has predominantly focused on individual voice users, with limited exploration of how collaborators perceive and respond to the condition. What remains unclear is how vocal fatigue is experienced and managed in collaborative professional environments, where wider working practices may influence vocal demands.

3. Methodology & Methods

3.1 Research Paradigm and Methodological Approach

This study is underpinned by the pragmatic paradigm. As Morgan (2014) argues, adopting a pragmatic stance extends beyond simply choosing a multi-method research design. Pragmatism represents a philosophical position that recognises the collaborative relationship between knowledge, experience and action (Dewey, 1998; Elkjaer, 2009). Due to the exploratory nature of this study, a qualitative-dominant mixed-methods approach was adopted. This design enabled an in-depth exploration of participants' lived experiences, interactions and individual perceptions of vocal fatigue (Mason, 2006), while incorporating quantitative data to provide contextual insight. Mixed-methods research is suited to investigating complex phenomena, as integrating qualitative and quantitative data allows for a more comprehensive analysis and understanding of the topic (Creswell & Creswell, 2017). Given the multifaceted nature of vocal fatigue (Cantor-Cutiva, Maxfield & Hunter, 2025), this approach was considered the most appropriate for addressing the study's aims. Qualitatively dominant research also presents methodological challenges regarding

researcher bias, assumptions and the interpretation of participant responses and accounts. Meyer and Goss (2024) emphasise the importance of intellectual humility, encouraging researchers to prioritise context and approach qualitative inquiry from the position of participants educating the researcher, rather than seeking to confirm preconceived opinions.

3.2 Research Design, Participant Selection and Methods

Ethical approval was obtained before commencement of the research process, and the completed and signed form is provided in Appendix A. The research process began with a narrative literature review to establish existing evidence, identify gaps and highlight areas requiring further exploration. A narrative review was chosen for its ability to synthesise existing literature, retain contextual detail and support exploration of complex topics (Fletcher, Davidson & Krause, 2020; Winter, 2022). A systematic literature review was also considered due to its ability to provide a rigorous and transparent synthesis of evidence to address a clearly defined research question (Nightingale, 2009; Xiao & Watson, 2019), but was not considered appropriate for the broad, multidisciplinary, experience-based nature of the research. Choosing a narrative approach provided greater flexibility in exploring the continuously developing and complex phenomenon of vocal fatigue; however, this meant that the review was less reproducible and standardised than a systematic approach. Literature searches used relevant search terms and Boolean operators across academic databases to identify relevant peer-reviewed literature (Appendix B).

The literature review informed the development of a questionnaire comprising open- and closed-ended questions. The CSM, as previously discussed (Leventhal, Phillips & Burns, 2016), further influenced the thematic structure of the questionnaire, offering a sequence that explored identification, potential causes, symptoms, management or strategies for control and emotional responses to the condition. Open-ended questions allowed participants to describe their perspectives and experiences in their own words, while closed-ended questions enabled the collection of standardised data (Goddard & Villanova, 2006; Lee, 2006). The questionnaire was administered via Google Forms, enabling online distribution and branching between question sections (Jaiswal, 2024). Participants were directed to role-specific questions to reflect differences in professional contexts. The full questionnaire is provided in Appendix C.

Initially, the proposed participant population included professional musical theatre performers, professional musicians, students studying a voice-based degree for a minimum of two years, and professional collaborators, including musical directors, music producers and vocal coaches. Vocal coaches were subsequently excluded due to variation in the professional definition of the role, training and qualification pathways, which risked reducing consistency within the participant group (Gill & Herbst, 2016; Norton, Ginsborg & Greasley, 2019). While this exclusion supported consistency, it also narrowed the range of professional perspectives considered within the study, as potentially specialist perspectives from vocal coaches were not captured. Professional musical theatre performers were required to have worked professionally within the previous year, which,

given the irregular nature of professional musical theatre employment (Fenton, 2022), was considered an appropriate timeframe (Clarke, Fiebig & Gerdtham, 2008). Professional musicians were defined as individuals working regularly within professional music contexts, and students were required to have completed a minimum of two years of voice-based training, ensuring participants had sufficient experience of training requirements and demands. Music producers and musical directors were required to work regularly with professional voice users as part of their occupation. Participants were recruited using criterion purposive sampling alongside snowball sampling. Criterion purposive sampling ensured participants met the predefined inclusion criteria and possessed relevant engagement with the topic of vocal fatigue (Palinkas *et al.*, 2015). Snowball sampling extended recruitment beyond my immediate professional network, increasing access to additional participants who met the selection criteria (Nyimbili & Nyimbili, 2024). A standardised recruitment message was distributed to potential participants via professional and social networks (Appendix D). The recruitment message included the questionnaire link; the first page contained the participant information sheet and consent form (Appendix E).

The final section of the questionnaire invited participants to opt in to the focus group or interview stages of the study (Appendix F). Participants were then separated according to professional role, with an initial aim of conducting ten individual interviews, comprising two participants from each role group, and two focus groups: one comprising four collaborators (two musical directors and two music producers) and one comprising six professional voice users (two musical theatre performers, two musicians and two students). These sample sizes were considered appropriate for the study's scope and timescale, whilst allowing sufficient depth of qualitative exploration (Hennink & Kaiser, 2022). Where volunteers exceeded the required numbers, stratified random sampling was used to maintain representation across each stakeholder group whilst minimising research selection bias (Stratton, 2023). The research-informed educational guide was provided in the interview or focus group confirmation email (Appendix G), allowing participants, where schedules permitted, sufficient time to engage with the resource prior to their interview or focus group.

Minor adaptations to the sampling strategy were required during recruitment. Due to limited musical director participation and scheduling constraints, only one musical director was able to complete an interview; therefore, only nine interviews were conducted. The planned professional voice user focus group was also split into two separate groups due to scheduling conflicts, one comprising musical theatre performers and students and the other comprising musicians. One of these groups subsequently became a dyad, which, although unintended, provided an opportunity for participants to engage in detailed discussion and elaborate on their experiences (Morgan *et al.*, 2013).

Individual interviews facilitated in-depth exploration of participants' individual experiences, while focus groups allowed participants to interact and build upon one another's responses. Both methods used a semi-structured format. This approach provided consistency across sessions whilst allowing participants to expand on their experiences and perspectives (Adeoye-Olatunde &

Olenik, 2021). Individual interviews lasted approximately 20 minutes, and focus groups approximately 45 minutes, providing sufficient time to explore the research aims whilst minimising participant burden (Morgan, 1997; Zavattaro & Gille, 2026). Both methods were conducted via Zoom, increasing geographical accessibility and reducing practical barriers. Online delivery also provided a more comfortable discussion environment, although potential challenges included maintaining engagement and managing technical difficulties (Falter *et al.*, 2022).

3.3 Data Analysis

Data were analysed using a qualitatively dominant mixed-methods approach, incorporating an embedded quantitative component. The primary analytical focus consisted of the qualitative interviews, focus groups and open-ended questionnaire data, which were analysed using Braun and Clarke's (2006) six-phase framework for thematic analysis. This approach was selected for its flexibility and suitability for exploring participants' experiences and perceptions, allowing themes to be developed through a primarily inductive coding process. Although the questionnaire was informed by existing literature, introducing a degree of deductive structure into its development, and the interviews and focus groups were informed by both existing literature and questionnaire responses, including the incorporation of a pre-existing guide for participant evaluation, the coding process remained primarily inductive, with codes generated directly from participant responses, rather than from predetermined categories. Saldaña's (2013) coding methods helped identify key concepts and, where appropriate, retained participants' own words in the process of developing meaningful codes. Within Braun and Clarke's (2006) framework, Saldaña's (2013) coding methods informed the development of first-cycle codes, primarily using descriptive and in vivo coding, alongside emotional coding where appropriate. Both coding and theme development were conducted manually using the Apple Numbers application, with coding transcripts provided in Appendices H, I and J. These codes were recorded in a master codebook before being grouped into categories and subsequently developed into themes (Appendix K). This integration of methods is consistent with the qualitative data analysis model described by Kalpokaite and Radivojevic (2019).

The embedded quantitative component consisted of the closed-ended questionnaire responses, which were analysed using descriptive statistics to provide contextual information regarding characteristics and reported experiences (Briggs Baffoe-Djan & Smith, 2019). Participants were assigned identification codes consisting of a number and their selected role, which were used throughout the analysis to maintain confidentiality and consistency (e.g., P27-MTP; see Table 1).

Identification Code	Meaning
PX	Participant number
M	Musician
MTP	Musical theatre performer
S/G	Student/Graduate
MD	Musical director
MP	Music Producer

Table 1 - Participant identification key

Schön's (1983) concept of the reflective practitioner informed the analytical process, particularly reflection-in-action and reflection-on-action. Reflection-in-action occurred during coding, as interpretations were continually reconsidered in response to the emerging data. Reflection-on-action involved reviewing these decisions following the development of categories and themes, considering researcher influence and potential assumptions. This supported an iterative and reflective approach to qualitative analysis.

3.4 Iterations of Educational Guide

Prior to this study, I developed an educational guide on vocal fatigue as part of my previous research project (Howley, 2026) (Appendix L). The guide was research-informed, developed from the available literature to support professional voice users in understanding, identifying, and managing vocal fatigue. Before use within this study, minor iterations were made to improve clarity, accessibility and presentation. These included refinements to wording, formatting, reducing text density, improving inclusivity across professional roles and highlighting guidance on when to seek professional support. No substantive research-informed content was altered.

3.5 Ethical Considerations, Researcher Positionality and Reflexivity

Due to my professional experience as a vocal coach within the specialised arts university sector and my own private practise working with professional musicians and musical theatre performers, I occupy the position of an insider researcher. My existing knowledge and experience within the field provided greater contextual understanding of participant experiences, supporting rapport and potentially facilitating deeper discussion. However, this familiarity also presented the risk of making assumptions surrounding participants' experiences or allowing prior knowledge to influence interpretation (Saidin & Yaacob, 2016). Particularly when interpreting participants' words and developing codes, my professional knowledge and experience occasionally influenced my initial interpretations. For example, when one participant described using vocal fatigue as "*a tool*" that can "*change a performance in a good way*" (P48-MP), my professional knowledge initially led me to interpret this as reflecting a lack of understanding of the potential effects of continuing to use the voice when fatigued. However, recognising that this interpretation reflected my own professional assumptions, I reconsidered the initial code and instead coded the statement as '*perception of using vocal fatigue to enhance emotion*', retaining the participants' perspective rather than imposing my own professional knowledge and judgement. This process was at times challenging and demonstrated the importance of remaining reflective throughout the study, ensuring all interpretations remained grounded in participants' accounts.

Due to the potential emotional impact associated with experiences of vocal fatigue and related vocal health concerns (Bingaman, Mauger & Cantor-Cutiva, 2026), ethical considerations were also required. The participant information sheet outlined the study's content and themes (Appendix E), enabling informed consent. Recruitment required careful consideration, particularly when

existing clients met the selection criteria. This potential power imbalance was mitigated by emphasising that participation was entirely voluntary and would not affect the existing professional relationship (Berkovic *et al.*, 2020). Participants were informed of confidentiality procedures, with data anonymised for analysis and audio/video recordings securely stored until completion of the Master's process.

4. Findings

The findings resulted in five overarching themes and associated subthemes (Figure 1; Appendix K), with participant distribution presented in Figure 2.

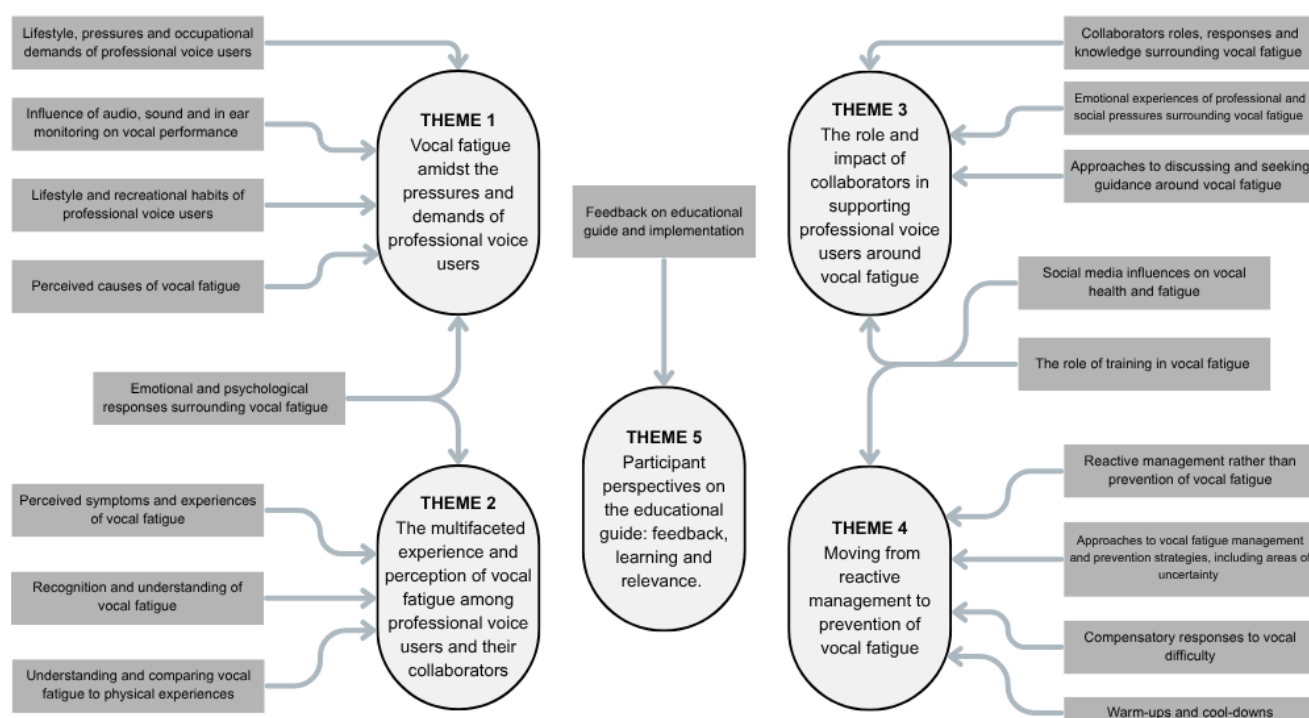


Figure 1 - Analytical process from categories to theme development.

- Professional musical director
- Professional voice user - Singer/musician
- Professional voice user - Musical theatre performer
- Professional music producer
- Student / 2026 graduate

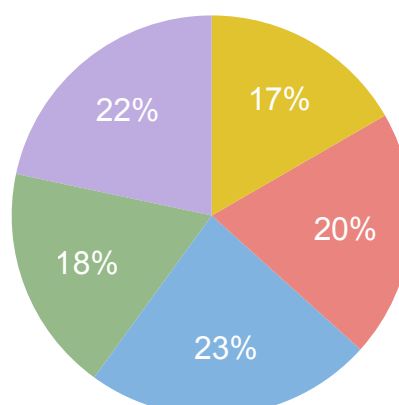


Figure 2 - Distribution of participants across participant roles.

4.1 Vocal Fatigue Amidst the Pressures and Demands of Professional Voice Users

Occupational demands & workload

Of the 39 participants who identified as professional voice users (students, musical theatre performers, and musicians), 38 reported experiencing vocal fatigue, while one participant was unsure. Participants' accounts demonstrated that occupational workload extended beyond the number of hours spent singing. Musical theatre performers described the demands of repeated performances, with one participant noting that *"obviously 8 shows a week is quite tough"*, and that *"some type of vocal fatigue is happening to me on a weekly basis"* (P9-MTP). Musicians similarly described periods of intensive work, particularly during seasonal demands such as the summer wedding season and the festive period. This suggests that repeated voice use during demanding work periods may influence an individual's perception of vocal fatigue.

Overuse and repetitive voice use were prominent within participants' accounts, particularly across recording, auditioning and rehearsal contexts. One participant described doing a full day of work and then returning home to *"doing maybe 15 takes of the same songs, trying to make it perfect"* (P49-S/G), while another noted, *"in tech, you do things over and over and over again"* (P4-S/G). These accounts highlight that weekly hours alone cannot fully represent vocal workload, as intensity and repetition influence vocal demand (Moniz, 2022), in addition to the variable and unpredictable nature of a professional voice user's workload. Participants also highlighted the demands of the material itself (von Germeten, 2023), with one participant noting fatigue as *"sometimes being an almost unavoidable result of a voice dealing with exceptionally demanding material on a repeated day-to-day basis"* (P19-M).

Financial pressures and professional expectations

Participants described situations in which financial necessity made it difficult to cancel professional commitments when experiencing vocal fatigue. One musician shared, *"unfortunately, even if I'm tired, I still have to go and do the gig to get paid"* (P12-M), while another highlighted the pressure associated with paid recording sessions, stating, *"when there's sessions that are being paid for, that's a massive stress...it has to be right"* (P8-M). This was also reinforced by a music producer who observed that *"no vocalist I've ever worked with has ever liked to turn down a paid gig... they'll come in if their voice is at top notch, or if their voice is struggling"* (P58-MP). Additional employment may further contribute to these pressures, with teaching and hospitality identified as common additional roles, both of which can involve substantial and sustained voice use (Martin & Darnley, 2024). This suggests that vocal fatigue is experienced within wider financial pressures, and prioritising vocal recovery may have immediate economic consequences for professional voice users (Berg *et al.*, 2022).

Taken together, these accounts suggest a cyclical relationship between financial pressures, professional expectations and vocal fatigue. Within this cycle, financial pressures may encourage overuse of the voice, potentially contributing to vocal fatigue, while concerns surrounding income, reputation and reliability make prioritising recovery time challenging. Participants also frequently described their voice as *“part of my identity”* (P8-M), and P49-S/G similarly identified reputation as *“the biggest fear for all performers”*. Reflecting on the proverbial quote *“you’re only as good as your last performance”*, this aligns with the findings of Portman-Smith and Harwood (2015), who identified reputation and reliability as important concerns for self-employed musicians. The present findings extend this relationship by suggesting that, for professional voice users, concerns surrounding vocal reliability may be experienced through experiences of vocal fatigue hindering their ability to meet professional and personal expectations.

These professional expectations may also have psychological consequences, with one student stating, *“I know that a performer and singer shouldn’t get fatigued”* (P31-S/G), suggesting that fatigue may be interpreted as personal failure or feeling inadequate. This psychological pressure may further contribute to the cycle, with one participant describing *“the mental side of it”* as *“the thing that sometimes makes it worse”* (P8-M). Vocal fatigue therefore appears not always as an isolated consequence of workload but is an experience embedded within wider financial and professional expectations for professional voice users.

Lifestyle and external factors that influence vocal fatigue

Lifestyle and environmental factors were also identified as potentially influencing experiences of vocal fatigue, with participants describing the tension between occupational vocal demands and participation in social and recreational activities. One musical theatre performer highlighted that *“a big part of our industry is loud environments after work”* (P9-MTP), demonstrating how occupational and social environments may extend beyond formal performance contexts, as socialising can involve further voice use, often in environments where individuals must increase their vocal effort to communicate. Participants also identified recreational behaviours including *“alcohol”* (P4-S/G), *“substance use”* (P48-MP), vaping and smoking, all of which have previously been documented to have negative effects on vocal health (Breitenfeld *et al.*, 2008; Byeon & Lee, 2013; Santos *et al.*, 2019; Mathmann *et al.*, 2024; Monteiro, Haddad & Azevedo, 2025). One participant questioned the extent to which performers should feel *“beheld to your job over your life”* (P41-MTP), suggesting that managing vocal fatigue involves negotiating and prioritising professional expectations with social activities. This is consistent with the concept of performers working as athletes, treating their voice the way an athlete would treat their body (LeBorgne & Rosenberg, 2024). However, participants’ accounts suggest that these behaviours should not be understood solely as individual choices. Occupational schedules, performance demands and social environments may shape opportunities for rest and constrain individual behaviour, demonstrating the interaction between lifestyle and occupational factors.

External performance conditions were also identified as contributors to vocal fatigue. Musicians and musical theatre performers discussed onstage monitoring, particularly in-ear devices; however, students did not mention this. Participants described how inadequate monitoring could increase vocal effort, with one performer sharing an experience where *“leads are feeding off of what the ensemble are doing, but we can't hear them so we're pushing, and they're pushing so we can hear them”* (P41-MTP), which relates to Solomon's (2008) suggestion that increased effort may contribute to vocal fatigue. This is especially relevant at present with the frequent increase of shows presented in the style of a rock concert (Taylor, 2025). However, participants, particularly musical directors, also identified insufficient education surrounding in-ear monitoring, suggesting that in-ears must be delivered with sufficient knowledge for performers to receive the benefit of the devices.

4.2 The Multifaceted Experience and Perception of Vocal Fatigue Among Professional Voice Users and Their Collaborators

Defining and understanding vocal fatigue and its aetiology

Figure 3 shows that all participants reported some level of familiarity with the term ‘vocal fatigue’.

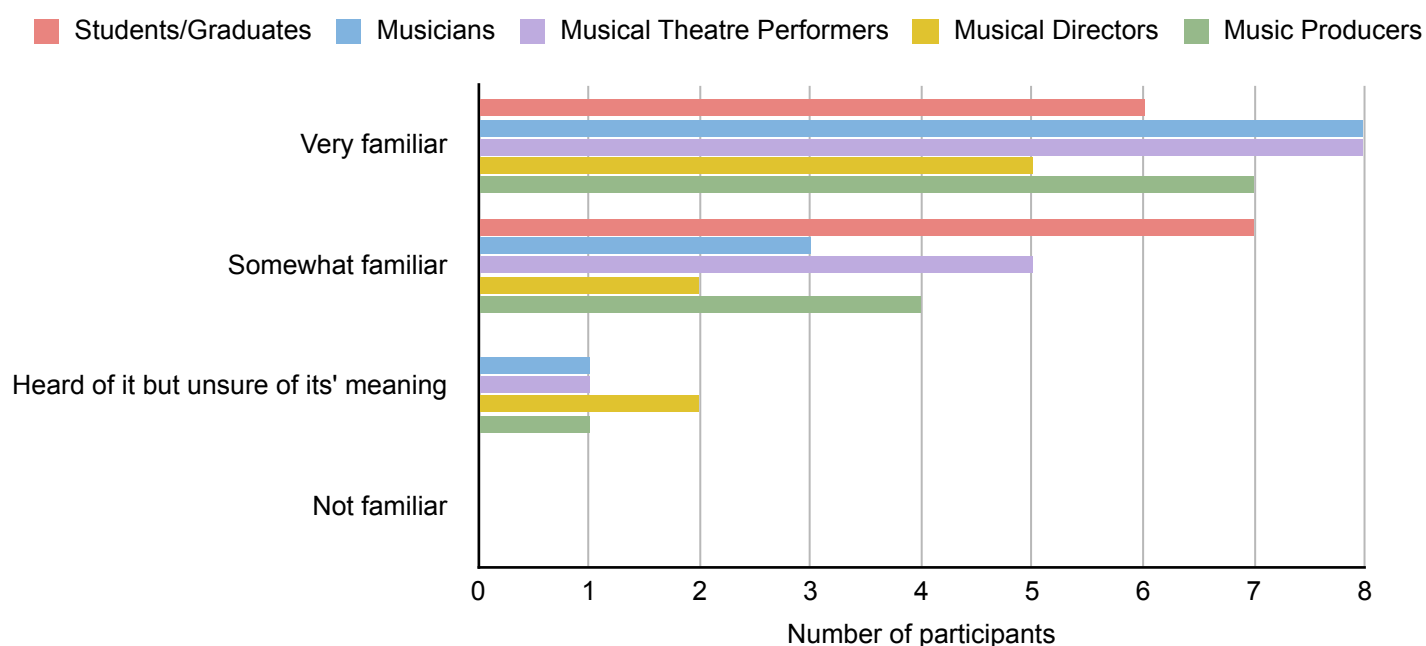


Figure 3 - Participants' familiarity with the concept of vocal fatigue.

Common descriptions included *“feeling vocally tired”* (P28-S/G) and using *“more effort to produce a sound”* (P9-MTP). Some participants conceptualised vocal fatigue as resulting from individual overuse, with one participant describing it as *“when the muscles that work together to produce voice have been overworked or abused”* (P52-MD). However, Calvache *et al.* (2024) identify multiple potential contributors to vocal fatigue, not always within the individual's control, as also

demonstrated in the previous theme. Therefore, vocal fatigue should not always be understood as the result of an individual overworking or abusing their voice, as this may overlook broader factors that contribute to the condition. Despite participants' familiarity as shown in Figure 3, qualitative accounts also indicated uncertainty around the definition of the condition. This apparent discrepancy suggests a disconnect between participants' perceived knowledge and demonstrated understanding of the condition, with one participant sharing, *"I think people call it vocal fatigue but don't actually know what it is"* (P31-S/G), while another stated, *"until you called it vocal fatigue, I don't think I'd really heard it called that before...so I think it's at least a positive step for me already, because I know what it's called"* (P58-MP). This suggests that familiarity with the terminology doesn't necessarily indicate a consistent understanding of the condition, supporting the need for greater clarity surrounding the definition as provided by Hunter *et al.* (2020).

Participants also identified a range of factors that they associate with the condition, including illness, seasonal issues such as hay fever, reflux, menstrual cycle, diet, hydration and vocal technique. Numerous participants mentioned illness and its connection with vocal fatigue, suggesting some uncertainty in distinguishing general illness from vocal fatigue. Sandage and Morton-Jones (2024) similarly highlight that illness does not necessarily equate to vocal fatigue, although working through an illness may potentially contribute to its onset. These findings further highlight the importance of understanding the multifaceted experience of vocal fatigue, rather than linking its occurrence to a single cause. Figure 4 below presents participants' confidence in recognising vocal fatigue.

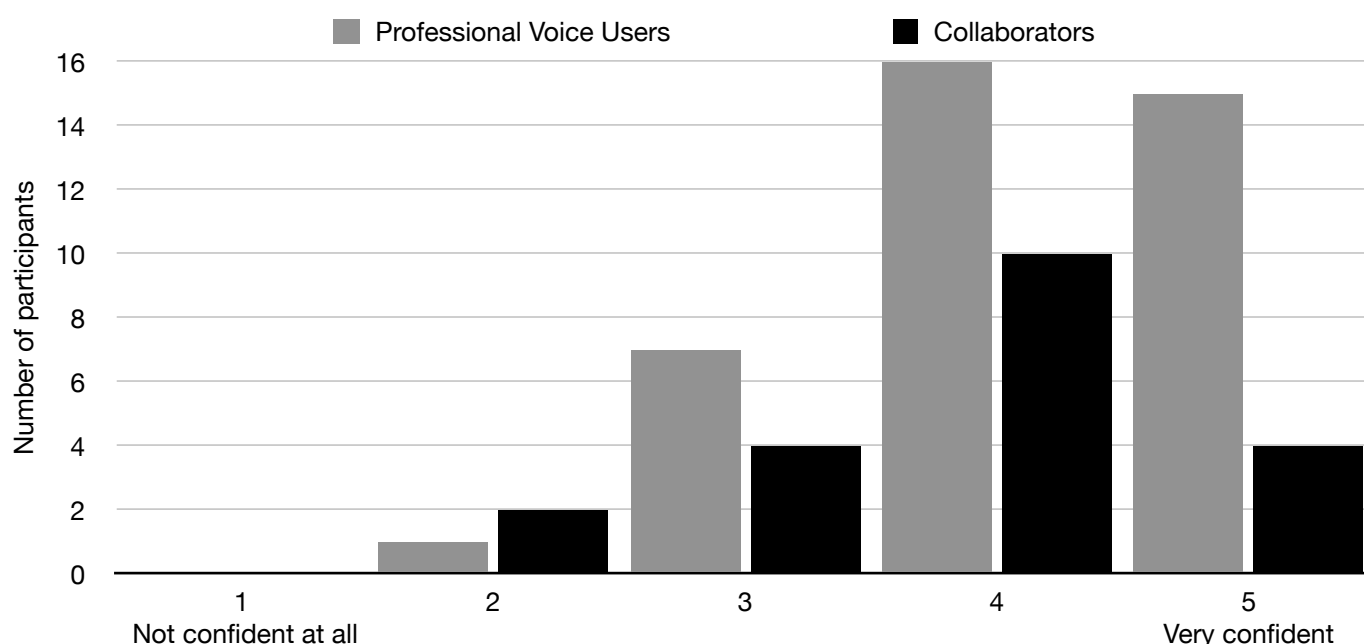


Figure 4 - Participants' confidence confidence in their ability to recognise vocal fatigue.

Although participants generally reported confidence in their ability to recognise the condition, qualitative accounts suggested that recognition relied on individual indicators and specific vocal tasks to identify fatigue, rather than a consistent understanding. An alternative perception was

identified among some musicians and music producers, who described vocal fatigue as potentially desirable for achieving particular vocal qualities. One producer explained, *“there are times when fatigue can be used as a tool...if I know there's quite an emotional track, but it doesn't need to be a particularly strong vocal...I may well put that at the end of a session... for the emotional aspect”* (P48-MP). This perception may reflect an attempt to produce vocal qualities associated with fatigue, which is particularly relevant when discussing vocal fry, a quality which some participants linked to vocal fatigue. Julea (2025) identifies vocal fry as a deliberate vocal technique used to produce emotional effects, while also noting that prolonged use of this quality can in fact contribute to vocal fatigue. This highlights a clear tension between the recommendations surrounding vocal fatigue, which emphasise prevention of the condition, and the potential culture within professional contexts in which some of the audible qualities associated with vocal fatigue may be aesthetically desirable. This disconnect raises considerations for both music producers and professional voice users, as encouraging or deliberately using vocal fatigue to produce vocal qualities may increase vocal-health risks. When professional voice users intentionally foster fatigue to create a specific sound, or producers encourage its use within a session, this creates additional ethical concerns regarding responsibility in a professional context around potential vocal injury. This emphasises the importance of both collaborators and professional voice users understanding the potential negative effects of embracing the qualities vocal fatigue may create and developing technically safe approaches to replicate these qualities without relying on vocal fatigue.

Recognition and interpretation of symptoms

Figure 5 shows that symptom patterns were broadly consistent across participant groups, with increased vocal effort, reduced vocal power, and reduced flexibility most frequently reported, while temporary loss of voice was the least common.

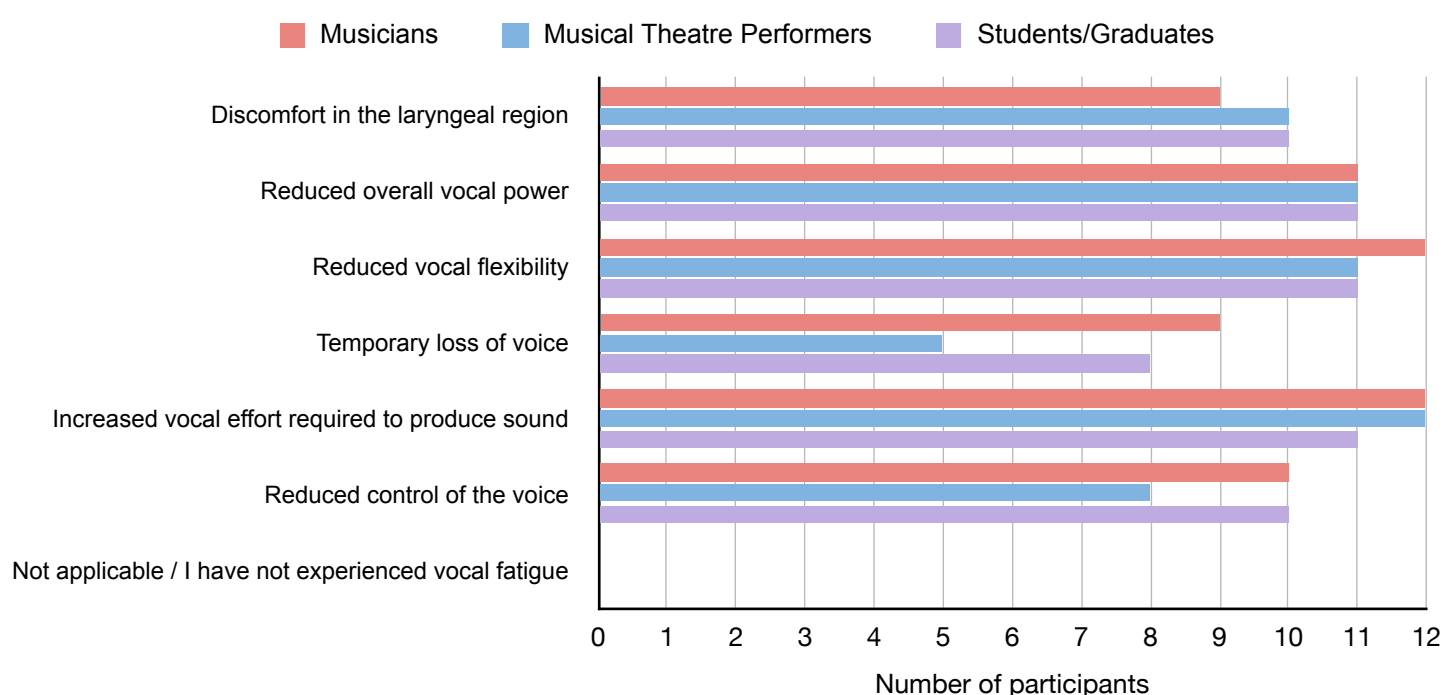


Figure 5 - Symptoms experienced by participants when feeling vocally fatigued.

Participants also differed in their perceptions of whether vocal fatigue was externally audible. Some described audible changes as an indicator of fatigue, while others suggested the condition isn't always audible to others. This distinction is particularly relevant for collaborators, who may not be able to identify fatigue solely from listening to a professional voice user.

Participants also showed some uncertainty surrounding how they interpreted these symptoms and whether they represented vocal fatigue or a vocal injury. One participant described how their vocal folds can “*feel a bit swollen*” (P9-MTP), while also acknowledging, “*obviously I can't feel my vocal folds*” (P9-MTP). This demonstrates how participants may interpret perceived sensations, while recognising that this may not accurately represent the condition. This uncertainty was also evident in a musical director's account of working with professional voice users, stating how they can quickly jump to assuming a significant injury, such as “*that means I have nodules and I can't sing for the next six months. And it's like, one, two, skip a few*” (P36-MD). This highlights the potential difficulty professional voice users may encounter in differentiating between vocal fatigue and a vocal injury, reinforcing the importance of greater education about vocal fatigue as a condition.

Emotional and physical impact and experiences of vocal fatigue

A common concern for participants was the difficulty “*not to have a negative connotation linked with vocal fatigue*” (P8-M), while also describing the shame and stigma associated with the condition, with one musical director noting that, “*there's still such a warped view on vocal health*” (P36-MD). Participants also described internal emotional responses interlinked with their experience of the condition, with one participant stating, “*I feel embarrassed, as if everyone knows that my voice is not strong and isn't being looked after correctly, even when I'm trying to*” (P31-S/G). In the questionnaire, participants selected the emotional responses they experienced when vocally fatigued, while collaborators identified emotions they observed when working with professional voice users experiencing the condition (figure 6).

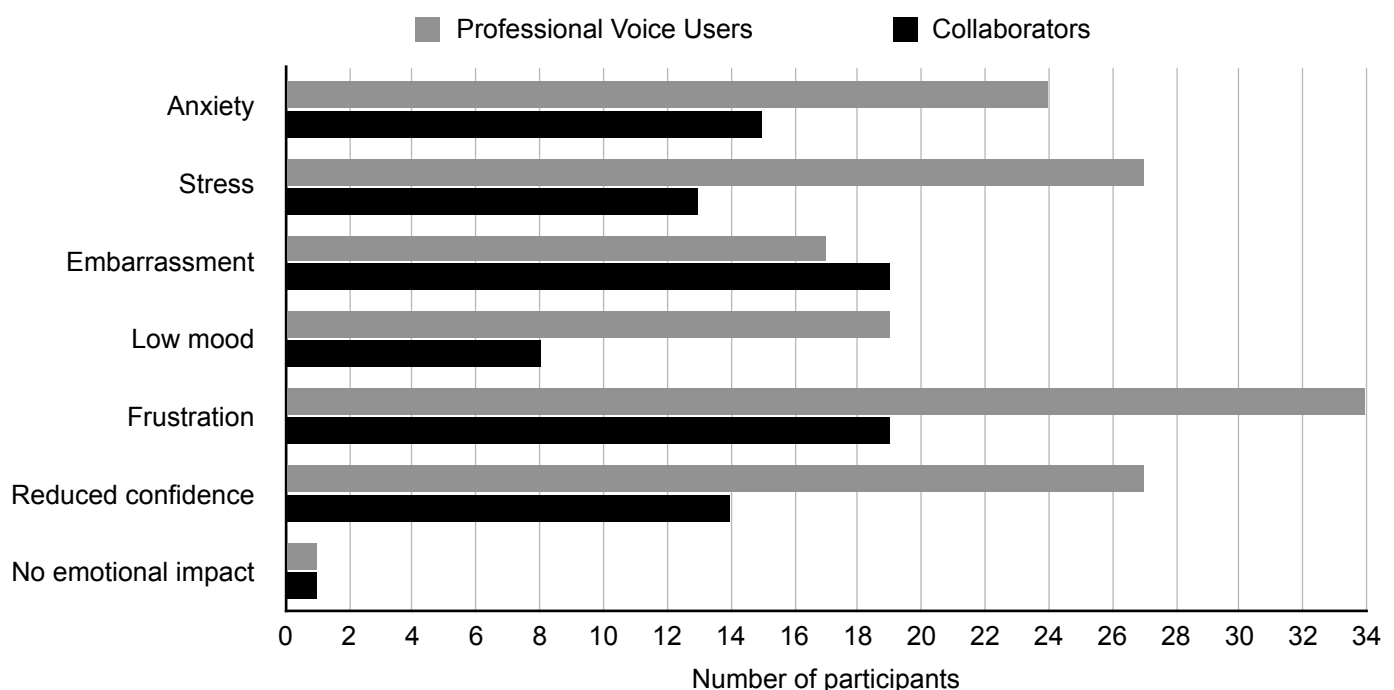


Figure 6 - Emotional responses participants associated with the experience of vocal fatigue.

One participant added an additional emotion, 'worthlessness', and only one professional voice user and one collaborator selected 'no emotional impact'. These findings are consistent with Bingaman, Mauger & Cantor-Cutiva (2026), who identified a reciprocal relationship between vocal and mental health among occupational voice users.

Another common theme was the perceived disconnect between vocal and physical health, with participants describing physical injuries as more widely recognised and accepted. Participants in the musical theatre industry, in particular, identified the additional demands of dancing and singing simultaneously, highlighting the need to consider how physical exertion may affect the voice. Literature similarly identifies the potential effects of combining these demands, including increased laryngeal tension (Thomas & Alexander, 2025), the potential to reduce maximum phonation time (Sliiden, Beck & MacDonald, 2017) and relationships between vocal exertion, respiratory strategies and vocal fatigue (Fujiki *et al.*, 2022), suggesting that the increased respiratory demands associated with simultaneous singing and dancing may contribute to vocal fatigue. Participants also made a connection between general physical fatigue and its impact on vocal function, with one participant noting that although musical directors may turn actors' microphones off to support vocal fatigue, *"you're still doing the physical"* (P27-MTP). This reflects Hamdan, Sataloff and Hawkshaw's (2019) identification of the relationship between body fatigue and vocal fatigue, suggesting that managing vocal fatigue may sometimes require physical rest in addition to reducing vocal demands. However, although the literature makes these links, participants perceived there to be a difference in how physical and vocal injuries are managed and responded to within professional contexts, with one participant explaining that *"if I'd have rolled my ankle, or pulled a muscle in my back, or dislodged something, they would have given me those two weeks to recover"* (P41-MTP); however, participants suggested that this time would not always be granted for a vocal injury. This suggests that vocal fatigue is not afforded the same legitimacy as physical fatigue, as reflected in discussions surrounding vocal and physical injuries. This may reflect wider institutional and professional constructions around how different injuries are accepted and perceived. Participants suggested that physical injuries are often more readily recognised as reasons for absence from training or the workplace, while vocal fatigue is not given the same consideration or acknowledgement.

4.3 The Role and Impact of Collaborators in Supporting Professional Voice Users Around Vocal Fatigue

What is a collaborator's role and responsibility to a professional voice user?

Collaborators play an integral role in the working lives of many professional voice users; however, this study identified uncertainty surrounding the responsibilities of musical directors and music producers in supporting vocal fatigue. Figure 7 shows that most collaborators had worked with a

professional voice user experiencing vocal fatigue, with only one collaborator selecting no, and one unsure, both of whom were music producers.

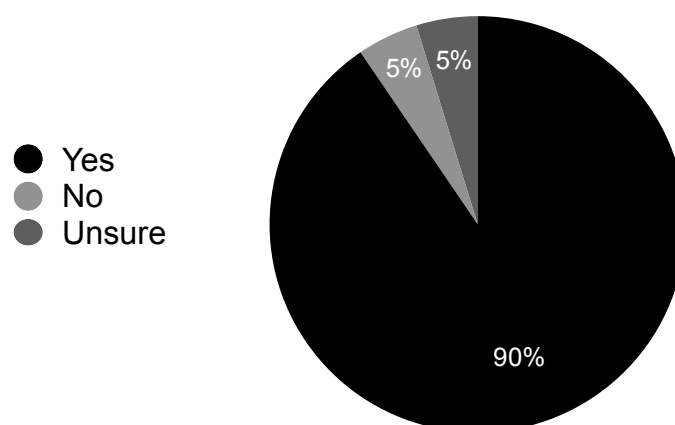


Figure 7 - Collaborators' experience of working with professional voice users experiencing vocal fatigue.

Analysis reflected conflicting views regarding the level of involvement collaborators should have in responding to vocal fatigue. One musical director described vocal fatigue as something that, although closely connected to their role, was not directly their responsibility, stating, *"although it's heavily linked to my job, it isn't my job"* (P44-MD). While a music producer similarly explained, *"I don't really feel like I've got that level of responsibility for them..."* (P58-MP), however, upon reflection, the same participant acknowledged, *"maybe that's where I'm going wrong, maybe there is a slight sense of challenge in terms of the relationship that we have with our freelancers...we probably should be a little bit more on the lookout for just how they're doing"* (P58-MP). In contrast, another musical director recognised a role in discussing vocal fatigue whilst still maintaining professional boundaries, stating, *"I'm comfortable discussing it but I wouldn't go so far as to advise anything beyond rest, I would always direct them to a technical specialist"* (P21-MD). This variation in perception demonstrates a lack of clarity regarding the level of responsibility collaborators believe they have toward professional voice users. The findings suggest that collaborators recognise that vocal fatigue intersects with their professional role, yet question the extent to which they should assume responsibility for guidance and management. However, responsibility may encompass several elements of dealing with vocal fatigue for collaborators, including identifying the condition, support within the workplace, guidance to prevent and mitigate the condition and ongoing management. This creates an unclear boundary between the collaborator's role in recognising, discussing and supporting vocal fatigue, and the point at which specialist guidance should be sought. This indicates a need for collaborators to have a clearer understanding of where their responsibilities lie and the type of guidance they may offer professional voice users.

Communication was also identified as an important consideration when approaching vocal fatigue. One producer questioned, *"How do we make you relaxed to allow you to perform efficiently and vocally deliver what you need to?"* (P48-MP), highlighting the need to balance supporting vocal management with fostering a supportive performance environment. Collaborators described difficulty in identifying or discussing vocal fatigue without causing offence, suggesting that the

language used when addressing the voice requires crucial consideration. One musical director explained, “*you have to use an entire different language and an entire different set of vocabulary, because... if you start talking about their singing without realising that it's them and their identity, they get upset, and that's totally understandable*” (P36-MD). This also appeared to be influenced by collaborators’ own musical training, with participants describing how their experience was often rooted in instrumental training, prior to or instead of working with the voice. One musical director explained this, stating, “*I’m not my instrument. You can tell me that something didn’t sound well, and that’s fine, because I’m not that piano*” (P36-MD). This further highlights the sensitivity required when delivering feedback to professional voice users when discussing and offering support around vocal fatigue.

Collaborators also recognised limitations in their own knowledge and expressed a desire for further education, particularly “*more around the mechanics*” (P30-MP); “*what’s going on biologically*” (P21-MD); and “*how to support singers experiencing vocal fatigue in session*” (P1-MP). This identified educational needs among collaborators, which are considered in the development and potential application of the educational guide.

The impact of collaborators and professional contexts on vocal fatigue among professional voice users

Figure 8 shows that collaborators appeared more comfortable discussing vocal fatigue with professional voice users than professional voice users were with collaborators.

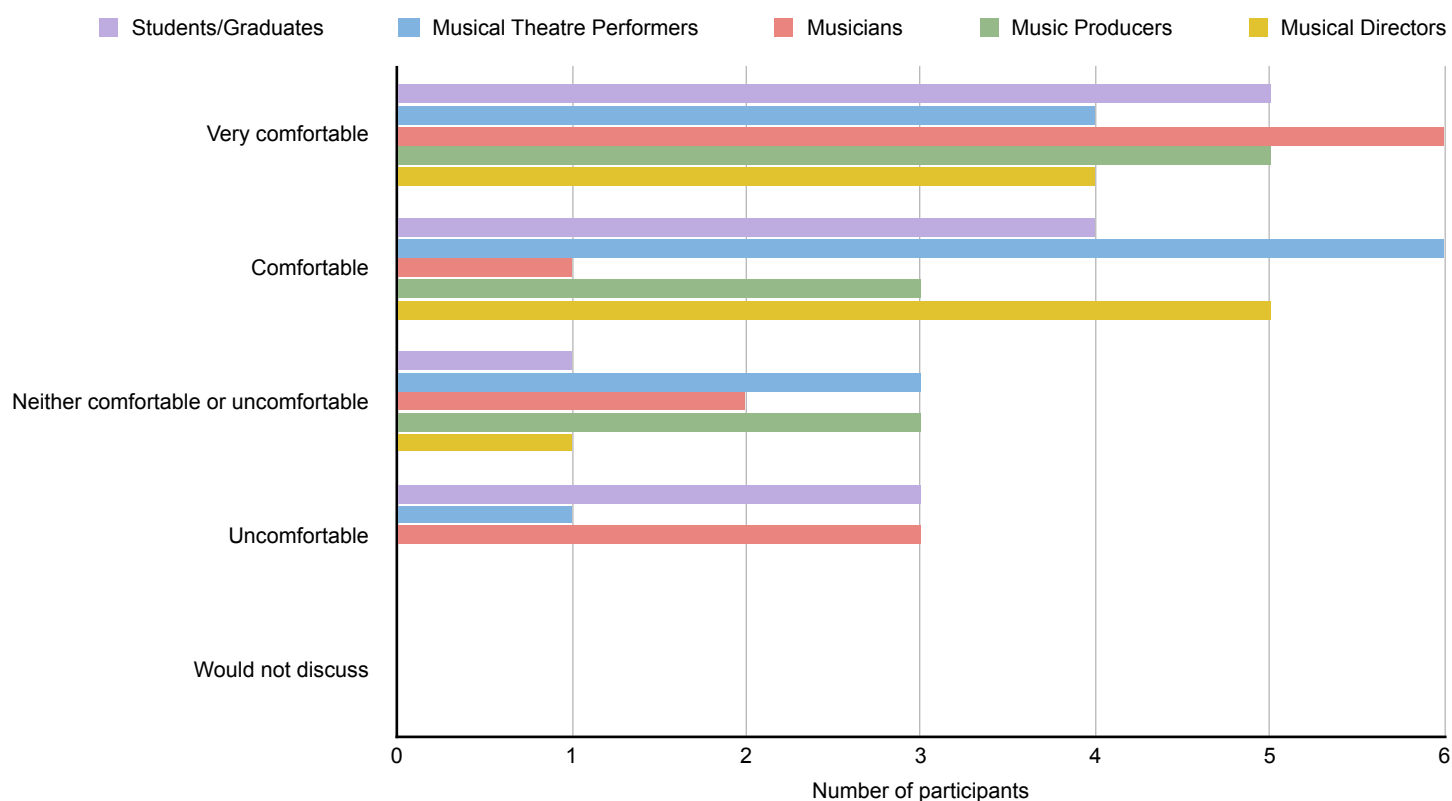


Figure 8 - Participants’ level of comfort discussing vocal fatigue with collaborators or professional voice users.

This may reflect the influence collaborators hold within professional environments and the potential consequences performers associate with disclosing vocal difficulties. Professional voice users frequently described a reluctance to let the company down, particularly when other company members were absent, creating additional pressure for remaining performers. One participant reflected on this experience, sharing *“if any other people are off, we will have to cancel the show. It's then, please push through where you can”* (P27-MTP). This was particularly evident in discussions surrounding the pressures of being a swing. Smith and Eyer (2015) identify the responsibility placed upon swings to ensure a show can continue. Numerous participants referenced the attitude of “the show must go on,” with one musical theatre performer sharing, *“my frustration comes with watching younger performers who fear getting ridiculed, or older performers who have the mentality the show must go on”* (P41-MTP). These accounts suggest that professional expectations and responsibilities may discourage performers from prioritising their vocal health.

Generation differences were also referenced, with both professional voice users and collaborators acknowledging the impact of age and experience on communication. One musical theatre performer shared, *“I have no problem telling a musical director that I am feeling tired or overworked. I say that now with 8 years of working experience but I wouldn't have had that confidence when I left drama school”* (P17-MTP), while a musical director similarly noted *“as a young person or as a fresh grad, you don't know what those boundaries are”* (P36-MD). However, in contrast, one musical theatre performer stated, *“I do feel like the younger generation coming through are a little bit more inclined to say I can't do the show”* (P27-MTP). These contrasting perspectives suggest that confidence in communication may be influenced by experience and changes in industry attitude, rather than age alone. Consequently, although performers may recognise vocal fatigue, professional expectations and environments can influence whether they feel comfortable acting upon it. Participants described concerns surrounding being perceived as *“unreliable”* (P19-M) or a *“diva”* (P33-M). This was also particularly evident where performers' own assessment of their vocal capability was challenged, with one performer recalling *“I was trying to say that I can't go on, and they were like you have to... it seems like you are well enough... And, I did, and then I had to go off mid-show”* (P9-MTP). This emphasises the importance of collaborators understanding professional voice users' needs and taking their assessment of their own vocal functionality seriously.

Participants also identified wider pressures within professional environments, such as expectations to perform “full out”, demands for high volume, and requests for particular vocal qualities, combined with the pressures of limited rehearsal time, which contribute to the way an individual manages balancing resilience with vocal health. One participant described how support was difficult to access during a rehearsal room because *“it's got to be quick. You've got to get through all the material. So it could be that you're doing it really unsafely”* (P27-MTP). This suggests that vocal fatigue management may be influenced not only by the individual but by the professional environment and expectations established by the collaborators. This was reflected by one

participant who described having to *“fight for what I want or need and sometimes being put in a position of having to work through, even when I know I shouldn’t, to not damage my voice further”* (P9-MTP). Overall, these findings suggest that the management of vocal fatigue is strongly influenced by the wider professional context, with the environment fostered within these settings playing a significant role in whether professional voice users feel comfortable to acknowledge and respond to vocal fatigue.

The role of training, education and alternative sources of information surrounding vocal fatigue

The role of training in how professional voice users identify, manage and respond to vocal fatigue was a prevalent theme in this study. Many participants expressed a desire for greater education surrounding the topic within training environments. Participants described training as insufficiently individualised, meaning that recommended guidance may not be equally effective for all professional voice users. Participants also described the repetition of general vocal health advice, with one student stating, *“we had one vocal health class.. a 1 hour 15 minute class over 3 years”* (P49-S/G). This suggests that greater consistency and integration of vocal health education throughout training may be beneficial. Participants also suggested that the vocal fatigue educational guide in development would be a welcome tool to provide accessible information to support the management and prevention of vocal fatigue throughout training.

Multiple participants also discussed a culture of disguising illness within training, with one participant sharing that they were encouraged *“don’t tell anyone, if you’re unwell or anything”* (P31-S/G). This mirrors Moore’s (2024) description of professional voice users feeling publicly marked by vocal injury. This was further reflected in discussions surrounding ‘voice rest badges’ offered to students within training. Although intended positively, participants described wearing these badges as *“a sign saying that I’m not okay...look, I’ve got something wrong with me”* (P31-S/G). Others noted that some students use the signs as an excuse to avoid singing, meaning those who would benefit from them may be reluctant to use them, due to concerns about being labelled as lazy. This highlights the importance of considering not only the practical provision of vocal fatigue support, but also the culture in which the support is implemented.

There was also discussion surrounding the credibility of advice provided to students, with one participant stating, *“they try and implement guidance but when the teachers are also outside smoking, it contradicts itself, to be honest. You can’t give advice to young people if you’re not taking the advice yourself”* (P49-S/G). Participants therefore discussed independently sourcing information surrounding vocal health, particularly through social media and seeking advice from credible musicians and performers. However, they also recognised the potential for misinformation, with one participant noting *“famous performers say things they don’t really understand, on social media, which can lead to misconceptions for younger people”* (P49-S/G). This is further supported

by Alter *et al.* (2026), whose study exploring the vocal health related content on TikTok found that the majority of content was unreliable and only moderately accurate.

Collectively, these findings indicate the range of contextual factors that contribute to how successfully guidance and advice are implemented by students and professional voice users. Education on vocal health must consider multiple factors, including the frequency of the information provided, the credibility of the guidance, the modelling and implementation of recommended behaviours by those delivering it, and the provision of individualised guidance. When these factors are considered, education may be more likely to be well received and implemented effectively within an educational environment. The vocal fatigue guide in this study offers a potential approach to improving access to consistent, research-informed information for professional voice users, enabling them to make more informed decisions about the information they encounter.

4.4 Moving from Reactive Management to Prevention of Vocal Fatigue

The dominance of reactive management over prevention

A clear majority of participants leaned towards reactive management over prevention when addressing vocal fatigue, with collaborators echoing this observation. This was also evident when participants were asked to identify separate strategies for management and prevention, with most strategies being identical and multiple participants listing no prevention strategies. This suggests a lack of distinction between the two approaches and a prioritisation of reactive management. This links to the previously discussed ‘Voice Eruption Volcano Model’ developed by Murali and Boominathan (2026), whose internal layers represent factors contributing to an eruption and could reflect the experience of vocal fatigue. Participants identified areas where they wanted to increase their knowledge, with prevention being the most common response; one participant asked, *“how to manage it in an industry setting that is healthy but doesn’t compromise your reputation in the industry”* (P35-S/G). This reinforces the need to distinguish preventative strategies from reactive management, as reflected in the educational guide.

One participant also described a wider tendency toward reactive responses in society, stating, *“I think human mentality in a lot of areas of life is more consequential than it is preventative... and I think that obviously translates into music, singing and voice work”* (P8-M). Similarly, a musical director reported only seeing professional voice users prioritise prevention when *“something has happened to them”* (P36-MD). A music producer echoed this, observing that those with previous experience of vocal difficulties will *“prepare a lot better, and they will keep their voice fit, and trained, and healthy”* (P48-MP), yet stated that the majority don’t do this until they are *“at the point where they need to do something about it”* (P48-MP). Dye (2021) discusses how the perceived immediacy of a health threat can influence the prioritisation of prevention. This idea is further developed by Dye (2024) through a concept called the 3Ss, describing how **soon**, how **certain**,

and how **shocking** the threat is perceived to be. Prevention is undertaken to reduce the threat, and the severity of the 3Ss may influence how individuals prioritise preventative behaviours. As Zhou *et al.* (2025) noted earlier, knowledge does not always translate into preventative behaviour. However, the tendency to favour reactive management may depend on multiple factors. A knowledge deficit surrounding management and prevention could be one factor, while contextual barriers, including financial constraints, professional workload or workplace culture, may also influence whether preventive strategies are successfully implemented. Nevertheless, the minority of participants who prioritised prevention demonstrate that this relationship is not straightforward. One participant stated, *“I don't really have the time to be like, okay, I've lost my voice, what am I going to do now?”* (P8-M), suggesting that prevention may also be valued as a means of avoiding the professional consequences of reactive management. This contrasts with the predominantly reactive approach, suggesting that prioritising prevention may also depend on the additional cost of reactive management.

The complexities, myths and misconceptions surrounding vocal fatigue management strategies

Although participants demonstrated greater clarity surrounding vocal fatigue management strategies, multiple approaches appeared to be conducted without consideration of individual needs. Steaming, nebulising and vocal rest were unanimously identified across professional voice users and collaborators as the most commonly used and recommended strategies, suggesting that these practices have become normalised within professional voice settings. These strategies appeared to be common recommendations, with one participant recalling collaborators asking, *“Have you steamed? Have you got your nebuliser?”* (P41-MTP), whenever vocal fatigue was discussed. However, some participants questioned their individual benefit, stating, *“I'm doing it because I think I should”* (P27-MTP), while another reflected, *“I just get screamed at to steam all the time...but I think overall hydration helps me a lot more”* (P46-M). Conversely, multiple participants perceived nebulising as beneficial, describing how it increases moisture, *“loosens the secretions”* (P20-M) and provides rehydration, acting as a *“quick fix”* (P9-M). Participants differed in whether they perceived greater benefit from steaming or nebulising, highlighting the importance of individualising vocal management strategies. Professional voice users should also recognise that superficial hydration cannot replace systemic hydration, as previously discussed in the literature (Alves *et al.*, 2019).

Participants also described misconceptions and uncertainty surrounding commercial remedies. Vocalzones were discussed as a popular remedy within professional environments, with one music producer noting that a client *“always brings Vocalzones in”*, and that *“I keep some in now too”* (P30-MP), while another reported, *“I have Vocalzones on pre-order on Amazon”* (P20-M). However, reliance was not universally viewed as effective, with one music producer questioning whether Vocalzones make a *“huge difference”* (P48-MP). Commercial promotion by celebrities such as Michael Ball and Dionne Warwick (Vocalzone, n.d.), alongside the gifting of Vocalzones to

West End productions such as *Hercules* (VocalzoneHQ, 2025), may continue to contribute to their perceived credibility. Meenan *et al.* (2016) suggest that Vocalzones should be used with caution, as they may mask the physiological response to pain, enabling continued voice use without addressing fatigue and reinforcing reactive rather than preventative management.

Understanding and responding to the individual experiences of vocal fatigue

Following the previous sub-theme, participants emphasised the importance of understanding their own voice and managing their own individual experience of vocal fatigue. Warm-up and cool-down practices were frequently discussed, with one participant challenging the expectation that professional voice users must partake in a standardised company warm-up, stating, *“to me, it’s much more professional to take myself off and do the vocal warm-up that I need to do for what my voice is doing in that show”* (P41-MTP). This account suggests that the perceived effectiveness of a warm-up is dependent on the individual’s requirements, highlighting the importance of individualised strategies. In contrast, one musical director viewed the company warm-up as *“a really good indicator of who’s feeling what”* (P36-MD), using it to observe how company members are feeling, vocally. While a collective warm-up may therefore provide an opportunity for a musical director to identify any vocal concerns, it may not necessarily accommodate each individual’s needs. Hoch and Sandage (2018) similarly identify the need for greater knowledge surrounding warm-up practices for managing vocal fatigue, highlighting the importance of adapting these to the individual voice user and their demands, as if not conducted correctly, there is the potential to increase vocal demand, which in turn may contribute to vocal fatigue (Hoch & Sandage, 2018).

The findings also highlighted the importance of understanding and developing consistent vocal technique. Participants identified incorrect technique as a potential cause of vocal fatigue, discussing how efficient vocal technique can reduce vocal effort (Davids & LaTour, 2020). Some participants also reported semi-occluded vocal tract (SOVT) exercises as positive management tools, while others expressed a desire to further develop their knowledge in this area. This demonstrates that knowledge of a strategy does not always equate to understanding the correct implementation, and SOVT exercises should also be designed to support the individual (Ragan, 2020). Vocal rest was another frequently recommended strategy, although participants suggested it was often offered as a general recommendation, rather than in response to an individual experience of vocal fatigue. Sataloff *et al.* (2019) distinguish between absolute and relative voice rest; however, participants did not appear to recognise this distinction. Instead, participants stated that vocal rest was often described as an unspecific blanket strategy, rather than considering specific approaches to managing their individual symptoms. Participants also described the process of conducting successful voice rest as *“difficult”* (P20-M), further emphasising the need for clarity in conducting vocal rest alongside the demanding lifestyle of a professional voice user. Hydration, sleep and vocal massage were also identified as other key strategies to aid vocal maintenance. However, participants’ trial-and-error approaches and uncertainty surrounding strategies highlight the importance of understanding the individual experience of vocal fatigue

before determining appropriate management. One participant captured this by asking, *“Do you think you could ever pinpoint as to when or where you're feeling it?”* (P4-S/G). This raises an important consideration: without being able to identify the nature and potential cause of their fatigue, professional voice users may struggle to select strategies that directly target the underlying mechanisms contributing to their individual experience (Shembel & Nanjundeswaran, 2025). Developing greater awareness of these factors may therefore enable professional voice users to make more informed decisions about the most appropriate management for their individual experience.

4.5 Participant Perspectives on the Educational Guide: Feedback, Learning and Relevance

Feedback on the structure, format and accessibility of the educational guide

Initial feedback focused on the structure, format and accessibility of the guide. Participants consistently described the resource as clear, accessible and logically structured, with one participant describing it as *“super easy to understand, really clear and tons of information. But, in a good way, it's not overwhelming”* (P2-MP). This suggests the guide communicated the condition's complexities without participants perceiving the volume or level of information as overwhelming, supporting the guide's original aim to reduce cognitive overload through its design. Participants particularly valued the accessibility of the scientific content, which was important feedback given the condition's complexity and ongoing development, particularly around the biophysiological mechanisms. Rather than removing scientific terminology, the guide attempted to make this information more accessible to a less specialised audience. However, it is important to consider this feedback alongside my positionality in creating the guide. Having already acknowledged my position as an insider researcher and having developed a rapport with each participant through the interview and focus groups prior to discussing the guide, there is potential for researcher-participant dynamics to have influenced the feedback. This may have encouraged participants to provide more favourable responses, particularly when evaluating a resource developed by the researcher.

Participant learning, key areas of engagement and suggested additions

Participants reported learning something new from the guide, with discussion focusing particularly on the explanations of potential causes and mechanisms underpinning the condition. As learning was not objectively assessed, the findings reflect participants' perceived learning rather than demonstrated changes in knowledge. Participants also responded positively to the logical progression of the guide, with one participant describing this structure as *“quite realistic, it's not just, your voice is tired, cancel all your gigs ever, it's, evaluate the impact of it, consider potential causes, targeted strategies”* (P12-M), highlighting the value of following a step-by-step process

when managing vocal fatigue. This aligns with the study's broader findings, where participants described jumping to conclusions before understanding their individual experience.

The scientific content generated the strongest engagement, with one participant stating, *“I love the whole scientific elements of the voice, and it would be nice if we got taught this”* (P49-S/G), while another responded, *“all of this biology, I had no idea!”* (P21-MD). Particularly significant was the observation that *“a lot of the time people just go... ‘oh my voice is so tired’ and that’s just as far as they register that their voice is tired”* (P42-MTP). This directly reflects the purpose of the guide: to move beyond the general acknowledgement of vocal fatigue and begin exploring individual experiences and responses. Engagement with this information may support more specific identification and management strategies.

One area of discussion, particularly among music producers, concerned the potential inclusion of information regarding the consequences of unmanaged vocal fatigue. One participant questioned, *“I did wonder if why should I care about this...needs to come first?”* (P48-MP) while another suggested, *“if I was to add another section, I would, maybe say what the dangers are, if you didn’t address it?”* (P2-M). This may reflect the importance of perceived threat in managing health conditions, as Dye (2021) suggests, understanding a condition's potential consequences may influence an individual's motivation and approach to response. However, this should be considered alongside participant feedback praising the guide's positivity, with one participant stating that the guide gets *“rid of the idea of the doom and gloom of fatigue”* (P42-MTP). These findings therefore highlight a potential tension for future development in communicating the significance of vocal fatigue and its potential consequences without creating unnecessary concern.

The potential application of the educational guide in professional practice

Participants identified a range of potential applications for the educational guide, including professional voice training within universities and colleges, individual singing lessons, healthcare settings, recording studios and professional company settings or organisations such as *“equity”* (P27-MTP). One participant stated that the guide would be beneficial for *“anybody that’s trying to make a career by using the voice”* (P30-MP), and another suggested it could help *“creatives to understand what it is that voice users are coming to them with”* (P41-MTP), with other participants suggesting that the guide be provided to non-singing band members too (P12-M), enabling those who work closely with professional voice users to develop an understanding of the condition.

4.6 Limitations

This study was not without limitations. Although 60 participants provided a substantial dataset for the scope and duration of the study, larger samples could provide greater representation across participant groups. The smaller subgroup sizes mean that differences between participant groups should be interpreted cautiously rather than taken as definitive comparisons. In addition, the

findings provide insight into the experiences of participants in this study but may not reflect the full range of experiences across the wider population of professional voice users. The reliance on self-reported experiences means responses may have been influenced by individual interpretation. Sampling bias must also be considered, as participants who volunteered for a study on vocal fatigue may have a pre-existing interest in the topic or greater awareness surrounding the condition, potentially influencing their ability to recognise or describe vocal fatigue. Including students and recent graduates alongside established professionals also means differences in professional experience should be considered when interpreting their experiences collectively. Furthermore, because the researcher developed the educational guide, reflexivity was particularly important throughout data collection, analysis, and interpretation to minimise researcher bias. The guide was evaluated through participants' perceptions of its accessibility, relevance and perceived learning, rather than through objective assessment of changes in knowledge or management of vocal fatigue.

5. Conclusion

This study explored how professional voice users and their collaborators perceive, identify and manage vocal fatigue, alongside exploring participants' responses to an educational guide. The findings show that vocal fatigue cannot be understood solely as a physiological response to vocal loading; it is shaped by individual experiences and wider professional contexts, including workplace culture, financial pressures, professional hierarchies, collaborator relationships, and professional expectations, all of which influence its identification, management, and potential prevention.

Collectively, the findings demonstrate that although most participants were generally familiar with the concept of vocal fatigue, there was less consistency in understanding its causes, underlying mechanisms and appropriate management. Vocal fatigue was experienced within complex professional and personal contexts, while management was predominantly reactive, with participants demonstrating greater awareness of strategies used once fatigue had occurred than of methods for prevention. However, participants also identified a need for greater knowledge surrounding both identification and prevention, suggesting that improved education may support a shift to preventative approaches, although knowledge alone may not overcome wider occupational and contextual barriers.

Although existing research has explored individual perceptions and experiences of vocal fatigue (Kitch & Oates, 1994; Phyland *et al.*, 2013; Joseph, Joseph & Jacob, 2020), this study contributes further understanding by examining not only participants' experiences of vocal fatigue, but also the knowledge gaps and areas of uncertainty they identified. Including both musical directors and music producers further extends consideration beyond the individual voice user, highlighting the

need for greater clarity around collaborators' responsibilities in recognising, supporting, and responding to vocal fatigue.

The educational guide provided an additional contribution to the study. While existing resources broadly address vocal health (Cazden, 2025) and vocal overloading (Burnay, 2026), comparatively less educational material focuses on developing an understanding of vocal fatigue as a whole, including its recognition, contributing factors, underlying mechanisms and individualised management. Participants responded positively to the guide, highlighting its potential application across training, professional and collaborative settings. Although it was not objectively evaluated for changes in knowledge or management behaviour, its perceived accessibility and relevance suggest that research-informed education may provide a useful approach to improving access to consistent information surrounding vocal fatigue.

Developing skills in qualitative data collection, coding and thematic analysis strengthened my confidence in research practice, while deeper engagement with both the literature and data further refined my understanding of vocal fatigue, its aetiology, mechanisms, symptoms and management. Translating research findings into practical guidance developed my ability to consider how research can be applied to support both professional voice users and their collaborators. Reflecting on my position as an insider researcher further enhanced my ability to recognise and critically examine how professional knowledge could influence interpretation, supporting a more reflective approach to analysis.

These findings should be considered alongside the previously discussed limitations. Further research could investigate whether increased knowledge translates into changes in preventative behaviour, professional practice, and whether this influences the frequency of vocal fatigue, including evaluation of the educational guide within such research. Investigating the knowledge of singing teachers and vocal coaches would also provide a further perspective. Exploring whether targeted, individualised strategies produce different outcomes across specific experiences of vocal fatigue may also support the development of more tailored management approaches.

Vocal fatigue is a multifaceted phenomenon (Welham & Maclagan, 2003), not only in its underlying mechanisms but also in the experiential variation of the condition. Developing accessible, research-informed resources may therefore enable voice users and their collaborators to further recognise and understand their individual experiences and responses, with the potential to influence targeted approaches towards prevention and management.