Stigma Against Vocal Illness Among Professional Singers and Actors

Colin Jones

School of Communication Sciences and Disorders

Faculty of Medicine and Health Sciences

McGill University, Montreal

July 2022

A thesis submitted to McGill University in partial fulfillment of the requirements of the degree of

Master of Science in Communication Sciences and Disorders

© Colin Jones, 2022

Abstract

Background: Individuals with a stigmatized medical condition may become reluctant to seek medical help. Among professional singers and actors there can be a stigma associated with voice disorders. However, evidence for this vocal stigma is limited and primarily anecdotal. No quantitative research has explored the impact of vocal stigma that may have on help-seeking behaviour in professional vocal performers. Primary goals of this study were to (a) quantitatively evaluate vocal stigma among professional actors and singers, (b) quantify the association between vocal stigma and help-seeking behaviour, and (c) explore personal factors that may influence vocal stigma.

Methods: An online survey questionnaire was created and deployed using LimeSurvey. The questionnaire comprised 64 items, grouped into 8 sections. Sections 1-3 pertained to demographics (6 items), occupation (3 items), and vocal health history (14 items). Sections 4-6 pertained to three constructs for predicting help-seeking: information, motivation, and behavioural skills. Section 7 measured experiences of stigma. These four sections (4-7) each comprised of 10 Likert-type items on 5-point scales. Section 8 was left open-ended for feedback. Performers were recruited via professional organizations, including the National Association of Teachers of Singing and the Alliance of Canadian Cinema, Television and Radio Artists. Gender-matched controls were recruited via Prolific, an online recruiting platform.

Results: A total of 200 professional singers and actors and 203 controls participated in the survey (both groups: ages 21-65; female 65%, male 32%, other 3%). Performers reported 14% more stigma than controls ($t(401)=8.87$, $p=0.025$). In both groups, stigma correlated negatively with motivation (Performers: $r=-0.49$; Controls: $r=-0.59$, $p<0.001$) and behavioural skills (Performers: $r=-0.28$; Controls: $r=-0.46$, $p<0.001$). Stigma was not significantly associated with information (Performers: $r=-0.09$, $p=0.205$; Controls: $r=-0.09$, $p=0.200$). The VHI-10 score was positively correlated with vocal stigma (Performers: $r=0.46$, Controls: $r=0.26$, $p<0.001$). In both groups, stigma was negatively associated with age (Performers: $r=-0.27$, $p<0.001$; Controls: $r=-0.17$, $p=0.018$), recency of a voice disorder (Performers: $\rho=0.15$, $p=0.033$; Controls, $\rho=0.14$, $p=0.047$), and frequency of voice disorder (Performers: $\rho=0.46$, $p=0.005$; Controls: $\rho=0.26$, $p=0.031$). In the performer group, singers reported levels of stigma were 15% higher than actors ($t(198)=-1.67$, $p=0.025$).

Discussion: This study confirms the existence of vocal stigma among professional singers and actors in Canada. Motivation and behavioural skills were negatively associated with stigma, suggesting that those experiencing greater stigma are less likely to seek help for a voice disorder. The negative association between age and stigma may indicate that early-career performers are more vulnerable to the effects of vocal stigma. The positive association between vocal stigma and a history of voice disorder may indicate that vocal stigma is not commonly recognized by individuals without direct experience.

Performers' access to vocal care could be improved by reducing vocal stigma. A common intervention for reducing stigma is education outreach, which could be provided by speech-language pathologists and other vocal health specialists. This could include education about accessing services and clarifying the roles of different health professions. These events could also facilitate conversations about individuals' struggles and recovery experiences, which have been found effective at combatting stigma in other health areas.

By shedding light on vocal stigma, our study could also help performing arts organizations and vocal health specialists collaborate to protect artists in more direct ways, for example by advocating for performers' medical privacy, supporting injury claims, and promoting preventative practices within the performance industry.

Résumé

Contexte : Les personnes ayant une condition médicale stigmatisée peuvent devenir réticentes à chercher de l'aide. Parmi les artistes vocaux, les troubles de la voix peuvent être stigmatisés. Cependant, il-y a peu de données sur cette stigmatisation vocale dont aucune qui explore son impact envers la recherche de l'aide. Les objectifs de cette étude étaient d'évaluer quantitativement la stigmatisation vocale chez les artistes vocaux, de quantifier le lien entre la stigmatisation vocale et la recherche de l'aide, et d'explorer les facteurs qui peuvent influencer la stigmatisation vocale.

Méthodes : Un questionnaire sur internet a été créé et déployé avec LimeSurvey. Il comprenait 64 items, regroupés en 8 sections : démographie (6 items), travail (3 items), antécédents de santé vocale (14 items), trois échelles de 10 items pour prédire la recherche de l'aide (information, motivation et intentions), une échelle sur l'expérience de stigmatisation (10 items) et commentaires (1 item). Des artistes ont été recrutés dans des organisations professionnelles, notamment le National Association of Teachers of Singing et l'Alliance of Canadian Cinema, Television, and Radio Artists. Des participants des mêmes sexes ont été recrutés avec Prolific, une plateforme de recrutement sur internet.

Résultats : 200 artistes vocaux et 203 participants de contrôle ont participé à l'enquête (les deux groupes : âgés de 21 à 65 ans ; femmes 65 %, hommes 32 %, autres 3 %). Les artistes ont signalé 14 % de stigmatisation en plus que les participants de contrôles (t(401)=8,87, p=0,025). Parmi les artistes, les chanteurs ont signalé 15% de stigmatisation en plus que les acteurs (t(198) =-1,67, p=0,025). La stigmatisation était corrélée négativement avec la motivation (Artistes : r=-0,49 ; Contrôles : r=-0,59, p<0,001) les intentions (Artistes : r=-0,28 ; Contrôles : r=-0,46, p<0,001), l'âge (Artistes : r=-0,27, p<0,001 ; Contrôles : r=-0,17, p=0,018), la récence d'un trouble de la voix (Artistes : ρ=0,15, p=0,033 ; Contrôles : ρ=0,14, p=0,047) et la fréquence des troubles de la voix (Artistes : ρ=0,46, p=0,005 ; Contrôles : ρ=0,26, p=0,031). Le score VHI-10 était corrélé positivement avec la stigmatisation (Artistes : r=0,46, Contrôles : r=0,26, p<0,001). La stigmatisation n'était pas significativement liée à l'information (Artistes : r=-0,09, p=0,205 ; Contrôles : r=-0,09, p=0,200).

Discussion : Cette étude confirme l'existence d'une stigmatisation vocale chez les artistes vocaux au Canada. La motivation et les intentions étaient négativement associées à la stigmatisation, ce qui suggère que les personnes les plus stigmatisées sont moins susceptibles de demander de l'aide pour un trouble de la voix. L'association négative entre l'âge et la stigmatisation

pourrait indiquer que les artistes en début de carrière sont plus vulnérables aux effets de la stigmatisation. Le lien entre la stigmatisation et des antécédents de trouble de la voix pourrait indiquer que la stigmatisation vocale est moins reconnue par les personnes sans expérience directe.

L'accès des artistes aux soins vocaux pourrait être amélioré en réduisant la stigmatisation vocale. Une approche courante pour réduire la stigmatisation est l'éducation et la sensibilisation, qui pourraient être fournie par des spécialistes de la santé vocale. Cela pourrait inclure des avis sur l'accès aux services et la clarification des rôles des différentes professions de la santé. Ces événements pourraient faciliter les conversations sur les expériences individuels, qui se sont révélées efficaces pour lutter contre la stigmatisation dans d'autres domaines.

Nos données pourront également aider les organisations des arts du spectacle et les spécialistes de la santé vocale à collaborer pour protéger les artistes de manières plus directes, par exemple en défendant la confidentialité médicale, en soutenant les réclamations pour blessures et en promouvant les pratiques préventives chez l'industrie du spectacle.

Acknowledgements and Contributions

Throughout this thesis project, I have been responsible for (a) assisting in the design of the study, (b) developing survey materials including recruitment materials and survey questionnaire, (c) overseeing recruitment and compensation of participants, (d) data processing and statistical analyses, and (e) writing this thesis paper, which was done independently with feedback from my supervisor and committee member.

I would like to express my deep gratitude to my supervisor, Dr. Nicole Li-Jessen for providing the opportunity to develop my research skills, and for the guidance she provided throughout the thesis process.

I would also like to thank my committee member, Dr. Marc Pell for his feedback and suggestions at critical junctures of the thesis, and my external examiner, Dr. Heather Stuart for her insightful comments.

Additionally, I am grateful to Lisa Martignetti for her invaluable assistance in managing the administrative and financial aspects of the project, and for her assistance in developing the initial concept, Dr. Jon Sakata at the Centre for Research on Brain, Language, and Music for his consultation in developing the statistical analyses used in this project, and Daphnée Dubé for her assistance with the French-language abstract.

This project would not be possible without the help of our collaborators at the National Association of Teachers of Singing and the Alliance of Canadian Cinema, Television and Radio Artists, including the expert feedback provided by Allen Henderson, Simon Peacock, and Theresa Tova. I would also like to thank Maia Masuda for her feedback as an expert voice clinician.

The research in this project was supported by funding from the Social Sciences and Humanities Research Council, SSHRC grant #430-2020-00108.

Finally, I would like to thank my family and friends for their unconditional support, without which none of this could happen.

Contents

Glossary of Terms and Abbreviations

Aphonia:	A symptom of voice disorders whereby sound production is completely prevented.
Dysphonia:	The vocal symptoms of a voice disorder, which include changes in vocal pitch, loudness, quality, or effortfulness that impact a person's voice-related quality of life.
ENT:	Ear, nose, and throat doctor.
IMB:	Information, Motivation, and Behavioural Skills – a model for predicting health behaviours first proposed by Fisher and Fisher (1992).
Phonation:	The production of voice sounds.
SLP:	Speech language pathologist.
VHI-10:	Voice Handicap Index-10 – a ten-item questionnaire, used to measure the impact of voice disorders on a person's life.
Vocal tract:	The airway above the vocal folds, including the pharynx, oral cavity, and nasal cavity.
Voice disorder:	Any condition that impacts the vocal mechanism such that a person can no longer meet their vocal needs, including daily communication and, in the case of actors and singers, artistic performance.
VP:	Vocal performer – a person who uses their voice for artistic performance in a professional capacity. For this study, this was defined as comprising professional singers and professional actors.

1 Introduction

1.1 Background and Research Objectives

Stigma is a label which sets a person apart from others and links them to undesirable characteristics (e.g., Fortenberry et al., 2002). Individuals affected by a stigmatized medical condition such as mental illness or HIV may be reluctant to seek medical help (Stangl et al., 2019). Voice disorders are a group of medical conditions that negatively affect a person's voice, for example by causing hoarseness, strain, or a reduced vocal range (Stemple et al., 2014). Voice disorders are especially common in professions that involve frequent and heavy voice use, such as teachers, singers, actors, and telemarketers (Phyland & Miles, 2019). Among professional singers and actors, there can be a stigma associated with voice disorders, which has been proposed to arise from the belief that voice disorders indicate poor vocal skills and from fear of losing employment (Bradshaw & Cooper, 2018; Huston, 2019; Phyland & Miles, 2019). However, evidence for this vocal stigma is primarily anecdotal. To our best knowledge, no quantitative research has been done to measure the extent of vocal stigma among professional vocal performers (VPs), nor explored its potential impact on their help-seeking behaviour.

The primary goals of this study were to (a) quantitatively evaluate vocal stigma among professional actors and singers, (b) quantify the association between vocal stigma and predicted help-seeking behaviour, and (c) explore personal factors that may influence vocal stigma.

By addressing these aims, this study can bring attention to vocal stigma among VPs. With greater understanding of this stigma, clinicians, performers, and advocacy groups will be empowered to combat it, and so improve access to vocal health care in a population who depend upon it deeply.

The rest of this introduction begins with overviews of the physiology of voice production and of voice disorders to ground the reader in an understanding of vocal health. This is followed by a discussion of vocal performers and their unique relationships with voice disorders, including introducing the concept of vocal stigma. After this, two theoretical frameworks used in this study are discussed, pertaining to medical stigma, and predicting help-seeking behaviour. The introduction concludes with a consolidation of these frameworks, and the presentation of the research hypotheses for this study.

1.2 Voice Production

The human voice is produced by a series of three systems: respiration, phonation, and resonance (Stemple et al., 2014). Respiration produces energy in the form of flowing air. Phonation is the process by which this energy is turned into sound in the larynx. Finally, the sound is modified and amplified by resonance. In combination, these systems control the acoustic characteristics of the voice: intensity, frequency, and spectrum, which are perceived respectively as loudness, pitch, and timbre or quality.

1.2.1 The Respiration System

The respiratory system controls the flow of air through the larynx by changing the volume of the chest cavity. As stated by Boyle's law, the volume of a space is inversely proportional to the pressure of a gas contained within it (West, 1999). Therefore, when the chest cavity expands, the pressure of the air inside is reduced and air from outside flows into the lungs to equalize the pressure. For example, contracting the diaphragm pulls the bottom of the lungs downward, and contracting the external intercostal muscles elevates the ribcage, causing a person to breathe in. Conversely, when the volume of the chest cavity is reduced, the pressure inside increases, and air is forced up through the larynx and out of the body. For example, when the diaphragm and external intercostal muscles relax, they return to their resting state, collapsing the ribs back downward, and pushing the lungs up from below. Additionally, muscles such as the internal intercostals actively constrict the thoracic cavity when they contract, causing air to be pushed out faster (Stemple et al., 2014).

Since respiration provides the energy source for the voice, it is partially responsible for the intensity or loudness of the sound: more air pressure enables more intense sound. Good control of the respiratory system is therefore necessary for normal speech intonation as well as for sustained sound.

1.2.2 The Phonation System

Phonation, the production of voice sounds, occurs in the larynx through the vibration of the vocal folds, commonly known as vocal cords. The vocal folds are a pair of soft tissue folds running horizontally across the top of the trachea from back to front. They are composed of multiple layers of mucous membrane surrounding a muscle, the thyroarytenoid, which attaches to the inner wall

of the larynx anteriorly on the thyroid cartilage, and posteriorly at the arytenoid cartilages (**Figure 1**). The positioning of these cartilages can be altered by the intrinsic muscles of the larynx, thus controlling the posture of the vocal folds. This includes pressing them together to close the airway (adduction), pulling them apart to open the airway (abduction), and changing their length, thickness, and tension. When the vocal folds are adducted with the appropriate force and tension, air pressure from a controlled exhale briefly pushes the vocal folds apart before they are pulled shut again by a combination of the elasticity of the vocal folds and aerodynamic forces (Benninger & Murry, 2006; Stemple et al., 2014). The resulting cycle of repeated opening and closing of the vocal folds causes a complex wave of alternating high and low air pressures, which we perceive as sound.

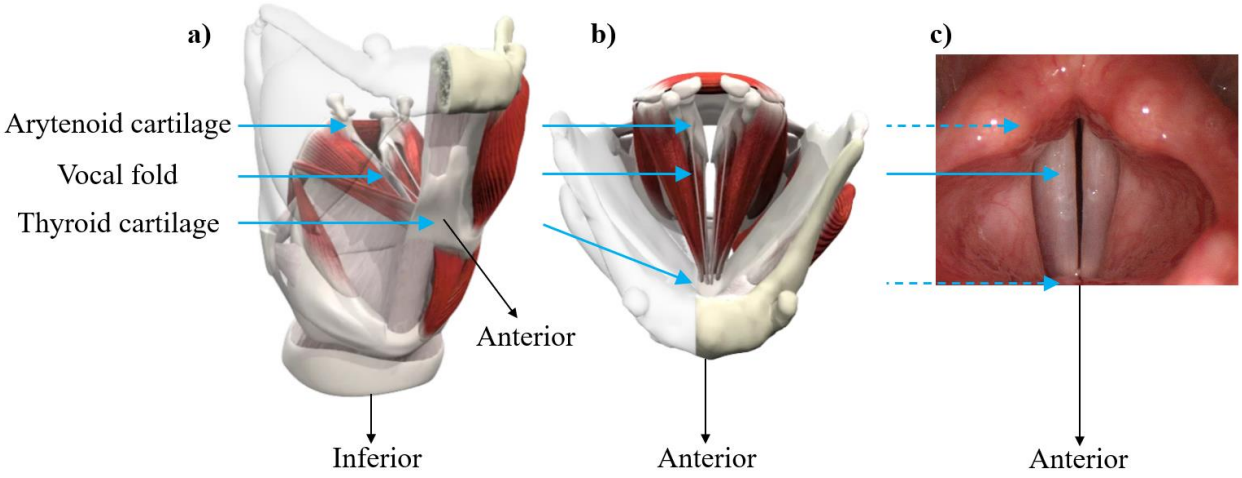


Figure 1. *Overview of Vocal Anatomy:* ***(a)*** *Cross-section of 3-D model larynx;* ***(b)*** *Superior view of 3-D model larynx;* ***(c)*** *Laryngoendoscopic image of vocal folds during phonation (cartilages are embedded below the mucous membrane). Medical images provided under creative commons by voicedoctor.net (Thomas, n.d.), 3-D Models are © Pharma Intelligence UK Limited (trading as Primal Pictures), 2022. www.primalpictures.com www.anatomy.tv, used with permission.*

The intrinsic muscles of the larynx play an important role in controlling the pitch, intensity, and timbre of the voice. The frequency or pitch of the voice depends primarily on the mass and tension of the vocal folds. When the vocal folds are stretched thinner and more tightly, they vibrate more rapidly, producing a higher pitch. Conversely when they are thicker and more relaxed, they vibrate more slowly, producing a lower pitch. Depending on individual anatomy and skill, the

vocal folds might vibrate between roughly 90 and 1,400 times per second in singing, a difference of around four octaves (Stemple et al., 2014). Meanwhile, the intensity of phonation can be increased when more forceful exhalation is matched by more forceful adduction of the vocal folds. Together, this creates greater buildups of air pressure before the vocal folds can open, resulting in a greater pressure difference throughout the sound wave, which is perceived greater loudness. Finally, changing the balance between air pressure and adductive force can impact the timbre of the voice as well. Reduced adduction relative to air pressure causes turbulent airflow, which produces a "breathy" sound quality (Colton et al., 2011). On the other hand, increased adduction can produce a "pressed" sound (Benninger & Murry, 2006).

1.2.3 The Resonance System

From the larynx, sound waves propagate along the upper airway, or vocal tract, where they are shaped by resonance. Acoustic resonance occurs when a sound wave of a particular frequency reflects off a surface and doubles back on itself such that the high- and low-pressure regions of the reflected wave align with those of the incoming wave. When this happens, the intensities of the waves are added together, amplifying the sound. The specific frequencies that are amplified depend on the size and shape of the space within which the sound is resonating. The size and shape of the vocal tract can be modified to control its resonance, for example by raising and lowering the larynx or soft palate, widening or protruding the jaw, or changing the position of the tongue.

The ability of resonance to amplify sound plays an important role in vocal intensity, i.e., perceived loudness. It is especially important for safely sustaining a loud voice for an extended time, since it does not place additional force on the vocal folds (Colton et al., 2011). Resonance is also important for the spectrum or timbre of the voice. The vibration of the vocal folds is complex and produces many frequencies at once. By selectively amplifying certain frequencies, the spectrum can be changed to produce sounds that are perceived as "brighter" or "darker" among other qualities (Benninger & Murry, 2006).

1.3 Voice Disorders

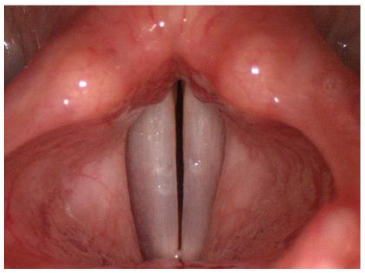
A voice disorder is a medical condition that impacts the voice systems such that they can no longer meet a person's vocal needs, including daily communication and, in the case of actors and singers, artistic performance (Stemple et al., 2014). The symptoms of voice disorders, collectively

termed “dysphonia,” include changes in vocal pitch, loudness, and quality, as well as effortfulness (Johns et al., 2010). In some cases, voice disorders can prevent phonation altogether, which is termed as “aphonia.”

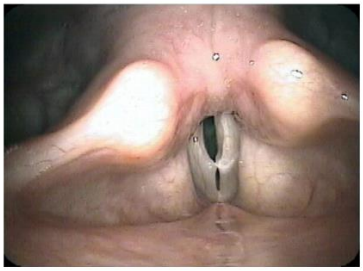
Voice disorders can be categorized as either organic or functional, depending on the pathology (American Speech-Language-Hearing Association., n.d.; van Houtte et al., 2010). Organic voice disorders are those caused by an alteration of mechanisms of the vocal tract, larynx, or respiratory system. Organic voice disorders are further divided into structural voice disorders, which are caused by physical changes in the structure of the voice systems, and neurogenic voice disorders, which are caused by problems with the central or peripheral nervous systems involved in neural control of the voice systems. Functional voice disorders are those which are not associated with any structural or neurological abnormalities, but instead arise from inefficient use of the voice systems (American Speech-Language-Hearing Association., n.d.; van Houtte et al., 2010).

The most common structural voice disorders are those caused by pathology of the larynx (de Bodt et al., 2015). These include benign growths on the vocal fold mucous membrane (e.g., nodules and polyps), fluid buildup between the layers of mucous membrane (edema, including Reinke’s edema), laryngeal inflammation (laryngitis), hemorrhages in the vocal folds, and laryngeal tumors (Colton et al., 2011; see **Figure 2**).

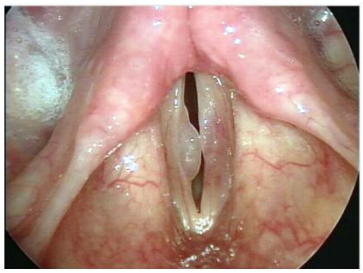
These conditions disrupt a person’s control over phonation by changing the mass, shape, and elasticity of the vocal folds. For example, increasing the mass of the vocal folds means they naturally vibrate at lower frequencies and require greater air pressure to set into vibration. This can cause reduced pitch range, greater vocal effort, and intermittent aphonia. Altering the shape of the vocal folds can prevent them from closing fully during phonation, leading to less efficient sound production and a breathy quality. Changes in the elasticity of the vocal folds can prevent them from vibrating easily and evenly, altering the voice quality and often causing difficulty with higher pitches (Colton et al., 2011). Structural pathologies on the vocal fold can arise from factors such as inhaled chemicals, acid reflux, and allergy responses, as well as from heavy voice use or habitual behaviours such as throat-clearing and coughing (Stemple et al., 2014). Depending on the diagnosis, untreated vocal fold pathologies can persist for several years (Childs & Mau, 2020).



Healthy Vocal Folds (Adducted)



Vocal Fold Nodules (Bilateral)



Vocal Fold Polyp

Laryngitis

Figure 2. *Laryngoscopy Images of Healthy Vocal Folds (Thomas, n.d.), Contrasted with Common Laryngeal Pathologies (© Pharma Intelligence UK Limited (trading as Primal Pictures), 2022. www.primalpictures.com www.anatomy.tv, used with permission).*

While less common, structural voice disorders can also be caused by pathology of the respiratory system or the vocal tract. For example, chronic obstructive pulmonary disease can constrict airflow leading to a wheezing voice quality (Stemple et al., 1994), and defects in the soft palate such as submucous clefts can lead to excessive nasal resonance (Boyce et al., 2018).

Neurogenic voice disorders can be caused by trauma, surgery, disease, or abnormal growths (Colton et al., 2011) By far the most common type of neurogenic voice disorder is vocal fold paralysis (de Bodt et al., 2015), a condition in which neural control of the intrinsic muscles of the larynx is interrupted, usually by damage to peripheral nerves (Colton et al., 2011). The symptoms of vocal fold paralysis can include a breathy or hoarse vocal quality, reduced pitch range, vocal fatigue, aphonia, or noisy breathing. Common causes of vocal fold paralysis include accidents during medical procedures and tumours (Myssiorek, 2004). Neurogenic voice disorders can also be caused by diseases such as Parkinson’s disease, Huntington’s disease, and Amyotrophic Lateral

Sclerosis, causing symptoms such as reduced loudness, vocal instability, hoarseness, breathiness, and reduced pitch range, among others.

The causes of functional voice disorders can be difficult to delineate, and are inconsistently termed within the literature (Colton et al., 2011; Stemple et al., 2014). Excessive muscle tension in and around the vocal systems, termed muscle tension dysphonia (Roy, 2003), is a common characteristic of functional voice disorders, although vocal production may be inappropriate in other ways (Colton et al., 2011). Functional voice disorders can arise as a maladaptive response to extreme vocal demands, psychological stresses, or organic disorders, and can become habitual even after the problem they stem from has resolved (Colton et al., 2011; Roy, 2003). Regardless of cause, the core aspect of functional voice disorders is inefficient use of the voice system (American Speech-Language-Hearing Association., n.d.), which can lead to vocal fatigue, hoarse or breathy vocal quality, reduced pitch control, and reduced loudness (Stemple et al., 2014).

1.4 Vocal Performers, Occupational Risks, and Vocal Stigma

Vocal performers (VPs) are individuals whose professions require using their voices in a skilled, artistic way (e.g., singers and actors). Because VPs use their voices heavily and regularly, their vocal folds can be subjected to extreme physical force. These mechanical forces can cause injuries to the vocal folds, so VPs are at increased risk of developing certain structural voice disorders, including nodules, polyps, cysts, and edema (Colton et al., 2011; Pestana et al., 2017; Stemple et al., 2014; Williams, 2003). High levels of voice use also increase the risk of functional voice disorders arising as maladaptive responses to the extra load on the vocal mechanism (Stemple et al., 2014; van Houtte et al., 2011).

According to a retrospective review by de Bodt et al. (2015), the most common disorder among patients referred for voice services was vocal nodules, representing 23.3% of the 4,447 patients reviewed. Functional disorders were the second most common, representing roughly 19.7%; vocal fold polyps were the fifth most common disorder at 4.1% of patients, followed by cysts and edema, each representing 3.6% of patients (Reinke's edema, which is typically related to smoking, was counted separately). Collectively, these five use-related disorders accounted for more than half of the 4,447 patients in the review.

Among singers, a meta-analysis by Pestana et al. (2017) found that roughly 46% report having a history with dysphonia, compared to 18% of the general population. Prevalence data are scarcer

for actors, but Lerner et al. (2013) found that 59% of the drama students they studied showed signs of laryngeal hyperfunction, which is associated with use-related voice disorders. This finding is backed up by the high prevalence of voice disorders in other professions with heavy voice use. For example, nearly a third of schoolteachers have experienced a functional voice disorder, more than triple the rate of the general population (Sliwinska-Kowalska et al., 2006).

To meet the aesthetic demands of their work, VPs need to use their voices at a high level of skill. This means that they can be severely impacted by voice disorders, even if the change in vocal function would be minor enough for most people to ignore (Lerner et al., 2013; Sloggy et al., 2019). Furthermore, voice disorders can have serious economic consequences for VPs because they lose income when they cannot perform. Compounding the immediate financial losses, VPs who cancel engagements due to vocal issues can earn a reputation of being unreliable, which can cost them future employment opportunities as well (Sataloff et al., 2007; Sloggy et al., 2019). Thus, VPs are both at elevated risk of and more sensitive to voice disorders.

In addition to being a source of livelihood, the voice is central to the sense of self for many vocal performers (Rosen et al., 2021). Losing vocal function can therefore have negative impacts on a VP's self-worth and overall psychological wellbeing. This includes VPs blaming themselves for their voice disorders (Rosen et al., 2021), in part because of the pervasive belief that vocal injuries are caused by poor vocal technique (Huston, 2019). Psychological distress is not only a negative outcome of voice disorders, but it can also exacerbate the voice disorder itself. For example, stress is associated with increased tension in laryngeal muscles, and depressive symptoms are associated with a nearly doubled likelihood of reporting a voice problem (Rosen et al., 2021).

Given the serious economic and psychological repercussions of voice disorders, VPs are highly incentivized to seek specialized voice care, e.g., from a laryngologist or a speech-language pathologist (SLP). Unfortunately, for at least some VPs, voice disorders carry a stigma (Huston, 2019; Phyland & Miles, 2019), sometimes to such an extent that they are afraid to disclose that they have a voice disorder (Bradshaw & Cooper, 2018). In the present work, the term "vocal stigma" is used to refer to this stigma associated with voice disorders.

In other health conditions, stigmas are associated with negative effects that include psychological distress (e.g., symptoms of anxiety, and depression), and loss of employment (Link & Phelan, 2006; Stangl et al., 2019). In other words, stigma has the potential to amplify many of the negative consequences of a voice disorder, which in turn exacerbate its symptoms. Furthermore, health-related stigmas are often associated with a reluctance to seek help (Link & Phelan, 2006; Stangl et al., 2019). Thus, stigma has the potential to both worsen the effects of voice disorders via psychological distress, and to perpetuate the cycle of voice disorders and distress by leading VPs to avoid treatment (**Figure 3**).

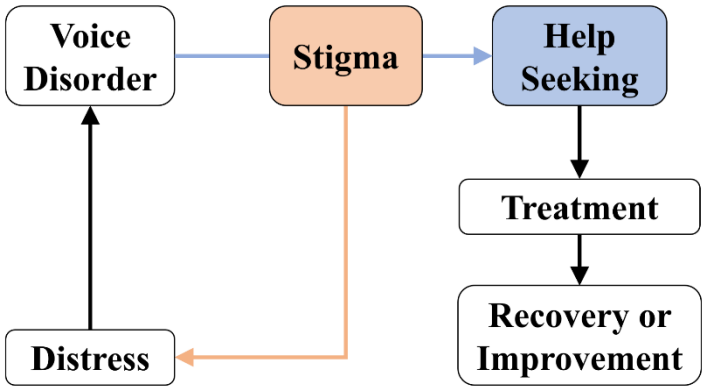


Figure 3. *Proposed Cycle of Voice Disorders and Distress, Amplified and Perpetuated by Stigma.*

1.5 Medical Stigma

The tendency to avoid seeking treatment has been observed across a broad variety of stigmatized health issues. For example, a meta-analysis on mental health stigma (Clement et al., 2015) found a negative correlation between stigma and help-seeking with a small-to-moderate effect size (median Cohen's d = -.27). Similarly, a 2016 review and meta-analysis of stigma and health outcomes in HIV/AIDS found that those who experience symptoms of stigma were 21% less likely to access health and social services (Rueda et al., 2016). Individual studies have also found associations between stigma and avoidance or delaying of help-seeking in other health issues, including alcoholism (Cellucci et al., 2006) and cancer (Carter-Harris et al., 2014).

The Health Stigma and Discrimination Framework proposed by Stangl et al. (2019) provides a detailed model of stigma in the context of health issues. This framework defines a hierarchy of social levels on which stigma operates, and a series of processes leading from the creation of a stigma to its measurable outcomes (**Figure 4**). The model includes up to five levels of social hierarchy (individual, interpersonal, organizational, community, and public policy), but also supports a simpler, two-level delineation: self-stigma versus social stigma.

The four stigma processes described in the Health Stigma and Discrimination Framework are as follows. First, drivers and facilitators give rise to a stigma. Second, individuals with a stigmatized condition are marked with the stigma. Manifestations, the third process, include attitudes, behaviours, and experiences that arise from the stigma, both in those who are marked by the stigma and those around them. The fourth and final process is stigma outcomes, which are more concrete, measurable effects. In the case of voice disorders among VPs, the main outcome of interest for our research is the impact on help-seeking. Manifestations of stigma for VPs may include the psychological and economic consequences discussed in section 1.4 above.

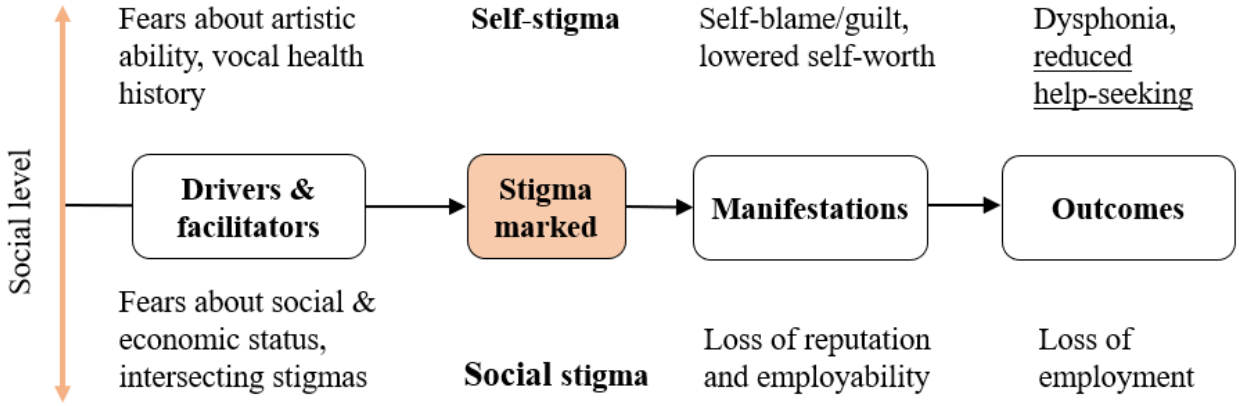


Figure 4. *The Health Stigma and Discrimination Framework Applied to Vocal Stigma. Figure created by author, based on Stangl et al. (2019).*

According to the Health Stigma and Discrimination Framework, a common driving factor of health stigmas is the fear of negative consequences from the afflicted health condition. For example, fear of mortality is a driving factor in diseases such as HIV (Stangl et al., 2019). For VPs, voice disorders can entail catastrophic fears about losing the employment, social status, and creative fulfilment that their art provides (Rosen et al., 2021). In other words, they fear the consequences of not being able to meet the vocal demands of performance. This fear is a strong candidate for a driving factor in vocal stigma among VPs. However, individuals face different vocal demands and consequences for being unable to perform. For example, actors and singers face different vocal demands, and full-time VPs face greater consequences from voice disorders than those who have other sources of income.

A possible facilitating factor is intersecting stigma: the experience of a health stigma is typically amplified for people who already face discrimination for other reasons, such as being a member of a visible minority. Vocal health history is another plausible driver of vocal stigma: people who have never had a voice disorder will likely have a different perspective compared to someone who has been affected extensively by one (although both can experience stigma, see Stangl et al., 2019). In this study, demographic, occupational and vocal health profiles were collected to identify possible drivers and facilitators relevant to vocal stigma in VPs (**Figure 4**).

In response to the well-recognized health challenges presented by stigma, there have been various attempts to reduce the stigma around conditions such as HIV and mental illness. For example, a common approach to reducing social stigma is to provide information about a health condition to the general public, emphasizing that affected individuals are not to blame for their condition. Other interventions focus instead on promoting empathy and understanding toward affected individuals, for example via testimonials or social contact between affected individuals and unaffected individuals. Still other interventions focus on reducing self-stigma by providing counselling or coping strategies to affected individuals (Brown et al., 2003; Morgan et al., 2018; Thornicroft et al., 2016). Of these, social contact has emerged as the most successful strategy for reducing stigma in adults, (Adu et al., 2021; Thornicroft et al., 2016). Education, meanwhile, is the most common strategy, and has demonstrated benefits at least in the short and medium term (Thornicroft et al., 2016). With a better understanding of vocal stigma, it may therefore be possible to devise similar interventions aimed at reducing vocal stigma, and so improve access to voice care.

1.6 Predicting Help-Seeking Behaviour

Measuring the relationship between vocal stigma and help-seeking is challenging because it requires a measure of the likelihood of seeking help. One method would be to survey a large sample of people known to have had a voice disorder, and test for a relationship between measures of vocal stigma and measures of past help-seeking behaviour within this group (e.g., Komiti et al., 2006 and Dyrbye et al., 2015 used this approach to measure the influence of stigma on help-seeking for mental health issues). Unfortunately, such a sample could not be guaranteed for this study, making this approach unfeasible. An alternative way is to compare stigma to behavioural predictors such as attitudes and intentions (Ajzen & Fishbein, 1980). These have the advantage

that they can be measured even in people who have not previously had a disorder (e.g., DeBate et al., 2018).

Predicting help-seeking and other behaviours that influence health is a major topic in the field of health psychology (see e.g., Conner and Norman, 2020). One model for making these predictions is the Information Motivation Behavioural Skills (IMB) model (Fisher et al., 2003). This model was originally proposed by Fisher and Fisher (1992) for predicting HIV prevention behaviours but has since been adapted to topics such as breast self-examination (Misovich et al., 2003), diabetes self-care (Osborn & Egede, 2010), and seeking help for mental health issues (DeBate et al., 2018).

According to the IMB model, a person's likelihood of engaging in a behaviour is predicated on three factors: Information, Motivation, and Behavioural Skills. Each factor positively predicts the behaviour in question.

Information represents a person's knowledge and beliefs about the behaviour, and the issue that the behaviour is intended to address. For example, in Fisher and Fisher (1992), Information included an understanding that HIV transmission risk cannot be estimated based on a partner's personality.

Motivation represents a person's attitudes toward the predicted behaviour, and their perception of social norms around it (i.e., what attitudes do the person believe other people hold?). For example, this could include the perceived costs and benefits of the behaviour.

Behavioural Skills represents a person's ability to perform the behaviour, both in terms of objective skills (such as knowing how to use a condom, in the case of HIV prevention) and in terms of psychological skills. Most notably, this includes self-efficacy, which DeBate et al. (2018) measure as a person's intention to seek help.

In this study, the IMB constructs are adapted as follows: Information includes a person's knowledge and beliefs about voice disorders and related issues. Motivation includes a person's attitudes and perception of social norms about seeking professional medical help for a voice disorder. Finally, Behavioural Skills represent the intention to seek professional medical help in the event that they acquire a voice disorder (**Figure 5**). For more detail about the operationalization of these constructs, see section 2.2.3 below.

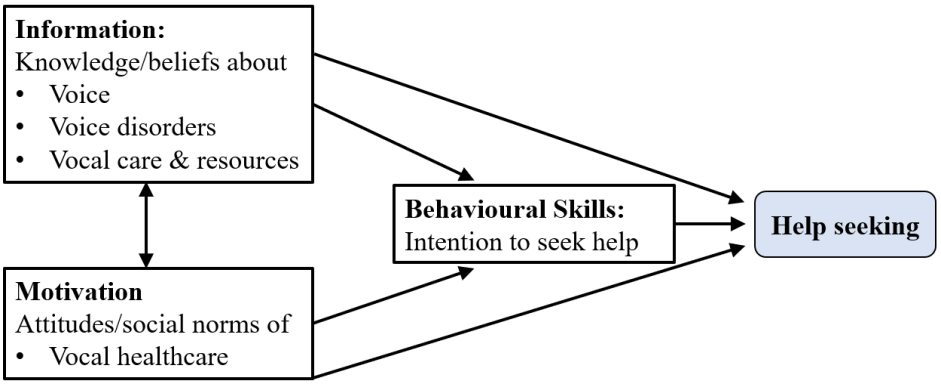


Figure 5. *Predicting Help-Seeking Behaviour for Voice Disorders Among Vocal Performers, Based on the IMB Model (Fisher et al., 2003).*

1.7 Research Framework and Hypotheses

The conceptual framework of this study follows the Health Stigma and Discrimination Framework as outlined in section 1.5, with the three constructs of the IMB model discussed in section 1.6 collectively serving as a surrogate measure for the vocal stigma outcome of reduced help-seeking (**Figure 6**). This study aims to thoroughly describe the phenomenon of vocal stigma among VPs by measuring demographic, occupational, and vocal health variables, as well as stigma experiences, Information, Motivation, and Behavioural Skills.

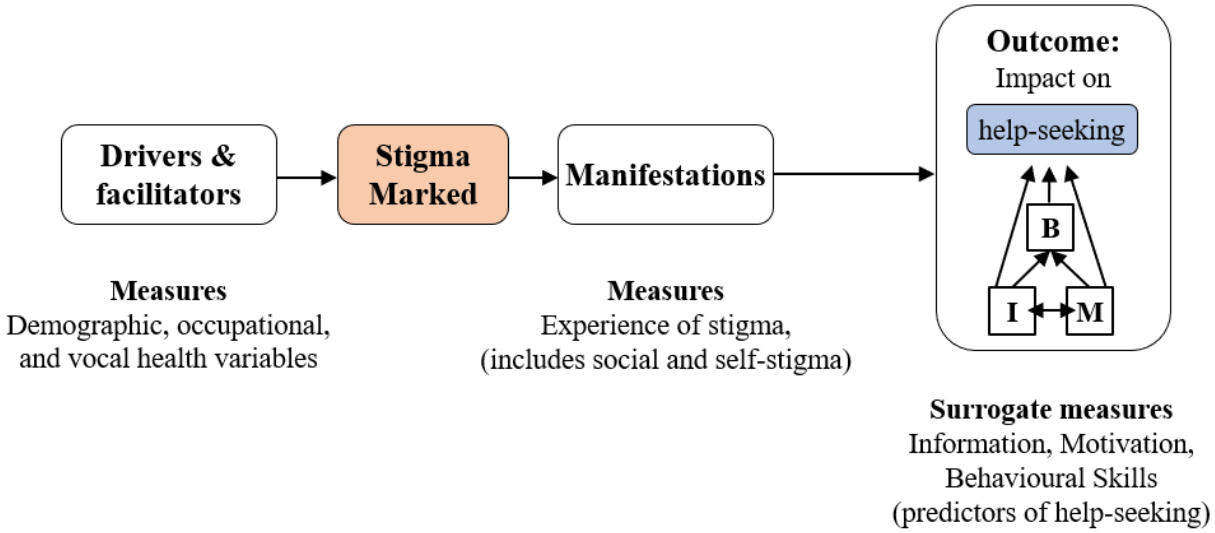


Figure 6. *Conceptual Framework for Measuring Vocal Stigma and its Impact on Help-Seeking. I = Information; M = Motivation; B = Behavioural Skills.*

Based on the conceptual framework described above, three research hypotheses (H1, H2 and H3 below) were proposed for this study. Specifically, H2 and H3 were informed by the theoretical frameworks developed by DeBate et al. (2018) and Stangl et al. (2019) respectively.

H1. Vocal performers, namely professional singers and actors, will have greater experience of vocal stigma than the general public.

H2. Experiences of vocal stigma will be correlated negatively with Information, Motivation, and Behavioural Skills relating to help-seeking behaviour for voice disorders in vocal performers.

H3. Experiences of vocal stigma will be associated with demographic, occupational, and vocal health variables in vocal performers.

2 Methods

This study was approved by the Institutional Review Board of the Faculty of Medicine and Health Sciences under protocol number A09-B73-20A.

2.1 Survey Development

2.1.1 Initial Survey Item Creation

An initial list of potential survey items was created using the theoretical framework for vocal stigma described in section 1.6. A total of 65 survey items were included in the initial survey.

Where possible, the items in this survey were taken directly from existing instruments or studies. However, this was largely not possible, so instead items were either adapted from studies in other health areas (e.g., by changing "mental health" to "vocal health") or created from scratch, guided by existing literature on vocal health. Where multiple pre-existing items or instruments could have been chosen, the selection was made based on relevance and on item analyses reported in the studies that used them.

2.1.2 Expert Consultation and Survey Review

The initial survey was subjected to an expert panel consultation. The panel consisted of four experts, including (a) a speech-language pathologist with 9 years of experience working with voice, and (b) three professional vocal performers (one actor, one singer, one both actor and singer), each with over 20 years of experience. The expert VPs were collaborating members of either the National Association of Teachers of Singing or the Alliance of Canadian Cinema, Television and Radio Artists who volunteered their time to help with the development of this study.

In the consultation process, each expert received a copy of the initial survey, and was asked to rate the IMB and stigma items on a scale of 1-4 based on how relevant they thought it was for professional performers, where 1 indicated that the item was not relevant, and 4 indicated it was highly relevant. Reviewers were also provided a space to comment on each item, each scale, and on the survey as a whole. Items that received an average relevance rating of less than 3 across all raters were modified based on feedback from the consulted experts. Items with specific comments from any reviewer were considered for further modification, especially if one or more reviewers found them confusing. Specifically, items DI-6, DI-7, DM-2, DM-9, were modified and item DM-

11 was removed completely. This review process was not applied to questions about demographics, occupation, or vocal health history (see **Appendix 7.1** for the survey sent for expert review; see section 2.2 for explanations of the item naming).

After the expert consultation and prior to survey launch, the authors of the study tested the usability and technical functionality using the built-in preview function of the LimeSurvey platform, where the survey was hosted online (LimeSurvey, 2021). No modifications were made to survey content at this stage.

2.2 Final Survey for Deployment

The final survey was created and hosted on LimeSurvey version 3 (LimeSurvey, 2021). It was deployed to a convenience sample of Canadian, professional vocal performers, and to a gender-matched group of Canadian controls with no experience in professional performance. The questionnaire contained 64 items, grouped into 6 sections (sections A through F; see **Appendix 7.2** for complete survey). Sections A, B, and C respectively pertained to demographics (6 items), occupation and training (3 items), and vocal health history (14 items). Section D measured predictors of help-seeking, and was divided into three subsections: DI, DM, and DB, respectively measuring participants' levels of Information, Motivation, and Behavioural Skills (for a breakdown of the IMB model see section 1.5). Section E measured experiences of vocal stigma. Finally, section F consisted of a single, open-ended item for feedback. Based on early piloting, we estimated the survey would take participants around 10-15 minutes to complete, which is a good length of survey to ensure low dropout rates (Galesic & Bosnjak, 2009).

Each section or subsection was presented on its own page. There was a total of 11 pages in the survey, including separate pages for introduction, screening, consent, and debriefing. Participants could change their answers within a page but could not return to previous pages after moving to the next. The contents of each section are described below.

2.2.1 Survey Sections A and B: Demographics and Occupation

The questionnaire included a maximum of six items for demographics (including one item that was only presented to some participants, based on responses to previous items), and three items for occupational variables. Together, these nine items evaluated possible drivers and facilitators of stigma (see section 1.5) as well factors which could otherwise influence survey

results (e.g., level of education, see de Leeuw et al., 2012). Finally, these items also served to verify that participants were eligible and responding in the correct group.

2.2.2 Survey Section C: Vocal Health History

Vocal health variables were assessed by 14 items, including the complete Voice Handicap Index-10 (VHI-10). The VHI-10 is a well-validated (Rosen et al., 2004) clinical tool commonly used to measure the impact that voice disorders have on quality of life (e.g., Morzaria & Damrose, 2012).

Because the VHI-10 is not a criterion test, it does not assess whether a participant currently has a voice disorder, nor whether they have had one previously. This was addressed in our study through two questions: one in which participants were asked when they had most recently experienced a voice disorder, and one which asked how frequently they experience voice disorders (with "never" being an available response for both). To help them answer these questions, participants were provided with the following explanation of voice disorders:

> *Voice disorders are a wide range of conditions that impact a person's voice in various ways, including the tone, pitch, loudness, and more. A voice disorder is not the same a speech disorder (which impacts your ability to speak fluently and accurately, such as a stutter or a lisp).*
>
> *For this study, a voice disorder refers to any disturbance to how your voice normally functions or sounds, in a way that interferes with your daily conversation and/or your professional work as a performer.*

Additionally, the following exceptions were defined for issues that do not warrant the services of a voice specialist:

> *Exceptions (the following would not be considered a voice disorder):*
> *•The problem resolves on its own within 1-2 days and does not come back regularly.*
> *•The problem is related to a brief illness such as a cold or flu, and voice symptoms resolve at a similar time to other symptoms.*

For participants who indicated that they have or previously had a voice disorder, two items ask whether they sought professional help, and if so, from which professionals.

2.2.3 Survey Section D: IMB Scales for Predicting Help-Seeking

All items in section D used a five-point, Likert scale format from 0 to 4, in line with the VHI-10. The scales were labeled as 0 = strongly disagree, 1 = disagree, 2 = neutral, 3 = agree, and 4 = strongly agree (except Information, see 2.2.3.1 below). In all three sections, a participant's likelihood of seeking help was represented as the sum of their scores on all ten items in the scale. This sum was a number between 0 and 40, where 40 represented the highest likelihood of seeking help and 0 the lowest. To reduce the impact of response bias, some items were reverse-coded, but item clarity was prioritized above creating a fully balanced scale (Tsang et al., 2017).

2.2.3.1 Section D-I: Information Scale.

Items in the Information scale were selected to assess participants' knowledge and beliefs about the following five facets of voice and vocal health: (a) vocal health issues (items DI-2 and 10), (b) vocal health resources (DI-4 and 5), (c) voice care (DI-1 and 3), (d) vocal anatomy and physiology (DI-6 and 7), and (e) signs and symptoms of voice disorders (DI-8 and 9). Of these, DI-3, 4, 5, and 10 were adapted from Braun-Janzen and Zeine (2009), DI-2 was adapted from Jung et al., (2016), and the rest, DI-1, 6, 7, 8, and 9, were written for this study based on information in Colton et al. (2011).

Response categories for Information items were labeled to indicate perceived truthfulness of the statements: 0 = definitely false, 1 = probably false, 2 = not sure, 3 = probably true, and 4 = definitely true. There were four reverse-coded items in the Information section (those indicated with * next to their item number, see **Appendix 7.2**).

2.2.3.2 Section D-M: Motivation Scale.

Items in the Motivation scale were selected to assess participants' attitudes and normative beliefs toward help-seeking for voice disorders. Items DM-1, 2, 3, 4, and 9 were either based on or taken directly from Gilman et al. (2009); item DM-10 was adapted from Christopher (2004); item DM-5 was adapted from Jung et al. (2016); and items DM-6, 7, and 8 were adapted from Fischer and Farina (1995). There were five reverse-coded items in this section.

2.2.3.3 Section D-B: Behavioural Skills Scale.

Items in the Behavioural Skills scale were selected to assess participants' intentions to seek help. Items DB-1 and 2 were adapted from the Mental Help-Seeking Intentions Scale, items DB-3 through 6 were adapted from the Intentions of Seeking Counselling Inventory, and DB-7 through 10 were adapted from the General Help-Seeking Questionnaire, all reviewed by Hammer and Spiker (2018). There was one reverse-coded Behavioural Skills item. This imbalance in reverse-coded items rises from a lack of reversed items in the source materials.

2.2.4 Survey Section E: Stigma Scale

Section E used the same Likert format as section D-M and D-B. The ten items making up the stigma scale were selected to assess participants' perceptions of both self-stigma (items ES-1 through ES-5), and social stigma (items EO-1 through EO-5). Items ES-1, 2, 3, and 5 were adapted from Vogel et al. (2006), while ES-4 was written for this study based on Rosen et al. (2021). Items EO-1, 2, 3, and 5 were based on Clough et al. (2020), and EO-4 was based on discussions of VPs' reputation found in, among others, Bradshaw and Cooper (2018), Sataloff et al. (2007), and Sloggy et al. (2019). The stigma scale included four reverse-coded items. As with each of the I, M, and B sections, the level of stigma experienced by a participant was measured as the sum of the ten scores. The two sub-scales of social and self-stigma were also examined and analyzed individually, measured as the sum of scores for their five respective items.

2.2.5 Survey Section F: Open-Ended Feedback

After answering all the other items, participants could share perspectives on voice disorders and vocal stigma that they felt were not addressed by the rest of the questionnaire.

2.3 Participants

Two groups of participants were recruited for the study, namely professional vocal performers, and controls with no experience in the performance industry. As our scale quantifying stigma was newly created for this study, a point of reference was necessary to meaningfully interpret the scores. The control group was thus included as a baseline comparison for the performers.

2.3.1 Criteria for the Vocal Performer Group

The following inclusion and exclusion criteria were set for the VP group. For a detailed description of the demographics and other characteristics of the final sample, see section 3.1, Profile of the Participants.

Inclusion Criteria:

- Professional vocal performer, defined as receiving at least part of their income via singing or acting performance. This restricted responses to performers with personal investment in their voice beyond that of a hobbyist, as well as membership in the professional cultures where we expected to find vocal stigma.
- Ages 20-65. This range encompasses a period of developmental stability in the voice (Colton et al., 2011; Fourquet et al., 2016), and includes most of the Canadian workforce (Statistics Canada, 2021).
- Canadian residential address. Participants from other countries might have different attitudes stemming from differences in culture and healthcare systems.

Exclusion Criteria:

- Involvement in the testing/consultation process for this study.
- History of vocal pathology arising from cancer, stroke, degenerative neurological conditions, or physical trauma to the throat head and neck. The medical process for vocal pathologies with these etiologies is notably different compared to more common types of voice disorder.

2.3.2 Criteria for the Control Group

The control group consisted of a gender-matched group of non-performers recruited online via Prolific (Prolific, 2021), an online platform for matching prospective research participants with paid research studies. The following criteria were set for the control group.

Inclusion Criteria:

- Non-performer, defined as receiving no income via singing or acting performance, and having no past or present employment in the arts sector listed in their participant profiles on Prolific.
- Ages 21-65. Limitations in the Prolific platform made it challenging to fully age-match the control group. However, the youngest participant included in the VP group was 21, so the age range for the control group was set to match.
- Canadian residential address, and current country of residence listed as Canada in their participant profiles on Prolific.

Exclusion Criteria: The same exclusion criteria as for the VP group.

2.4 Participant Recruitment and Consenting

Recruitment for the survey occurred in two stages to enable the groups to be matched for gender. First, VPs were recruited via an electronic advertisement, disseminated via email and social media. VP recruitment started on October 8th, 2021, and lasted until 200 valid responses had been received (43 days later, November 19th, 2021). After the demographics for the VP group were profiled, control participants were recruited from the Prolific platform between December 13th and 30th 2021, where a similar advertisement was posted.

The advertisement described our study as "a 10–20-minute survey about voice health," that was intended to "help researchers to understand how we can take better care of performers' voices." (See **Appendix 7.3** for recruitment materials). Participants were invited to follow a link to the survey, hosted on LimeSurvey, where they could complete the screening questions to determine their eligibility.

Participants who passed the screening section were prompted to read and agree to an informed consent form before completing the survey questionnaire. In this consent form, participants were informed of our data privacy policy (see section 2.4.3, Data Privacy), and contact information was provided for the author, principal investigator, and study coordinator, as well as the Ethics Officer of the McGill Institutional Review Board. The general purpose of the study was described, but explicit reference to stigma was omitted to avoid response biases caused by participants' preconceptions. After the questionnaire, participants were prompted to read a debriefing form in

which the full purpose of the study was disclosed (including the issue of stigma), and they were given an opportunity to either include their data in our study or withdraw it. Only participants who both consented to participate and agreed to have their data included after the debrief were included in analyses.

2.4.1 Recruitment for the Vocal Performer Group

The advertisement for our survey was disseminated through the central offices of project collaborators, i.e., the National Association for Teachers of Singing (NATS) and the Alliance of Canadian Cinema, Television and Radio Artists (ACTRA), to their members. A further 30 organizations representing Canadian actors and/or singers were also solicited to distribute our survey of whom four agreed, and the same advertisement was hosted on the author's private social media (for the full list of organizations that distributed our survey, see **Appendix 7.4**).

Participation was voluntary. To incentivise participation, participants in the VP group were given an opportunity to enter a raffle for fifty $50 gift cards for amazon.ca. To enter the draw, participants followed a link to a separate form (hosted separately on Microsoft Forms) to enter their email addresses. After removing duplicate entries, the list of email addresses was randomized using a random number generator to perform the draw. The first fifty addresses were then contacted by the study author to confirm that they could receive the gift card, and to assure their validity (see discussion section 4.4.4, Data Security).

2.4.2 Recruitment for the Control Group

The control group was recruited via Prolific (Prolific, 2021). If participants' user profiles matched our inclusion criteria, they were notified about our study, and saw the electronic advertisement. Participants were paid USD $3.93, based on the exchange rate for CAD $5 at the time of launch, which was deemed appropriate compensation for our estimated completion time of 15 minutes (Prolific only processes payments for participants in USD or GBP).

2.4.3 Data Privacy

As indicated in the consent form, all data were collected anonymously, and were stored on a secure, Canadian server to be deleted after a maximum of 12 months, and for up to 7 years on password-protected computers to be accessed only by the researchers. Participant data did not

contain any identifying information, and there was no code linking responses to the emails in the VP prize raffle, thus ensuring that participant identity was not traceable or identifiable. As our protocol and consent form specified that the only information collected would be the information in the questionnaire, no additional information was collected passively about participants' computers (e.g., IP address, cookies).

2.4.4 Data Cleaning

Table 2.1. *Number of Responses Excluded from Each Group During Data Cleaning.*

	VPs	**Controls**
Initial Number of Responses Received	**3217**	**271**
Reason for Removing Cases		
Did not have a Prolific ID (control group only)	N/A	22
Failed the screening questions	142	25
Did not consent	2	0
Requested to have their data excluded after debriefing	1	0
Did not finish the survey	850	11
Did not provide postcode data	2000	0
Postcode was invalid	2	0
Entered the survey in the wrong group	14	7
Provided mutually exclusive responses	3	0
Self-reported demographics did not match Prolific profiles (control group only)	N/A	3
Missing data	3	0
Final Number After Data Cleaning	**200**	**203**

The response rate after opening the survey to VPs was much higher than expected. Over 1,000 were collected in the first two weeks, which was a stark contrast to our initial estimate of at most 100 participants per week. Interim analyses were therefore conducted on the first 1,000 responses to investigate their validity. It was discovered that those who had not provided postcode data differed from those who had in several ways: they had a much narrower age range (23-45 vs 22-65), and they completed the survey much more quickly (No postcode: M = 4:32, SD = 1:53 vs postcode: M = 13:07, SD = 7:34 – compare also 10- to 15-minute estimate for completion time based on early piloting). Additionally, their VHI-10 scores displayed a nearly perfect normal

distribution (M = 19.93, SD = 4.57), compared to the highly skewed distribution of those who had provided postcodes (M = 7.59, SD = 8.13). Together, these observations suggested that the data of those who declined to provide a postcode was not reliable, so these cases were removed before analyses were performed, and the survey settings were adjusted so that the postcode item was mandatory (see Discussion section 4.4.4, Data Security, for a discussion of plausible explanations).

Cases were also removed from analysis during data cleaning for other reasons related to data quality or permission as listed in **Table 2.1** above. No automated procedures were used to exclude participants prior to data submission.

2.5 Statistical Analyses

Descriptive statistics were calculated within groups for each item and scale using item mean and standard deviation for continuous data (e.g., age, total stigma score), or response frequencies for categorical data (e.g., gender, individual stigma scale items). Comparisons between participant groups were also made using independent samples *t*-tests for continuous data, chi-squared tests of independence for nominal data (e.g., gender), and Mann-Whitney *U* tests for ordinal data (e.g., level of voice training). The reliability of our custom scales was assessed using Cronbach's alpha.

An independent samples *t*-test was used to determine whether performers had higher stigma scores on average than controls (H1: vocal performers experience greater vocal stigma than the general public).

Pearson's product-moment correlation (r) was used to assess the relationship between stigma scores and each of Information, Motivation, and Behavioural skills (H2: experiences of vocal stigma correlate negatively with predictors of help-seeking behaviour for voice disorders in vocal performers).

Depending on the type of data, Pearson's product-moment correlations, Spearman's rank-order correlations (ρ), independent samples *t*-tests, or one-way ANOVAs were used to evaluate the relationship between stigma an each of the personal factors from sections A, B, and C of the survey (H3: experiences of vocal stigma are associated with demographic, occupational, and vocal health variables in vocal performers).

The α-level for all tests was set at 0.05. Given the current, early stage of inquiry, no adjustments were made for alpha inflation, in order to protect from Type II (β) error as well as Type I (α).

3 Results

The results of this study are presented in accordance with the Checklist for Reporting Results of Internet E-Surveys (CHERRIES, see **Appendix 7.5**).

3.1 Profile of the Participants

After data cleaning, the final sample included 200 professional singers and actors in the vocal performer group, and 203 non-performers in the control group. The completion rate, calculated as the number of people who submitted the full questionnaire divided by the number of people who started the survey, was 0.28 in the VP group and 0.85 in the control group, after removing responses suspected of being low-quality or insincere (i.e., those with a missing or invalid postcode, who provided mutually exclusive responses, who participated in the wrong group, or whose demographics conflicted with their Prolific profile, see **Table 2.1**). Since view rate data were not available, the recruitment rate could not be calculated. In both groups, the age range was 21-65 and the gender distribution was female 65%, male 32%, and other 3% (including non-binary, agender, and those who preferred not to indicate their gender). Most participants were not visible minorities, did not live in rural areas, and held a bachelor's degree or higher. The VP group was found have significantly higher mean age ($p < .001$), significantly fewer visible minorities ($p = .001$), and significantly different degree areas ($p < .001$). For a full breakdown of participant demographics, see **Table 3.1**.

The majority of the VP group were professional actors (59%), while a smaller but still substantial proportion were professional singers (41%). The control group, by definition, contained neither. About half of VPs reported receiving 5 or more years of voice training (50.5%), and a strong majority reported receiving at least 1 year of training (85%). By contrast, most control participants had no voice training whatsoever (75.9%). When asked what proportion of their income came from performance, the most common response from VPs was "all or almost all" (29%), but a broad distribution of financial reliance on performance was represented in our sample. Once again, the control group contained no participants receiving any income from performance, by definition. A full breakdown of responses to occupation-related items is presented in **Table 3.2**.

Table 3.1. *Participant Demographics. Presented as Response Frequencies in Each Group (Except Age, which is Presented as the Mean for Each Group).*

Variable	Category	VPs		Controls		*p*
Gender identity						.835[a]
		n	**%**	***n***	**%**	
	Male	64	32	65	32	
	Female	130	65	132	65	
	Other	4	2	6	3	
	Prefer not to answer	2	1	0	0	
Visible minority status						**.001[a]**
		n	**%**	***n***	**%**	
	Not a visible minority	156	78	135	66.5	
	Visible minority	37	18.5	68	33.5	
	Prefer not to answer	7	3.5	0	0	
Rural vs non-rural						.973[a]
		n	**%**	***n***	**%**	
	Rural	10	5	10	4.9	
	Non-Rural	190	95	193	94.6	
Education level						.288[a]
		n	**%**	***n***	**%**	
	High school diploma	18	9	26	12.8	
	Apprenticeship or trades certificate/diploma	10	5	4	2	
	College or CEGEP degree/diploma, or university degree lower than bachelor's	33	16.5	29	14.3	
	Bachelor's degree	92	46	102	50.2	
	Graduate degree (master's or doctorate)	47	23.5	41	20.2	
	None of the above	0	0	1	0.5	
Degree area						**<.001[a]**
		n	**%**	***n***	**%**	
	Performance	124	62	2	1	
	Health sciences	10	5	37	18.2	
	Both performance and health sciences	6	3	0	0	
	Other area(s) only	42	21	137	67.5	
	N/A[c]	18	9	27	13.3	
Age						**<.001[b]**
		Years		**Years**		
	Mean	43.68		33.76		
	SD	12.56		10.29		

[a]Results of a chi-squared test of independence between participant groups.

[b]Results of a Student's t-test between participant groups.

[c]N/A= participants to whom this item was not presented because they reported their education level as "high-school diploma" or "none of the above."

Table 3.2. *Occupation and Training. Presented as Response Frequencies in Each Group.*

Variable	Category	VPs		Controls		*p*
Performer type		***n***	**%**	***n***	**%**	N/A
	Actor	118	59	N/A		
	Singer	82	41	N/A		
Vocal training		***n***	**%**	***n***	**%**	**<.001[a]**
	No training	8	4	154	75.9	
	<1 year training	22	11	37	18.2	
	≤3 years	43	21.5	3	1.5	
	≤ 5 years	26	13	5	2.5	
	>5 years	101	50.5	4	2	
Proportion of income from performance		***n***	**%**	***n***	**%**	N/A
	None or almost none	16	8	N/A		
	Less than half	49	24.5	N/A		
	About half	35	17.5	N/A		
	More than half	37	18.5	N/A		
	All or almost all	58	29	N/A		
	Prefer not to answer	5	2.5	N/A		

[a]Results of a Mann-Whitney U-test between participant groups.

In the vocal health history section, VPs reported experiencing voice disorders with significantly greater frequency and recency (both: $p < .001$). Half (49-51%) of VPs reported having had a voice disorder at some point in their lives, and most of these people (77%) reported that they had sought professional help of some kind. This is significantly higher than controls, of whom only 7.4-8.4% had ever experienced a voice disorder, and just two participants sought professional help ($p < .001$). The VP group also scored significantly higher on the VHI-10 on average, though both were highly variable (VP: $M = 7.01$, $SD = 7.03$; control $M = 3.74$, $SD = 4.65$, group difference $p < .001$). Our analyses confirmed very high reliability for the VHI-10 scale, with Cronbach's $\alpha = 0.91$. For a full breakdown of participant responses to vocal health items, see **Table 3.3**.

Table 3.3. *Vocal Health Histories. Presented as Response Frequencies in Each Participant Group (Except VHI-10 Score, which is Presented as Mean Score for Each Group).*

Variable	Category	VPs		Controls		*p*
Recency of a voice disorder						**<.001[a]**
		n	**%**	***n***	**%**	
	Never had a voice disorder	100	50	186	91.6	
	Currently have a voice disorder	12	6	2	5.9	
	Within the past month	9	4.5	1	0.5	
	Within the past year	19	9.5	1	0.5	
	More than a year ago	60	30	13	6.4	
Frequency of experiencing voice disorders						**<.001[a]**
		n	**%**	***n***	**%**	
	Never	102	51	188	92.6	
	Once every few years	67	33.5	12	5.9	
	Once or twice every year	18	9	1	0.5	
	Once or twice every three months	9	4.5	1	0.5	
	Once or twice every month	1	0.5	0	0	
	Almost all the time	3	1.5	1	0.5	
Sought professional help for previous voice disorder?						**<.001[b]**
		n	**%**	***n***	**%**	
	N/A[d]	100	50	186	92.6	
	No	23	11.5	15	7.4	
	Yes	77	38.5	2	1	
VHI-10						**<.001[c]**
		Mean	***SD***	**Mean**	***SD***	
	Score	7.01	7.03	3.74	4.65	

[a]Results of a Mann-Whitney U-test between participant groups.

[b]Results of a chi-squared test of independence between participant groups.

[c]Results of a Student's t-test calculated between participant groups.

[d]N/A= participants to whom this question was not presented because they reported never to have had a voice disorder.

3.1.1 Experiences of Stigma

The reliability of the custom stigma scale used in this survey was estimated using Cronbach's Alpha. Using all 403 participants, the scale demonstrated good reliability ($\alpha = 0.82$, see Gliem and Gliem, 2003). The reliabilities of the two sub-scales were found to be acceptable (social stigma sub-scale: $\alpha = 0.72$; self-stigma sub-scale: $\alpha = 0.75$). On average, VPs reported total levels of stigma that were 1.14 times greater than those reported by controls ($p = .025$). Examining the two components, social stigma and self-stigma, VPs were found to score significantly higher on items

relating to social stigma (p = .002) but not on self-stigma (p = .379). The mean scores and group differences are given in detail in **Table 3.4** below. Additionally, a paired samples t-test was used to compare social stigma to self-stigma within groups. In VPs, social stigma was found to be significantly higher than self-stigma ($t(199) = 2.89$; p = .002), but there was no significant difference in controls ($t(202) = 0.13$; p = .450). The correlation between self- and social stigma was strong in both groups (VP: r = .540, p < .001; control: r = .645, p < .001).

Table 3.4. *Experiences of Stigma. Presented as Mean Score for Each Participant Group.*

Scale	VP Scores		Control Scores		$t(401)$	p
	Mean	***SD***	**Mean**	***SD***		
Total stigma (Max: 40)	11.15	6.68	9.74	5.84	2.25	**.025**
Self-stigma (Max: 20)	5.20	3.76	4.88	3.50	0.88	.379
Social stigma (Max: 20)	5.95	3.85	4.86	2.96	3.18	**.002**

To provide greater detail, the frequency at which participants received each possible score on a given question is summarized in **Figure 7**. Among VPs, the items with the two highest mean stigma scores were ES-4, ("If I had a voice problem, I would blame myself", M = 1.65, SD = 1.18) and EO-1 ("Where I work, a person experiencing a voice disorder would be given understanding and support", M = 1.52, SD = 1.11). For a full breakdown of the response frequencies of individual items in the stigma scale, see **Appendix 7.6**.

3.1.2 Information, Motivation, and Behavioural Skills Scales

The reliability of the custom scales used for measuring predictors of help-seeking behaviour were estimated using Cronbach's Alpha. The Information scale was found to have low reliability at $\alpha = 0.53$ (an α of less than 0.50 is generally considered unacceptable; 0.70 is considered adequate for early-stage, group-level research; see Gliem and Gliem, 2003, and Nunnally and Bernstein, 1994). Among Information items, DI-10 ("The treatment of choice for early-stage vocal nodules is complete vocal rest until symptoms subside") contributed the most negatively to the reliability (scale α if DI-10 was deleted = 0.58). DI-10 was also the Information item where with the lowest mean score in both groups (VPs M = 1.43, SD = 1.1; controls M = 1.41, SD = 0.68).

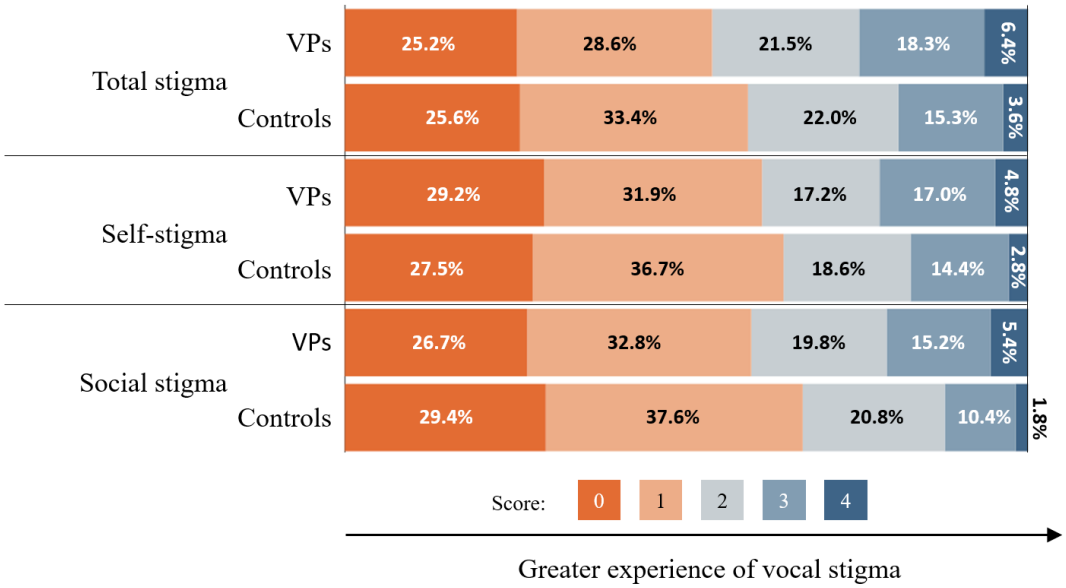


Figure 7. *Frequency of Scores Among Stigma Items.*

The Motivation scale was found to have low reliability (α = 0.65). The item contributing most negatively to this reliability was item DM-4 ("My voice is an important part of my profession;" scale α if DM-4 was deleted = 0.69). DM-4 was also the lowest-scoring Motivation item in the control group (*M* = 2.17, *SD* = 1.30). However, in the VP group, DM-4 was the highest scoring item (*M* = 3.83, *SD* = 0.58), while the lowest scoring Motivation item for VPs was DM-9 ("I may not seek health care for my voice problems because I anticipate or experience difficulty with affording private health services", *M* = 2.27, *SD* = 1.402).

The Behavioural Skills scale was also found to have low reliability (α = 0.65). The item contributing most negatively to the reliability of the scale was DB-3 ("If I was experiencing a voice disorder, I would be likely to seek help from a family doctor/general physician;" scale α if DB-3 was deleted = 0.72). DB-3 was also the lowest-scoring item among VPs (*M* = 2.15, *SD* = 1.20), but scored relatively highly among controls (*M* = 2.98, *SD* = 0.84). Controls scored lowest on item DB-7 (*M* = 1.75, *SD* = 0.97).

Mean scores and group differences for each of the Information, Motivation, and Behavioural Skills scales are summarized in **Table 3.5**. The two groups were found to be significantly different on all three measures.

Table 3.5. *Predictors of Help-Seeking. Presented as Mean Score for Each Participant Group.*

Scale	VP Scores		Control Scores		*t*(401)	*p*
	Mean	**SD**	**Mean**	**SD**		
Information	26.88	4.64	23.48	2.87	8.87	**<.001**
Motivation	30.60	5.00	28.01	4.99	5.19	**<.001**
Behavioural skills	28.69	4.79	27.52	4.96	2.41	**.017**

The frequency at which participants received each possible score on a given question is summarized in **Figure 8**. For a full breakdown of the response frequencies of individual items in the Information, Motivation, and Behavioural Skills scales, see **Appendix 7.6**.

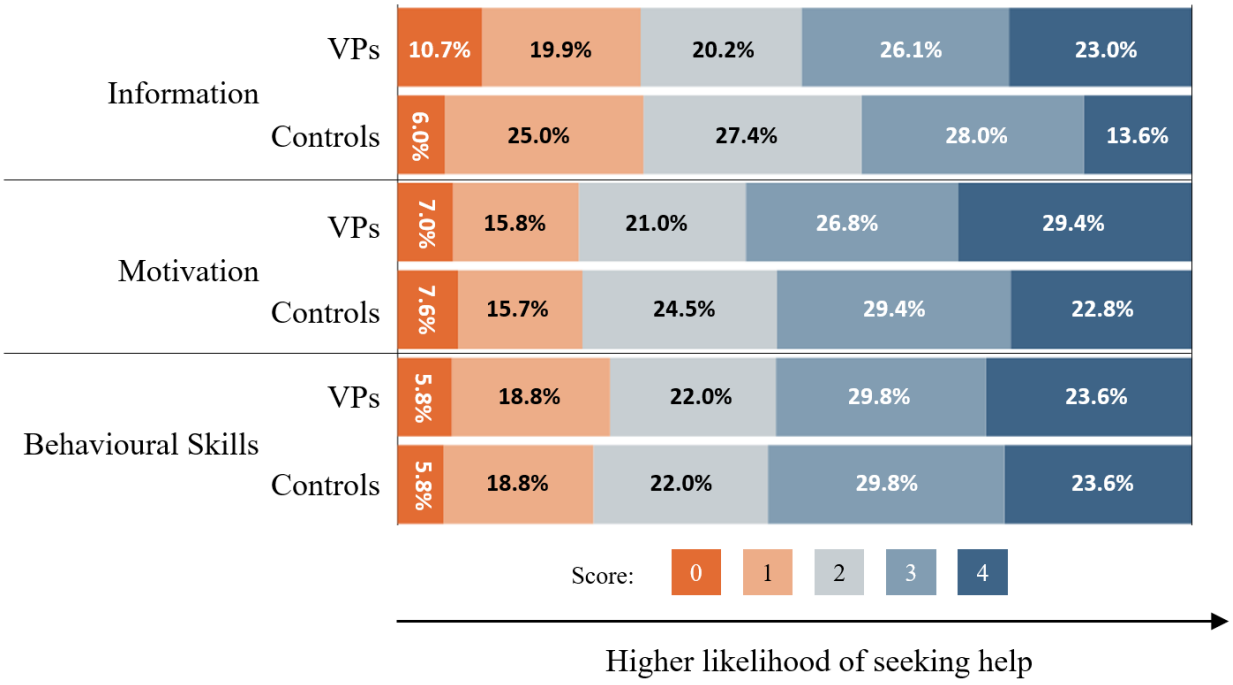


Figure 8. *Frequency of Scores Among Information, Motivation, and Behavioural Skills Items.*

3.1.3 Relationships Among Stigma and Help-Seeking Predictors

Total Information score was found to have no significant correlation with stigma score in either group (VPs p = .205; controls p = .200). Total Motivation score was found to have a moderate (Cohen, 1992), negative correlation with total stigma score among VPs (p < .001) and a strong negative correlation among controls (p < .001). Total Behavioural Skills score was found

to have a negative correlation with total stigma score in both groups (both $p < .001$), with the VPs' being a small correlation, and the controls' being moderate.

Among VPs, Information and Motivation were weakly correlated to one another ($p < .001$), as were Information and Behavioural Skills ($p = .001$), while Motivation and Behavioural Skills were strongly correlated ($p < .001$). Among controls, Information and Motivation were weakly correlated, ($p = .006$), Information and Behavioural Skills were not significantly correlated, ($p = .480$), and Motivation and Behavioural Skills were strongly correlated ($p < .001$). Correlation matrices for stigma, Information, Motivation, and Behavioural Skills are presented to summarize these relationships in **Tables 3.6** (VP group) and **3.7** (control group).

For each of Motivation and Behavioural Skills, the size of the correlation to stigma was compared between groups using Fisher's *z*-transformation. The Motivation-stigma correlation was not significantly different between groups ($z = -1.41$, $p = .079$), but the Behavioural Skills-stigma correlation was significantly smaller in the VP group ($z = -2.09$; $p = .018$). Since Information was not significantly correlated to stigma in either group, the Information-stigma correlation was not compared between groups.

Table 3.6. *Correlation Matrix of Stigma and Predictors of Help-Seeking from the Vocal Performer Group.*

Scale	Information score	Motivation score	Behavioural Skills score	Stigma score
Information score	1.00			
Motivation score	.25***	1.00		
Behavioural Skills score	.23**	.53***	1.00	
Stigma score	-.09	-.49***	-.28***	1.00

** significant at $p = .01$

*** significant at $p < .001$

Table 3.7. *Correlation Matrix of Stigma and Predictors of Help-Seeking from the Control Group.*

Scale	Information score	Motivation score	Behavioural Skills score	Stigma score
Information score	1.00			
Motivation score	.19**	1.00		
Behavioural Skills score	.05	.50***	1.00	
Stigma score	-.09	-.59***	-.46***	1.00

** significant at $p = .01$

*** significant at $p < .001$

3.1.4 Relationships Between Stigma and Demographics, Occupation and Training, and Vocal Health History

Among demographic, occupational, and vocal health variables, the following were found to have a significant relationship with total stigma scores: age, recency of a voice disorder, frequency of a voice disorder, VHI-10 scores, and type of performer.

In both participant groups, age had a small, negative correlation with total stigma scores (VPs: $p < .001$; controls: $p = .018$). Related to an individual's vocal health history, both groups showed a small, positive correlation between total stigma score and both recency of a voice disorder (VPs: $p = .033$; controls: $p = .047$) and frequency of a voice disorder (VPs: $p = .005$; controls: $p = .031$). VHI-10 scores were found to have a moderate positive correlation with total stigma score in VPs, and a small correlation in controls (both $p < .001$). VHI-10 scores were additionally compared to the self-stigma and social stigma sub-scores. In VPs, it was found that VHI-10 scores were moderately correlated with both self-stigma ($r = .42$, $p < .001$) and social stigma ($r = .39$, $p < .001$). In controls, VHI-10 scores were found to correlate weakly with self-stigma ($r = .29$, $p < .001$), and strongly with social stigma ($r = .76$, $p = .011$). The correlation between VHI-10 scores and social stigma was found to be significantly smaller in VPs than in controls ($z = 2.35$; $p = .009$), but the correlation between VHI-10 scores and self-stigma did not differ significantly between groups ($z = 1.43$, $p = .76$).

Finally, within the VP group, total stigma scores were significantly higher among singers than actors (actors: $M = 10.49$, $SD = 5.81$; singers: $M = 12.09$, $SD = 7.69$; group difference: $t(198) = -1.67$, $p = .025$). No other significant associations were found between stigma and any measures of demographics, occupation, or vocal health history (see **Tables 3.8, 3.9,** and **3.10** below for a full summary).

Table 3.8. *Correlations Between Total Stigma and Demographics, Occupation, and Vocal Health History Within Each Participant Group.*

Variable	Correlation method	VPs	*p*	Controls	*p*
Age	Pearson's *r*	-.27	**<.001**	-.17	**.018**
Years of voice training	Spearman's ρ	.05	.448	.10	.142
Income from performance	Spearman's ρ	.09	.222	N/A	N/A
Recency of a voice disorder	Spearman's ρ	.15	**.033**	.14	**.047**
Frequency of a voice disorder	Spearman's ρ	.20	**.005**	.15	**.031**
VHI-10 score	Pearson's *r*	.46	**<.001**	.26	**<.001**

Table 3.9. *Mean Differences in Total Stigma by Personal Factors in the Vocal Performer Group.*

Variable	Levels	Test used	Test Statistics		
			F	***df***	***p***
Gender identity[a]	3	ANOVA	1.91	202	.151
Education	6	ANOVA	1.94	202	.09
Degree area	5	ANOVA	1.85	202	.140
			t	***df***	***p***
Visible minority status[a]	2	*t*-test	0.10	191	.261
Rural vs non rural	2	*t*-test	0.46	198	.395
Performer type	2	*t*-test	-1.67	198	**.025**
Past help-seeking[b]	2	*t*-test	0.85	98	.620

[a]For these items, participants who selected "I prefer not to answer" were not included in the above analyses.

[b]Participants who reported to have never experienced a voice disorder were not presented with this question.

Table 3.10. *Mean Differences in Total Stigma by Personal Factors in the Control Group.*

Variable	Levels	Test used	Test Statistics		
			F	***df***	***p***
Gender identity[a]	3	ANOVA	1.70	199	.168
Education	6	ANOVA	1.36	199	.248
Degree area	5	ANOVA	1.54	199	.192
			t	***df***	***p***
Visible minority status[a]	2	*t*-test	-2.04	201	.399
Rural vs non rural	2	*t*-test	1.09	201	.592
Past help-seeking[b]	2	*t*-test	1.49	15	.257

[a]For these items, participants who selected "I prefer not to answer" were not included in the above analyses.

[b]Participants who reported to have never experienced a voice disorder were not presented with this question.

4 Discussion

The primary goals of this study were to (a) quantitatively evaluate vocal stigma among professional actors and singers, (b) quantify the association between vocal stigma and predicted help-seeking behaviour, and (c) evaluate personal factors that may influence vocal stigma.

4.1 The Presence of Vocal Stigma in Vocal Performers

The first hypothesis (H1) was that vocal performers, namely professional singers and actors, would experience greater vocal stigma (i.e., a stigma around voice disorders) than the general public. This hypothesis was supported by the data from this study. Professional VPs reported significantly greater levels of vocal stigma than non-performer controls, despite having significantly more experience with voice disorders.

Within the VP group, it was found that social stigma was significantly higher than self-stigma, whereas within controls, the two sub-scales of stigma were not significantly different. Similarly, social stigma was higher in VPs than in controls, but self-stigma did not differ significantly between groups. In other words, the additional vocal stigma experienced by VPs was characterized more by social factors than by internalized beliefs. This finding confirms the observation of the expert SLP who was consulted in the creation of the survey. In her comments about the stigma scale she said, "…working with professional voice users/performers, I have definitely seen more often social stigma versus self-stigma in my practice." This result is not entirely unexpected, especially given that self- and social stigma remain strongly correlated even in VPs (see e.g., Vogel et al., 2013). Future efforts to combat vocal stigma in VPs may consider prioritizing interventions at a group level, for example through artists' unions.

Two closely linked experiences of social stigma that were mentioned repeatedly by VPs in the open-ended feedback section were loss of professional reputation and loss of employment. For example, VP feedback #10 states, "…having the label of 'had vocal problems' hung on me is going to place doubt in producers/engagers minds. Professional help with vocal issues … needs to be confidential and private so as to avoid labelling and the accompanying loss of opportunities" (also see VP feedback #4, #8, #11, #17, #19, #26, and #50 in **Appendix 7.7**). Such comments point to the need for medical privacy among VPs, a conclusion supported by Bradshaw and Cooper (2018). While Bradshaw and Cooper's recommendations are intended for American Broadway artists, some of their recommendations may be transferrable to Canadian performers. They called on

organizations representing performers and producers to collaborate in creating policies to protect performers' personal health information. For example, they suggest the institution a database modelled after the Performer Availability Screening Service Inc., (n.d.) that would indicate whether a performer's availability was restricted by a medical condition without disclosing the nature of the condition. However, as Bradshaw and Cooper acknowledge, such institutional change is slow. Accordingly, they also recommend educating performers about protecting their medical privacy, for example by explaining what information is protected by medical privacy laws, and what information employers can access from insurance providers.

4.2 Predicted Help-Seeking for Voice Disorders

The second hypothesis (H2) was that experiences of vocal stigma would correlate negatively with predictors of help-seeking behaviour for voice disorders based on the IMB model. Information represents the knowledge and beliefs about voice and vocal health issues. Motivation represents the attitudes and social norms around vocal health care. Behavioural Skills represents the intentions to seek help for voice disorders. Key results are: (a) Motivation and Behavioural Skills but not Information were found to be negatively correlated with stigma; and (b) VPs showed higher average scores than controls in all three IMB scales. Interpretations of these results are discussed below.

4.2.1 Motivation and Behavioural Skills were Negatively Correlated with Vocal Stigma

Motivation and Behavioural Skills were negatively correlated with stigma in both VPs and controls. This result suggests that VPs are highly motivated and have high intentions of seeking help despite vocal stigma, not because vocal stigma has no effect on them. VPs are highly invested in maintaining vocal health: as VP feedback #25 says, "…the right treatment would positively affect earning potential." These unavoidable economic pressures may explain why Behavioural Skills were less correlated to stigma in VPs than in controls. However, vocal stigma still exerts some pressure on VPs not to seek help, especially via Motivation: VPs want to avoid labelling as discussed in 4.1 and are expected to be able to resolve voice difficulties through their own skill. VP feedback #17 illustrates the conflict created by these pressures saying, "A loud and healthy voice is … a requirement in the acting & voice industry, yet … this voice is expected to come naturally and not through getting help." With these pressures in mind, interventions aimed at

increasing help-seeking by targeting Motivation may be more effective if they emphasise the effectiveness of treatment, rather than the consequences of voice disorders, which VPs are already well aware of.

Compared to Motivation, Behavioural Skills showed a weaker correlation with stigma. This may be explained by the position of Behavioural Skills within the IMB model. It is theorized that Behavioural Skills has the strongest direct influence on health behaviours, whereas Information and Motivation are theorized to act mainly (though not exclusively) through their influence on Behavioural Skills. Since Behavioural Skills is influenced by both Information and Motivation, its relationship to stigma is likewise influenced by those of Information and Motivation. In the present study, Motivation had a moderate to strong correlation with stigma, but Information was not significantly correlated with stigma. In this light, it is not surprising that Behavioural skills showed a weak to moderate correlation stigma: the correlation is strengthened through the influence of Motivation but weakened through the influence of Information.

Interventions targeting Motivation and Information may improve intentions to seek help, as could interventions against stigma. However, it is entirely possible that other factors are behind the relatively weak relationship between stigma and Behavioural Skills, such as the low availability of services (see section 4.5).

4.2.2 Information was not Correlated with Vocal Stigma

In contrast to Motivation and Behavioural Skills, Information showed no significant correlations with vocal stigma. One possible interpretation is that objective knowledge about voice issues is less influenced by stigma, whereas Motivation (and thereby Behavioural Skills, as discussed in 4.2.1 above) is more subjective and thus more vulnerable to psychosocial pressures. Interestingly, similar pathways were also reported in a stigma study on a different health condition. Vogel et al. (2007) showed that mental health stigma negatively influenced an individual's attitudes towards counselling and subsequently the willingness to seek counseling (**+ stigma → - attitudes toward counselling → - willingness to seek counselling**).

In the current study, the Motivation construct primarily represents an individual's attitudes toward help-seeking (c.f. "*attitudes towards counselling*"). Also, the Behavioural Skills construct represents an individual's intentions to seek help (c.f. "*willingness to seek counseling*"). In alignment with Vogel et al.'s observation around mental health stigma, our findings suggested that

vocal stigma is likely to affect help-seeking through a similar pathway (**+ stigma → - motivation → - intentions**, as shown in **Figure 9**).

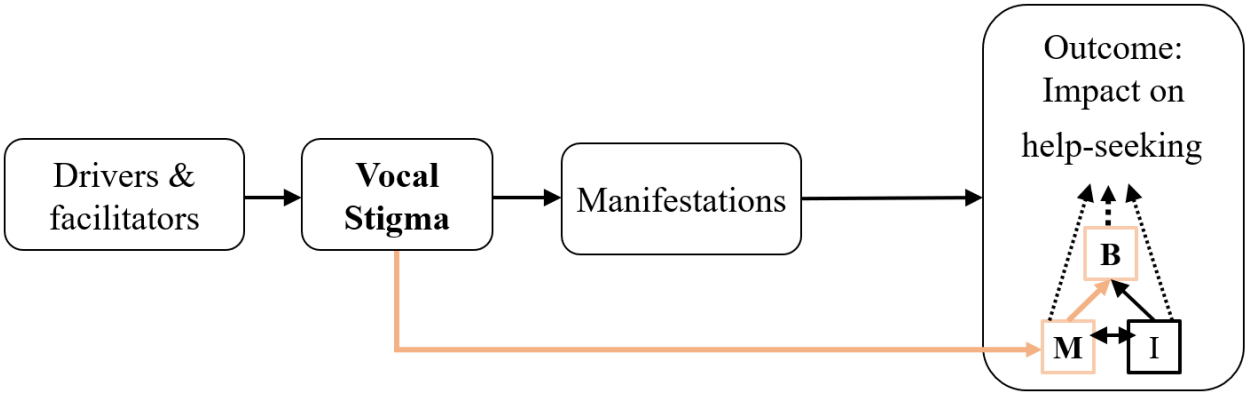


Figure 9. *Suggested Pathway Between Vocal Stigma and Help-Seeking Behavior. Results from this study showed a strong association between vocal stigma and Motivation, and between Motivation and Behavioural Skills (denoted in orange arrows). I = Information; M = Motivation; B = Behavioural Skills.*

That being said, our findings should not be interpreted as showing that Information has no role in help-seeking, only that Information is not influenced by vocal stigma. As Fisher and Fisher (1992) point out, Information is not sufficient to produce a behaviour, but it is necessary. Several participants expressed an appetite for such education, especially with regards to learning healthy vocal techniques. For example, VP Feedback #46 states, "There is still very little general understanding of how to care and respect the instrument of the voice, particularly if one is not an opera or musical theatre singer." VP feedback #24 is even more direct, saying, "[I] Wish there was more education for actors and singers about being proactive about voice health." Education outreach may thus still be helpful in improving overall outcomes for VPs' vocal health, for example by promoting preventative practices within the performance industry.

4.2.3 Limitations of using IMB as Predictors of Help-Seeking Behaviour

An important caveat to the findings of this study is that the IMB constructs are predictors, not direct measures of help-seeking behaviour. Unfortunately, only 100 VP participants reported having experience with a voice disorder, of whom 23 indicated that they did not seek professional

help compared to 77 who indicated that they did. This unbalanced sample made it challenging to robustly verify the relationship between help-seeking behaviour and stigma within the survey participants.

International studies suggest that singers may be overrepresented at voice clinics and may be more likely to use voice services than non-singers (e.g., Beaud et al., 2021; Sapir, 1993). However, these results are complicated by the elevated prevalence of voice disorders among VPs (see section 1.4), and the extent of this overrepresentation varies enough between these studies that it cannot easily be generalized to Canada. Furthermore, Statistics Canada does not track the number of VPs in the country (Statistics Canada, 2022) nor the prevalence of voice disorders in the general population. Without these statistics, we were not able to verify our results with known, population-level data. Future research focusing more on direct measures (e.g., longitudinal studies of actual help-seeking in a large group of VPs) measures in would be beneficial in understanding patterns of help-seeking behaviour in VPs.

4.3 Personal Factors Related to Vocal Stigma

The third hypothesis (H3) was that experiences of vocal stigma would be associated with demographic, occupational, and vocal health variables. Among demographic factors, age showed a negative correlation with vocal stigma. Among vocal health factors, recency of a voice disorder, frequency of voice disorders, and VHI-10 scores all correlated positively with vocal stigma. Finally, within the VP group only, vocal stigma was found to be significantly higher in singers than in actors. These variables emerged as the best candidates for drivers and facilitators of vocal stigma, with age being a negative facilitator.

No other demographic, occupational, or vocal health variables were found to have a significant relationship with stigma. Part of this may rise from the sample characteristics of current study. For example, visible minorities, people with lower education levels, and people outside the gender binary were not highly represented among participants in the present survey. However, even taking our results at face value, it is worth cautioning that people may still face discrimination, marginalization, or stigmatization in the performance industry based on factors such as gender, race, and socioeconomic status (e.g., Incorporated Society of Musicians, 2022). Our results only indicate that those factors do not appear to influence the stigmatization of voice disorders specifically.

4.3.1 Age was Negatively Correlated with Stigma

Age showed a negative correlation with stigma in both participant groups, i.e., younger participants reported experiencing more stigma than older participants. This result is similar to findings in mental health stigma such as Mackenzie et al. (2019), who found that younger adults were more likely to endorse stigma of mental health help-seeking than older adults. One possible explanation is that open discussions about stigma have become more common and acceptable over time, so that younger people are more aware of such issues, and thus more likely to report them. Another possible explanation is that early-career artists are more vulnerable to reputational damage. As Sataloff et al. (2007) point out, reliability is important in an artist's early career. The Broadway singers surveyed by Bradshaw and Cooper (2018) unanimously agreed vocal injuries could damage their reputation, and nearly all of them thought it could jeopardize future employment. This fear was echoed by many of our participants in the feedback section. For example, VP feedback #26 says, "If people learn you have recurring vocal problems, it may keep you from being hired," and VP feedback #50 says, "A voice that is known to have consistent problems would start to hurt my professional reputation over time.... especially if performances had to be cancelled," (ellipses theirs; also see VP feedback #4, #8, #10, #11, #17, and #19 in **Appendix 7.7**). Without a well-established reputation, and with more career ahead of them, young artists may feel they have more on the line. Additionally, as pointed out by VP feedback #4, young artists may find it more difficult to be open about voice disorders (see also Gilman et al., 2007; Sloggy et al., 2019). As VP feedback #4 puts it, "It can be nerve wracking for younger or less confident actors to speak up." Taken together, these comments and findings make it clear that young and early-career artists should receive special attention when considering where and how to combat vocal stigma.

4.3.2 Experience with Voice Disorders was Positively Associated with Vocal Stigma

Of the personal factors that were found to be significantly related to stigma, three came from the vocal health history section. Recency of having a voice disorder, frequency of having a voice disorder, and VHI-10 scores all correlated positively with total stigma score.

Among vocal health variables, VHI-10 score showed the strongest correlation to stigma. Further investigation revealed that the correlation between VHI-10 scores and social stigma was

greater in VPs than in controls, but that the correlation between VHI-10 scores and self-stigma was not significantly different between groups. This result reinforces the impression that VPs are more strongly impacted by the social component of vocal stigma than the general public.

The correlation between stigma and both recency and frequency of a voice disorder indicates that individuals who have more experience with voice disorders also experience more vocal stigma. A potential interpretation of this result is that there may be low awareness of vocal stigma among those who lack personal experience with voice disorders. This interpretation is supported by several feedback comments saying that they had not previously given voice disorders or vocal stigma much consideration (e.g., VP feedback #31: "I never really thought about voice disorders before." Also see VP feedback #45 and control feedback #12 and #24). However, the low strength of both correlations suggests that at least some exposure to vocal stigma is common in the performance industry regardless of vocal health history.

4.3.3 Singers Experienced Higher Levels of Vocal Stigma than Actors

Among VPs, singers reported higher levels of vocal stigma than actors. This discrepancy is perhaps explained by the different vocal demands they face. For example, if a VP has a voice disorder that reduces their vocal range, they may avoid pitches they can no longer reach in a speaking role but not in a song, which has fixed notes. The Health Stigma and Discrimination Framework specifies that a driving factor for health stigmas is the fear of negative consequences from the afflicted health condition. In this light, the ability to perform and earn income is less impacted by voice disorders in actors than in singers, it could explain the difference in their levels of vocal stigma. Different social norms between the acting and singing industries may also be a factor. For example, VP Feedback #57, an actor, said, "I was proud of [having nodules] because it meant that I had worked so hard that I hurt my voice." However, this "show must go on" attitude could also negatively impact help-seeking in its own right. As the same participant noted, it puts pressure on VPs to "push through injury" instead of seeking help or advocating for their own vocal health.

Further research examining the experiences of different types of vocal performers may add nuance to this finding. The sample for this study was deliberately broad to capture the pervasiveness of vocal stigma, but this also makes the sample is heterogenous, containing actors and singers across many different media and genres including video-game voiceover, live theatre,

opera, Broadway, and more. The IMB model specifies that interventions promoting a behaviour should be tailored specifically to the culture and needs of its target (Fisher et al., 2003), and there could be important differences in vocal health attitudes and practices between these sub-groups. For example, VP feedback #4 singled out video-game voice acting as exerting particularly strenuous vocal demands, often including screaming; #11 highlighted the heavy performance schedule and lack of understudies in regional theatres; and #43 complained that opera singers with voice problems are seen as vocally immature.

It is worth noting that one VP may work in several different styles. For example, VP feedback #21 says, "I make equal income from acting as singing," and VP feedback #16 says that "a high percentage of actors (80%) have had to sing live as a condition of employment at some point in their professional lives." Existing literature tends to focus on issues within specific performing communities such as Broadway singers (Bradshaw & Cooper, 2018) or contemporary commercial musicians (Gilman et al., 2009), so research focusing on the differences and overlaps between such communities could provide valuable insights about vocal stigma and help-seeking, and inform future efforts to improve care, especially if it takes into consideration the experiences of VPs with experience in multiple areas of the performance industry.

4.4 Study Limitations

4.4.1 Scale Reliability

Overall, while the results related to IMB scores support our hypotheses, there remain many challenges in interpreting them. Notably, the scales showed low reliability measures. One potential source of this internal inconsistency is the presence of floor and ceiling effects on several items (e.g., items DM-7, DM-8, and DB-9, see Appendix 7.6: Item Response Rates and Mean Scores for IMB and Stigma Scales). Other items show a clear floor or ceiling effect in one participant group, but not the others (e.g., DM-4, where 88.5% of VPs selected "strongly agree." In contrast, non-VPs had a broad spread of responses, such that each category was selected by between 14-38% of participants). These reliability issues could be mitigated by removing or modifying items with clear floor or ceiling effects, and by tailoring the scale for applicability to a narrower population (e.g., only VPs).

The reliability of the Information scale was especially low, with a Cronbach's α of 0.53 (Gliem and Gliem, 2003, recommend treating an α of less than 0.50 as unacceptable). This low

internal consistency may arise from the breadth of topics it covered (see section 2.2.3.1. on Information scale items). These reliability issues may account for the lack of significant correlation between Information and Stigma scores, and the small correlations between Stigma and each of Motivation and Behavioural Skills.

In future, the Information scale may be improved by narrowing its scope, for example by removing items related to anatomy and physiology in favour of more information about treatment and vocal health resources. This would align with recommendations by Fisher and Fisher (1992), who suggest that understanding basic health biology may not be directly predictive of health behaviours.

4.4.2 Sampling Bias

As with all web-based surveys, it is difficult to ensure that our recruitment of VPs covered the population in an unbiased, representative way (de Leeuw et al., 2012). In the case of this study, VPs were targeted by recruiting from a wide variety of actors' and singers' unions and guilds across Canada. While we made efforts to maximize the diversity of VPs sampled, the approach of recruiting via artists' unions and guilds meant there was a very low chance of reaching non-unionized artists. The exact number of non-unionized VPs in Canada is difficult to determine but given the general decline of unionization in the Canadian workforce (Government of Canada, 2022), this may represent a bias in our sample.

A related source of potential bias is that not all groups we contacted were of equal size. For example, the largest organization of singers that we contacted was the National Association of Teachers of Singing. Thus, singing teachers may be overrepresented in our survey compared to other singers. Since singing teachers have an additional interest in vocal health, this could influence our results by inflating the level of Information, Motivation, and Behavioural Skills in VPs. As the proportion of participants recruited from different sources was not traceable, no post-hoc statistical adjustments could be made to account for this under-representativeness.

4.4.3 Data Security

In section 2.4.3, Data Cleaning, it was noted that those who provided postcode data appeared to be both quantitatively and qualitatively different from those who did not, leading to our exclusion of participants without postcode data. A plausible explanation is that the 2000 VP

participants who left this item blank were either not truly eligible or were hoping to disguise multiple entries. Only participants with a Canadian address were eligible to respond, and anyone else was screened out by item X-3, assuming they responded truthfully. Unfortunately, our prize incentives may have tempted some participants to respond insincerely, or even use automated programs to fill out our survey multiple times.

After examining the responses, we feel confident that our data cleaning removed any responses produced by automated programs, and that the remaining responses are all or nearly all sincere, especially given the high rate of thoughtful commentary found in the feedback section. Of course, it is still possible that some participants may have provided individual responses without much thought or sincerity, but this risk is inherent to all surveys, and can never be fully avoided (de Leeuw et al., 2012).

4.5 Future Directions

4.5.1 Further Use of the Vocal Stigma Scale

The vocal stigma scale developed for this study showed promise, with good overall reliability, and acceptable reliability (Gliem & Gliem, 2003; Nunnally & Bernstein, 1994) for each of the sub-scales (self-stigma and social stigma). In the present study, the dimensionality of the vocal stigma scale was not explored, and vocal stigma was treated as both unidimensional (summing scores over the whole scale) and as two separate constructs. Future research into the factor structure of the vocal stigma scale would be useful, both for clarifying the results of the present study, and for facilitating use of the scale in other projects.

4.5.2 Accessibility and Availability of Vocal Health Services

One of the challenges of applying the IMB model to help-seeking is that it does not account for the availability of services. If, like the participant who left VP feedback #41, someone intends to ask an SLP for help, but they discover that there are no available SLPs in their area for the next 11 months, they might be less incentivized to seek help in the future, and the IMB model could not predict this.

To account for this, we tracked whether participants lived in rural or urban areas, reasoning that services are less accessible in rural areas. Unfortunately, our sample did not contain enough rural participants to make a meaningful comparison, but accessibility of services was a common

complaint in feedback comments. For example, VP feedback #37 said, “the accessibility to an ENT or specialist without a general practitioner's referral has been the major obstacle … on top of cost and affordability for private clinics.” Also see results 3.3 and VP feedback #13, #25, #49, and #53 in **Appendix 7.7**.

Another challenge, especially for interpreting measures of Behavioural Skills is the underlying assumption that seeking help from a medical professional is an appropriate course of action for VPs with possible voice disorders. As Sloggy et al. (2019) point out, VPs are a special population who, like elite athletes, are best served by specialized professionals. While some SLPs and ear nose and throat doctors (ENTs) have extensive training and experience in meeting these needs, most do not. For example, in 2019 there were 779 ENTs practicing in Canada (Canadian Medical Association, 2019), yet a survey in 2018 identified only 22 as belonging to the sub-specialty of laryngology, which focuses on voice and swallowing (Bensoussan & Anderson, 2018). Of these 22 laryngologists, 7 were in the province of Ontario, and there were none practicing in Saskatchewan, Prince Edward Island, Newfoundland and Labrador, New Brunswick, or any of the Territories.

This scarcity of true voice specialists may explain the negative experiences some of our participants reported. For example, VP feedback #47 says, “I don't always feel that ENTs are well equipped to deal with patients who are performers.” The lack of specialized services in some provinces is compounded by regulations that prevent people from using services in other provinces. For example, VP feedback #36 says, “I am working with an SLP here on [Prince Edward Island] but they have no experience with singing. The restraints placed on SLPs by the college in [Nova Scotia] make it hard for professional voice users to continue to work with … The Voice Clinic in Halifax.” Private clinics can be an alternative, but may be prohibitively expensive (e.g., VP feedback #13: “Private specialists, while more accessible, charge too much for artists to afford,” and #37: “the accessibility to an ENT or specialist without a general practitioner's referral has been the major obstacle … on top of cost and affordability for private clinics”).

With these financial and logistical barriers in mind, a VP’s best first resort may often be a vocal coach or someone else outside of the formal health care system. Our research does not account for these forms of help-seeking because the questionnaire specifically focused on intentions to seek help from SLPs, ENTs, Laryngologists, and general practitioners. Therefore,

future research may wish to investigate how and when vocal coaches and other non-medical voice experts can be integrated into vocal health care.

4.6 Recommendations

Given the apparently low awareness of vocal stigma even among VPs, increasing awareness may be an effective first step in reducing vocal stigma. This awareness could be promoted at education outreach events for VPs by vocal health specialists and performing arts organizations. In addition to awareness about vocal stigma, such events could provide information about how to prevent voice disorders, how and when to access vocal health services, and how those services can effectively treat voice disorders. These areas could improve relevant Information, Motivation, and Behavioural Skills for seeking help for voice disorders among VPs. Additionally, education about medical privacy may help VPs manage or avoid stigma labelling.

Outreach events may also be an appropriate venue for facilitating social contact, which has been proposed as an effective strategy in combatting stigma in other contexts (e.g., Adu et al., 2021; Brown et al., 2003; Thornicroft et al., 2016). This approach is based on the principle that social exposure to people with different lived experience promotes understanding and reduces stigma. This social exposure would centre conversations about experiences with and recovery from voice disorders. Given the prominence of concerns about losing employment, ideally these conversations would also include producers and employers.

Unfortunately, the effectiveness of the above recommendations is limited by the scarcity of existing services. Increasing help-seeking behaviour can only improve access to care if there are enough services to meet VPs' needs. On the other hand, new vocal health services are less likely to be created if the demand for such services appears to be low. Given that vocal stigma appears related to reduced help-seeking, vocal stigma may be masking the actual demand for vocal health services. Targeting vocal stigma may therefore enable the expansion of vocal health services. Additionally, as discussed in section 1.4, vocal stigma may negatively affect the vocal and psychological health of VPs on its own. With these considerations in mind, reducing vocal stigma remains a worthwhile goal, albeit with the caveat that an expansion of vocal health services will also be important to meeting the needs of VPs.

Meanwhile, access to existing services may be improved by addressing the logistical and financial barriers reported by our participants (see section 4.5.2). For example, VPs could benefit

from improvements to employment and medical insurance, including better coverage for local private services, or funding to mitigate the cost of travelling for out-of-province services when local services do not exist. Such measures would reduce the negative impact of voice disorders on VPs, especially in under-served regions. Given the link between vocal stigma and the impact of a disorder on a person's life (stigma was correlated with VHI-10 scores), a reduction in negative consequences of voice disorders would likely reduce vocal stigma as well.

5 Conclusion and Summary

This study confirmed the existence of vocal stigma among professional singers and actors in Canada. The level of Motivation and Behavioural Skills of an individual were negatively associated with vocal stigma, suggesting that vocal performers experiencing greater stigma are less likely to seek help for a vocal illness. The negative association between age and experiences of stigma may indicate that early-career vocal performers are more vulnerable to this stigma. The positive association between a history of vocal illness and experience of vocal stigma may indicate that vocal stigma is not commonly recognized by individuals without direct experienced.

The ability of vocal performers to access quality vocal care could be improved by reducing vocal stigma. A common type of intervention for reducing stigma is education outreach, which could be provided by SLPs, laryngologists, and other vocal health specialists. This could include providing information about accessing services in their region, and clarifying the roles of different vocal health professions, as well as giving general education about vocal health care. Outreach events could also provide a venue for conversations about individual struggles and recovery experiences, which have been found effective at combatting stigma in other health areas.

Fears around loss of employment and professional reputation remain an important aspect of the dynamic between VPs and voice disorders. By shedding light on vocal stigma, our study could help performing arts organizations and vocal health specialists collaborate to protect artists, for example by advocating for the medical privacy of performers, supporting injury claims, and promoting preventative practices within the performance industry.

6 Bibliography

Adu, J., Oudshoorn, A., Anderson, K., Marshall, C. A., Stuart, H., Anderson Phd, K., Anne, C., & Phd, M. (2021). *Social contact: Next steps in an effective strategy to mitigate the stigma of mental illness*. https://doi.org/10.1080/01612840.2021.1986757

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. Englewood Cliffs.

American Speech-Language-Hearing Association. (n.d.). *Voice disorders*. (Practice Portal). Retrieved April 11, 2022, from https://www.asha.org/practice-portal/clinical-topics/voice-disorders/

Beaud, M., de La Bretèque, A., Pillot-Loiseau, C., Bernardoni, N. H., It, B., & de La Bret Eque B, A. (2021). *Clinical characteristics of singers attending a phoniatric outpatient clinic*. https://doi.org/10.1080/14015439.2021.1924853

Benninger, M. S., & Murry, T. (2006). *The performer's voice*. Plural Publishing Inc.

Bensoussan, Y., & Anderson, J. (2018). In-office laryngeal procedures (IOLP) in Canada: Current safety practices and procedural care. *Journal of Otolaryngology - Head and Neck Surgery*, *47*(1). https://doi.org/10.1186/S40463-018-0270-2

Boyce, J. O., Kilpatrick, N., Morgan, A. T., & Morgan, A. (2018). Speech and language characteristics in individuals with nonsyndromic submucous cleft palate—A systematic review. *Child: Care, Health and Development*, *44*(6), 818–831. https://doi.org/10.1111/cch.12613

Bradshaw, N., & Cooper, A. L. (2018). Medical privacy and the professional singer: Injury stigma, disclosure, and professional ramifications on Broadway. *Journal of Singing*, *74*(5), 513–520.

Braun-Janzen, C., & Zeine, L. (2009). Singers' interest and knowledge levels of vocal function and dysfunction: Survey findings. *Journal of Voice*, *23*(4), 470–483. https://doi.org/10.1016/j.jvoice.2008.01.001

Brown, L., Macintyre, K., & Trujillo, L. (2003). Interventions to reduce HIV/AIDS stigma: What have we learned? *AIDS Education and Prevention*, *15*(1), 49–69. https://doi.org/10.1521/aeap.15.1.49.23844

Canadian Medical Association. (2019). *Number of physicians by province/territory and specialty, Canada, 2019*. https://www.cma.ca/sites/default/files/2019-11/2019-01-spec-prov_1.pdf

Carter-Harris, L., Hermann, C. P., Schreiber, J., Weaver, M. T., & Rawl, S. M. (2014). Lung cancer stigma predicts timing of medical help–seeking behavior. *Oncology Nursing Forum*, *41*(3), E203. https://doi.org/10.1188/14.ONF.E203-E210

Cellucci, T., Krogh, J., & Vik, P. (2006). Help seeking for alcohol problems in a college population. *The Journal of General Psychology*, *133*(4), 421–433. https://doi.org/10.3200/GENP.133.4.421-433

Childs, L. F., & Mau, T. (2020). Combining voice rest and steroids to improve diagnostic clarity in phonotraumatic vocal fold injury. *Journal of Voice*. https://doi.org/10.1016/J.JVOICE.2020.06.003

Christopher, M. S. (2004). *The ability of self-construals to predict psychological distress, satisfaction with life, and help-seeking in ethnically diverse American college students* [Ph.D.]. University of South Dakota.

Clement, S., Schauman, O., Graham, T., Maggioni, F., Evans-Lacko, S., Bezborodovs, N., Morgan, C., Rüsch, N., Brown, J. S. L., & Thornicroft, G. (2015). What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychological Medicine*, *45*(1), 11–27. https://doi.org/10.1017/S0033291714000129

Clough, B. A., Hill, M., Delaney, M., & Casey, L. M. (2020). Development of a measure of stigma towards occupational stress for mental health professionals. *Social Psychiatry and Psychiatric Epidemiology*, *55*(7), 941–951. https://doi.org/10.1007/s00127-019-01820-9

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155. https://doi.org/10.1037/0033-2909.112.1.155

Colton, R. H., Casper, J. K., & Leonard, R. (2011). *Understanding voice problems: A physiological perspective for diagnosis and treatment*. Wolters Kluwer Health/Lippincott Williams & Wilkins.

Conner, M., & Norman, P. (2020). *Predicting health behaviour* (M. Conner & P. Norman, Eds.; 2nd ed.). Open University Press.

de Bodt, M., van den Steen, L., Mertens, F., Raes, J., van Bel, L., Heylen, L., Pattyn, J., Gordts, F., & van de Heyning, P. (2015). Characteristics of a dysphonic population referred for voice assessment and/or voice therapy. *Folia Phoniatrica et Logopaedica*, *67*(4), 178–186. https://doi.org/10.1159/000369339

de Leeuw, E. D., Hox, J. J., & Dillman, D. A. (2012). International handbook of survey methodology. In *International Handbook of Survey Methodology*. Routledge. https://doi.org/10.4324/9780203843123

DeBate, R. D. G., Gatto, A., & Rafal, G. (2018). The effects of stigma on determinants of mental health help-seeking behaviors among male college students: An application of the Information-Motivation-Behavioral Skills model. *American Journal of Men's Health*, *12*(5), 1286–1296. https://doi.org/10.1177/1557988318773656

Dyrbye, L. N., Eacker, A., Durning, S. J., Brazeau, C., Moutier, C., Massie, F. S., Satele, D., Sloan, J. A., & Shanafelt, T. D. (2015). The impact of stigma and personal experiences on the help-seeking behaviors of medical students with burnout. *Academic Medicine*, *90*(7), 961–969. https://doi.org/10.1097/ACM.0000000000000655

Fischer, E. H., & Farina, A. (1995). Attitudes toward seeking professional psychological help: A shortened form and considerations for research. *Journal of College Student Development*, *36*(4), 368–373.

Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin*, *1*(3), 455–474.

Fisher, W. A., Fisher, J. D., & Harman, J. (2003). The Information-Motivation-Behavioral Skills model: A general social psychological approach to understanding and promoting health behavior. In *Social Psychological Foundations of Health and Illness* (pp. 82–106). Blackwell.

Fortenberry, J. D., McFarlane, M., Bleakley, A., Bull, S., Fishbein, M., Grimley, D. M., Malotte, C. K., & Stoner, B. P. (2002). Relationships of stigma and shame to gonorrhea and HIV screening. *American Journal of Public Health*, *92*(3), 378–381.

Fourquet, M., Pisanski, K., Mathevon, N., & Reby, D. (2016). Seven and up: individual differences in male voice fundamental frequency emerge before puberty and remain stable throughout adulthood. *Royal Society Open Science*, *3*(10), 160395. moz-extension://021d4132-c4ff-4bc7-a500-b06fec74dd15/enhanced-reader.html?openApp&pdf=https%3A%2F%2Froyalsocietypublishing.org%2Fdoi%2Fpdf%2F10.1098%2Frsos.160395

Galesic, M., & Bosnjak, M. (2009). Effects of questionnaire length on participation and indicators of response quality in a web survey. *Public Opinion Quarterly*, *73*(2), 349–360. https://doi.org/10.1093/poq/nfp031

Gilman, M., Merati, A. L., Klein, A. M., Hapner, E. R., & Johns, M. M. (2009). Performer's attitudes toward seeking health care for voice issues: Understanding the barriers. *Journal of Voice*, *23*(2), 225–228. https://doi.org/10.1016/j.jvoice.2007.08.003

Gliem, J. a, & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. *2003 Midwest Research to Practice Conference in Adult, Continuing, and Community Education*, *1992*, 82–88. https://doi.org/10.1109/PROC.1975.9792

Government of Canada. (2022). *Collective voice for non-unionized workers - Issue paper*. https://www.canada.ca/en/employment-social-development/corporate/portfolio/labour/programs/labour-standards/reports/issue-paper-collective-voice-non-unionized-workers.html

Hammer, J. H., & Spiker, D. A. (2018). Dimensionality, reliability, and predictive evidence of validity for three help-seeking intention instruments: ISCI, GHSQ, and MHSIS. *Journal of Counseling Psychology*, *65*(3), 394–401. https://doi.org/10.1037/cou0000256

Huston, C. (2019). *Speaking out about vocal injuries on Broadway*. https://broadwaynews.com/2019/09/19/speaking-out-about-vocal-injuries-on-broadway/

Incorporated Society of Musicians. (2022). *Dignity at work: Discrimination in the music sector*. https://www.ism.org/campaigns/dignityatwork?fbclid=IwAR30RooUmFHtH2VzSgzbV4aim66vBq5CaDgOODH6uSa3VdbNKHSizgUIaJk

Johns, M. M., Sataloff, R. T., Merati, A. L., & Rosen, C. A. (2010). Shortfalls of the American Academy of Otolaryngology–Head and Neck Surgery's clinical practice guideline: Hoarseness (dysphonia). *Otolaryngology - Head and Neck Surgery*, *143*(2), 175–177. https://doi.org/10.1016/J.OTOHNS.2010.05.026

Jung, H., von Sternberg, K., & Davis, K. (2016). Expanding a measure of mental health literacy: Development and validation of a multicomponent mental health literacy measure. *Psychiatry Research*, *243*, 278–286. https://doi.org/10.1016/j.psychres.2016.06.034

Komiti, A., Fiona, A. E., Ae, J., & Jackson, H. (2006). The influence of stigma and attitudes on seeking help from a GP for mental health problems A rural context. *Social Psychiatry and Psychiatric Epidemiology*, *41*(9), 738–745. https://doi.org/10.1007/s00127-006-0089-4

Lerner, M. Z., Paskhover, B., Acton, L., & Young, N. (2013). Voice disorders in actors. *Journal of Voice*, *27*(6), 705–708. https://doi.org/10.1016/j.jvoice.2013.05.006

LimeSurvey. (2021). *LimeSurvey* (No. 3). https://community.limesurvey.org/

Link, B. G., & Phelan, J. C. (2006). Stigma and its public health implications. *Lancet*, *367*(9509), 528–529. https://doi.org/10.1016/S0140-6736(06)68184-1

Mackenzie, C. S., Heath, P. J., Vogel, D. L., & Chekay, R. (2019). Age differences in public stigma, self-stigma, and attitudes toward seeking help: A moderated mediation model. *Journal of Clinical Psychology*, *75*(12), 2259–2272. https://doi.org/10.1002/JCLP.22845

Misovich, S. J., Martinez, T., Fisher, J. D., Bryan, A., & Catapano, N. (2003). Predicting breast self-examination: A test of the information-motivation-behavioral skills model. *Journal of Applied Social Psychology*, *33*(4), 775–790. https://doi.org/10.1111/j.1559-1816.2003.tb01924.x

Morgan, A. J., Reavley, N. J., Ross, A., Too, L. S., & Jorm, A. F. (2018). Interventions to reduce stigma towards people with severe mental illness: Systematic review and meta-analysis. *Journal of Psychiatric Research*, *103*, 120–133. https://doi.org/10.1016/j.jpsychires.2018.05.017

Morzaria, S., & Damrose, E. J. (2012). A comparison of the VHI, VHI-10, and V-RQOL for measuring the effect of botox therapy in adductor spasmodic dysphonia. *Journal of Voice*, *26*(3), 378–380. https://doi.org/10.1016/J.JVOICE.2010.07.011

Myssiorek, D. (2004). Recurrent laryngeal nerve paralysis: Anatomy and etiology. *Otolaryngologic Clinics of North America*, *37*(1), 25–44. https://doi.org/10.1016/S0030-6665(03)00172-5

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Osborn, C. Y., & Egede, L. E. (2010). Validation of an Information-Motivation-Behavioral Skills model of diabetes self-care (IMB-DSC). *Patient Education and Counseling*, *79*(1), 49–54. https://doi.org/10.1016/j.pec.2009.07.016

Performer Availability Screening Service Inc. (n.d.). *PASS Certified*. Retrieved April 12, 2022, from https://www.passcertified.org/

Pestana, P. M., Vaz-Freitas, S., & Manso, M. C. (2017). Prevalence of voice disorders in singers: Systematic review and meta-analysis. *Journal of Voice*, *31*(6), 722–727. https://doi.org/10.1016/j.jvoice.2017.02.010

Phyland, D., & Miles, A. (2019). Occupational voice is a work in progress: Active risk management, habilitation and rehabilitation. *Current Opinion in Otolaryngology and Head and Neck Surgery*, *27*(6), 439–447. https://doi.org/10.1097/MOO.0000000000000584

Prolific. (2021). *Prolific* (August 2021). www.prolific.co

Rosen, C. A., Lee, A. S., Osborne, J., Zullo, T., & Murry, T. (2004). Development and validation of the VHI10. *The Laryngoscope*, *114*(9), 1549–1556.

Rosen, D. C., Sataloff, J. B., & Sataloff, R. T. (2021). *The psychology of voice disorders* (2nd ed.). Plural Publishing Inc.

Roy, N. (2003). Functional dysphonia. *Current Opinion in Otolaryngology & Head and Neck Surgery*, *11*(3), 144–148. https://journals.lww.com/co-otolaryngology/Fulltext/2003/06000/Functional_dysphonia.2.aspx

Rueda, S., Mitra, S., Chen, S., Gogolishvili, D., Globerman, J., Chambers, L., Wilson, M., Logie, C. H., Shi, Q., Morassaei, S., & Rourke, S. B. (2016). Examining the associations between HIV-related stigma and health outcomes in people living with HIV/AIDS: a series of meta-analyses. *BMJ Open*, *6*(7), e011453. https://doi.org/10.1136/bmjopen-2016

Sapir, S. (1993). Vocal attrition in voice students: Survey findings. *Journal of Voice*, *7*(1), 69–74. https://doi.org/10.1016/S0892-1997(05)80113-4

Sataloff, R. T., Divi, V., Heman-Ackah, Y. D., & Hawkshaw, M. J. (2007). Medical history in voice professionals. *Otolaryngologic Clinics of North America*, *40*(5), 931–951. https://doi.org/10.1016/j.otc.2007.05.003

Sliwinska-Kowalska, M., Niebudek-Bogusz, E., Fiszer, M., Łoś-Spychalska, T., Kotylo, P., Sznurowska-Przygocka, B., & Modrzewska, M. (2006). The prevalence and risk factors for occupational voice disorders in teachers. *Folia Phoniatrica et Logopaedica*, *58*(2), 85–101. https://doi.org/10.1159/000089610

Sloggy, J., Stemple, J., Rowles, G., & Andreatta, R. (2019). In support of the exceptional voice. *Perspectives of the ASHA Special Interest Groups*, *4*(6), 1306–1310. https://doi.org/10.1044/2019_pers-sig3-2019-0015

Stangl, A. L., Earnshaw, V. A., Logie, C. H., van Brakel, W., Simbayi, L. C., Barré, I., & Dovidio, J. F. (2019). The Health Stigma and Discrimination Framework: A global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas. *BMC Medicine*, *17*(1), 18–23. https://doi.org/10.1186/s12916-019-1271-3

Statistics Canada. (2021). *Labour force characteristics by age group, monthly, seasonally adjusted*. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410028702

Statistics Canada. (2022, February 2). *Performing arts, spectator sports and related industries - 711 - Summary - Canadian industry statistics - innovation, science and economic development Canada*. https://www.ic.gc.ca/app/scr/app/cis/summary-sommaire/711

Stemple, J. C., & others. (1994). Efficacy of vocal function exercises as a method of improving voice production. *Journal of Voice*, *8*(3), 271–278.

Stemple, J. C., Roy, N., & Klaben, B. K. (2014). *Clinical voice pathology: Theory and management* (5th ed.). Plural Publishing Inc.

Thomas, J. P. (n.d.). *voicedoctor.net*. Retrieved April 13, 2022, from https://www.voicedoctor.net/media/

Thornicroft, G., Mehta, N., Clement, S., Evans-Lacko, S., Doherty, M., Rose, D., Koschorke, M., Shidhaye, R., O'Reilly, C., & Henderson, C. (2016). Evidence for effective interventions to reduce mental-health-related stigma and discrimination. *The Lancet*, *387*(10023), 1123–1132. https://doi.org/10.1016/S0140-6736(15)00298-6

Tsang, S., Royse, C. F., & Terkawi, A. S. (2017). Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. *Saudi Journal of Anaesthesia*, *11*(Suppl 1), S80. https://doi.org/10.4103/SJA.SJA_203_17

van Houtte, E., van Lierde, K., & Claeys, S. (2011). Pathophysiology and treatment of muscle tension dysphonia: A review of the current knowledge. *Journal of Voice*, *25*(2), 202–207. https://doi.org/10.1016/j.jvoice.2009.10.009

van Houtte, E., van Lierde, K., D'Haeseleer, E., & Claeys, S. (2010). The prevalence of laryngeal pathology in a treatment-seeking population with dysphonia. *The Laryngoscope*, *120*(2), 306–312. https://doi.org/10.1002/LARY.20696

Vogel, D. L., Bitman, R. L., Hammer, J. H., & Wade, N. G. (2013). Is stigma internalized? The longitudinal impact of public stigma on self-stigma. *Journal of Counseling Psychology*, *60*(2), 311. https://doi.org/10.1037/A0031889

Vogel, D. L., Wade, N. G., & Haake, S. (2006). Measuring the self-stigma associated with seeking psychological help. *Journal of Counseling Psychology*, *53*(3), 325–337. https://doi.org/10.1037/0022-0167.53.3.325

Vogel, D. L., Wade, N. G., & Hackler, A. H. (2007). Perceived public stigma and the willingness to seek counseling: The mediating roles of self-stigma and attitudes toward counseling. *Journal of Counseling Psychology*, *54*(1), 40–50. https://doi.org/10.1037/0022-0167.54.1.40

West, J. B. (1999). The original presentation of Boyle's law. *Journal of Applied Physiology*, *87*(4), 1543–1545. http://www.jap.org

Williams, N. R. (2003). *Occupational groups at risk of voice disorders: a review of the literature*. https://doi.org/10.1093/occmed/kqg113

7 Appendices

7.1 Appendix I: Expert Review

7.1.1 Instructions for Expert Reviewers

This survey is designed to explore the stigma around vocal illness and how it affects professional singers and actors, and how this stigma influences whether or not they seek help for a vocal illness. The survey has seven sections from A to F.

Only Sections D and E need your expert review.

Section D

This section is about how likely our participants are to seek professional, medical care for their voices should they need it. It contains three subsections:

Information subsection

This section assesses participants' knowledge and beliefs about the voice and vocal health issues.

Motivation subsection

This section assesses participants' attitudes around seeking professional, medical help for their voice, and what attitudes they believe other people have on this issue.

Behavioural skills subsection

This section assesses whether participants would intend to seek professional, medical help for their voices (if they could benefit from it).

Section E

This section assesses how much stigma participants experience or perceive against vocal illness. Items indicated with *E-O* are about social stigma: the experience of stigma coming from other people.

Items indicated with *E-S* are about self-stigma: the experience of stigma coming from one's self.

Note: In all sections, items with an asterisk (*) are reverse-coded. A high response in a reverse-coded item is equivalent to a low response in another item, and vice versa.

Instructions for experts reviewing the survey:

For each question in these sections, please use the spaces next to question to rate how relevant they are for professional performers on the following scale:

1 = not relevant 2 = somewhat relevant 3 = quite relevant 4 = highly relevant

You do not need to answer the survey, only the expert ratings. Optionally, the form also contains areas where you can leave comments on any item (e.g., if an item is unclear, leading, offensive, or difficult to answer) or general comments (e.g., the survey is missing something important) With your feedback, we will pick the best items so that the final version is shorter and more relevant.

7.1.2 Survey Questions Reviewed by Experts

D – Likelihood of Seeking Help

Please rate the following statements according to how confident you are that they are true:
0 = definitely false; 1 = probably false; 2 = not sure; 3 = probably true; 4 = definitely true

Item no.	**Item text and responses**	**Expert Rating** **1 = not relevant** **2 = somewhat relevant** **3 = quite relevant** **4 = highly relevant**	**Expert Comments**
D-I-1	Well-hydrated vocal folds are less likely to become injured with use.		
D-I-2*	A performer with good technique does not develop voice problems.		
D-I-3	Whispering can be harmful to the vocal mechanism.		
D-I-4*	A family doctor is qualified to diagnose injuries on the vocal folds.		
D-I-5*	A speech-language pathologist is qualified to prescribe medication (drugs) to an individual with voice disorders.		
D-I-6	Singing or speaking on higher pitches requires stretching of the vocal folds.		
D-I-7*	The vocal folds come apart during speaking and singing.		
D-I-8	Hoarseness is a common symptom of work-related voice disorders.		
D-I-9	Muscle tension in the neck can be a symptom of a voice disorder.		
D-I-10*	The treatment of choice for early-stage vocal nodules is complete vocal rest until symptoms subside.		

Please rate the statements below on a scale of 0 – 4, where:
0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree

Item no.	**Item text and responses**	**Expert Rating** **1 = not relevant** **2 = somewhat relevant** **3 = quite relevant** **4 = highly relevant**	**Expert Comments**
D-M-1*	I do not see a specialist when I have voice problems because I am afraid of what may be found.		
D-M-2*	I may not seek health care for my voice problem due to medical coverage.		
D-M-3*	I have anxiety/fear about going to a specialist for problems with my voice.		
D-M-4	My voice is an important part of my profession.		
D-M-5	Speech therapy is a helpful treatment for voice problems.		
D-M-6	A person with a voice problem is not likely to solve it alone.		
D-M-7*	A person should work out their own problems; getting voice therapy would be a last resort.		
D-M-8*	There is something admirable in the attitude of someone who is willing to cope with their voice difficulties without resorting to professional help.		
D-M-9	If I were experiencing a voice problem, my friends would think I should seek professional vocal health services.		
D-M-10	If I were experiencing a voice problem, my work colleagues would think I should seek professional vocal health services.		
D-M-11	A person with a voice problem is likely to solve it with professional help.		

Please rate the statements below on a scale of 0 – 4, where:
0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree

Item no.	Item text and responses	Expert Rating 1 = not relevant 2 = somewhat relevant 3 = quite relevant 4 = highly relevant	Expert Comments
D-B-1	If I had a vocal health concern, I would intend to seek help from a vocal health professional.		
D-B-2	If I was experiencing a voice disorder, I would try to solve it on my own rather than seeking help.		

The next 4 items fill in the blank of the following sentence:

If I was experiencing a voice disorder, I would be likely to seek help from_____.

Item no.	Item text and responses	Expert Rating 1 = not relevant 2 = somewhat relevant 3 = quite relevant 4 = highly relevant	Expert Comments
D-B-3	…a family doctor/general physician.		
D-B-4	…a laryngologist/ENT (Ear, Nose, and Throat doctor)		
D-B-5	…a speech-language pathologist.		
D-B-6*	…an alternative medicine practitioner (e.g., acupuncture, reiki, homeopathy)		

For the purposes of the rest of the questionnaire, the term "vocal health professional" will refer to family doctors/general physicians, laryngologists/ENT (Ear, Nose, and Throat doctor), and speech-language pathologists.

The next 4 items fill in the blank of the following sentence:

"I would be likely to seek help from a vocal health professional if_____."

Item no.	Item text and responses	Expert Rating 1 = not relevant 2 = somewhat relevant 3 = quite relevant 4 = highly relevant	Expert Comments
D-B-7	I would be likely to seek help from a vocal health professional if my voice sounded hoarse or rough.		
D-B-8	I would be likely to seek help from a vocal health professional if my voice often felt tired after use.		
D-B-9	I would be likely to seek help from a vocal health professional if using my voice felt painful or uncomfortable.		
D-B-10	I would be likely to seek help from a vocal health professional if I had to cancel a performance/contract because of voice problems.		

Expert comments on section D as a whole

E – Experiences of Stigma

Reminder: for this survey, "vocal health professional" refers to family doctors/general physicians, laryngologists/ENTs (Ear, Nose, and Throat doctors), or speech-language pathologist.

Please rate the statements below on a scale of 0 – 4, where:
0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree

Item no. *S=self O=social*	**Item text and responses**	**Expert Rating** **1 = not relevant** **2 = somewhat relevant** **3 = quite relevant** **4 = highly relevant**	**Expert Comments**
E-O-1*	Where I work, a person experiencing a voice disorder would be given understanding and support.		
E-O-2*	If I had a voice problem, my colleagues and employers would encourage me to see a vocal health professional.		
E-S-1	I would feel inadequate if I went to a vocal health professional for help with my voice.		
E-O-3*	I would feel comfortable telling my peers I was seeing a vocal health professional for a voice disorder.		
E-S-2	I would feel worse about myself if I could not solve my voice problems on my own.		
E-S-3*	My view of myself would not change just because I made the choice to see a vocal health professional about my voice.		
E-S-4	If I had a voice problem, I would blame myself.		
E-S-5	It would make me feel inferior to ask a vocal health professional for help.		
E-O-4	My professional reputation would suffer if I went to a vocal health professional.		
E-O-5	I worry what potential employers would think if they found out I had seen a vocal health professional for a voice disorder.		

Expert comments on section E as a whole

Expert comments on survey as a whole

Expert's Name: _____

Years of Experience in Your Profession: _____

7.2 Appendix II: Final Survey

Below is a reproduction of the content in the final survey. Text in italics is for the reader's information only, and was not visible to participants. Questions marked with a * were reverse-coded.

WELCOME MESSAGE

Vocal Illness Experiences

Welcome to this survey about people's experiences with vocal illnesses. We'll start with a few simple questions to make sure you fit our study's criteria. After that, there will be a consent form, followed by a survey.

You can save your progress and return at any time, but you can't go back to previous questions after you have moved to the next page.

Click next to continue.

PARTICIPANT SCREENING

X1 **Do you have a Canadian Address?**

a. Yes
b. No

X2 **Are you between the ages of 20 and 65?**

a. Yes
b. No

X3 **Has your voice ever been affected by one of the following conditions:**

- **Cancer in the head/neck**
- **Stroke**
- **Parkinson's Disease, ALS, or other neurodegenerative conditions**
- **Physical trauma to the throat, neck, or head (e.g., caused by car accident)**

a. Yes
b. No

Participants who answered X1, yes; X2, yes; X3, no were able to continue to the consent section. Otherwise, they saw the following message:

"Thank you for responding to our survey. Unfortunately, you don't quite fit for what we're trying to study. Feel free to share our study if you know anyone who does, so they can enter the draw for a gift card!"

CONSENT SECTION

Consent split **Are you a professional singer or actor (i.e., you make at least some income via performance)?**

a. Yes
b. No

Participants who answered "yes" became part of the performer group, while participants who answer "no" became part of the control group. Their respective consent forms were presented here.
Participants who did not consent to participate saw the following message:

Thanks for considering our study, we're sorry to see you go! If you have concerns about the study, you can contact us at the following locations:
Nicole Li-Jessen, principal investigator: nicole.li@mcgill.ca or 514-398-5933
Lisa Martignetti, study coordinator: lisa.martignetti@mail.mcgill.ca or 514-398-6222
Colin Jones, student investigator: colin.jones@mail.mcgill.ca
If you have any ethical concerns or complaints about your participation in this study, and want to speak with someone not on the research team, please contact Ms. Ilde Lepore, Ethics Officer of the McGill Institutional Review Board, at 514-398-8302 or ilde.lepore@mcgill.ca.

Participants in both groups who did consent to participate were able to proceed to the rest of the study.

A – Demographics

A-1 **What gender do you identify as?**

a. Male
b. Female
c. I prefer not to answer
d. Other: _____

A-2 **Are you a member of a visible minority?**

a. No
b. Yes
c. I prefer not to answer

A-3 **What is your age? (Years)**

_____

A-4 **What are the first three characters of your Canadian post-code?**

_____

A-5 **What is the highest level of education you have completed?**

a. High school diploma
b. Apprenticeship or trades certificate/diploma
c. College or CEGEP degree/diploma, or university degree lower than bachelor's
d. Bachelor's degree
e. Graduate degree (master's or doctorate)
f. None of the above

Participants who responded to A-5 with any answer other than (a) or (f) were shown item A-5.1:

A-5.1 **In which area(s) did you obtain a degree/diploma/certificate?**

Check all that apply

a. Performance (e.g., music, acting, dance…)
b. Healthcare
c. Biology or Physiology
d. Other
e.

B - Occupation

B-1 **Which of these statements about your occupation best describe you?**

a. I am a professional actor (including theatre, film/TV, Voice Actor; not including musical theatre/opera).
b. I am a professional singer (including concerts, recordings, staged productions; solo and ensemble).
c. I am not a professional vocal performer.

B-2 **How much voice training have you received? (Training includes any lessons, classes, or coaching with a focus on learning voice skills for spoken or sung performance.)**

a. None
b. Less than 1 year
c. 3 years or less
d. 5 years or less
e. More than 5 years

B-3 **Approximately how much of your income is made by working as a singer or actor in an average year (pre-pandemic)?**

a. None or almost none
b. Less than half
c. About half
d. More than half
e. All or almost all
f. I prefer not to answer

C - Vocal Health

Please read the following information about voice disorders before continuing.

Voice disorders are a wide range of conditions that impact a person's voice in various ways, including the tone, pitch, loudness, and more. A voice disorder is not the same a speech disorder (which impacts your ability to speak fluently and accurately, such as a stutter or a lisp).
For this study, <u>a voice disorder</u> refers to any disturbance to how your voice normally functions or sounds, in a way that interferes with your daily conversation and/or your professional work as a performer.
Exceptions: (the following would <u>not</u> be considered a voice disorder):

- **The problem resolves on its own within 1-2 days and does not come back regularly.**
- **The problem is related to a brief illness such as a cold or flu, and voice symptoms resolve at a similar time to other symptoms**.

C-1 **When was the last time you had a voice disorder?**

a. I have never had a voice disorder
b. I currently have a voice disorder
c. Within the past month
d. Within the past year
e. More than a year ago

Participants who responded to C-1 with any answer other than (a) were shown item C-1.1:

C-1.1 **Did you approach a professional to help identify, overcome, or cope with this issue?** (In this question, a professional can include anyone whose job includes helping people with their voice or other health issues. Possible examples include: doctor, speech-language pathologist, voice teacher/coach, massage therapist, psychologist, acupuncturist, etc.)

a. No
b. Yes

Participants who responded to C-1.1 with (b), were shown item C-1.1.1:

C-1.1.1 **What type of professional did you seek help from? (You may list several)**

_____
_____
_____
_____
_____
_____

C-2 **How often have you experienced a voice disorder?**

a. Never
b. Once every few years
c. Once or twice every year
d. Once or twice every three months
e. Once or twice every month
f. Almost all the time

C-3 **These are statements that many people have used to describe their voices and effects of their voices on their lives. Choose the response that indicates how frequently you have the same experience.**

Item	*Item text*	**0: never**	**1: almost never**	**2: sometimes**	**3: almost always**	**4: always**
C-3.1	My voice makes it difficult for people to hear me.					
C-3.2	People have difficulty understanding me in a noisy room.					
C-3.3	My voice difficulties restrict personal and social life.					
C-3.4	I feel left out of conversations because of my voice.					
C-3.5	My voice problems cause me to lose income.					
C-3.6	I feel as though I have to strain to produce voice.					
C-3.7	The clarity of my voice is unpredictable.					
C-3.8	My voice problem upsets me.					
C-3.9	My voice makes me feel handicapped.					
C-3.10	People ask, “what’s wrong with your voice?”					

D – Likelihood of Seeking Help

DI: Information

Please rate the following statements according to how confident you are that they are true:
0 = definitely false; 1 = probably false; 2 = not sure; 3 = probably true; 4 = definitely true

Item	*Item text*	**0: Definitely False**	**1: Probably false**	**2: Not sure**	**3: Probably true**	**4: Definitely true**
DI-1	Well-hydrated vocal folds are less likely to become injured with use.					
*DI-2**	A performer with good technique does not develop voice problems.					
DI-3	Whispering can be harmful to the vocal mechanism.					
*DI-4**	A family doctor is qualified to diagnose injuries on the vocal folds.					
*DI-5**	A speech-language pathologist is qualified to prescribe medication (drugs) to an individual with voice disorders.					
DI-6	When you speak or sing on a higher pitch, your vocal folds become longer and thinner.					
DI-7	The vocal folds open and close during speaking and singing.					
DI-8	Hoarseness is a common symptom of work-related voice disorders.					
DI-9	Muscle tension in the neck can be a symptom of a voice disorder.					
*DI-10**	The treatment of choice for early-stage vocal nodules is complete vocal rest until symptoms subside.					

DM: Motivation

Please rate the statements below on a scale of 0 – 4, where:
0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree

Item	*Item text*	**0: strongly disagree**	**1: disagree**	**2: neutral**	**3: agree**	**4: strongly agree**
*DM-1**	I do not see a specialist when I have voice problems because I am afraid of what may be found.					
*DM-2**	I may not seek health care for my voice problem because I anticipate or experience difficulty with accessing public health services.					
*DM-3**	I have anxiety/fear about going to a specialist for problems with my voice.					
DM-4	My voice is an important part of my profession.					
DM-5	Speech therapy is a helpful treatment for voice problems.					
DM-6	A person with a voice disorder is not likely to solve it alone.					
*DM-7**	A person should work out their own problems; getting voice therapy would be a last resort.					
*DM-8**	There is something admirable in the attitude of someone who is willing to cope with their voice difficulties without resorting to professional help.					
*DM-9**	I may not seek health care for my voice problem because I anticipate or experience difficulty with affording private health services.					
DM-10	If I were experiencing a voice problem, my work colleagues would think I should seek professional vocal health services.					

DB: Behavioural Skills

Please rate the statements below on a scale of 0 – 4, where:
0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree

Item	*Item text*	**0: strongly disagree**	**1: disagree**	**2: neutral**	**3: agree**	**4: strongly agree**
DB-1	If I had a vocal health concern, I would intend to seek help from a vocal health professional.					
*DB-2**	If I was experiencing a voice disorder, I would try to solve it on my own rather than seeking help.					

The next 4 items fill in the blank of the following sentence:
"If I was experiencing a voice disorder, I would be likely to seek help from_____."

Item	*Item text*	**0: strongly disagree**	**1: disagree**	**2: neutral**	**3: agree**	**4: strongly agree**
DB-3	…a family doctor/general physician.					
DB-4	…a laryngologist/ENT (Ear, Nose, and Throat doctor)					
DB-5	…a speech-language pathologist.					
*DB-6**	…an alternative medicine practitioner (e.g., acupuncture, reiki, homeopathy)					

For the purposes of the rest of the questionnaire, the term "vocal health professional" will refer to laryngologists/ENT (Ear, Nose, and Throat doctors), and speech-language pathologists.

The next 4 items fill in the blank of the following sentence:
"I would be likely to seek help from a vocal health professional if_____."

Item	*Item text*	**0: strongly disagree**	**1: disagree**	**2: neutral**	**3: agree**	**4: strongly agree**
DB-7	… my voice sounded hoarse or rough.					
DB-8	… my voice often felt tired after use.					
DB-9	… using my voice felt painful or uncomfortable.					
DB-10	… I had to cancel a performance/contract because of voice problems.					

E – Experiences of Stigma

Please rate the statements below on a scale of 0 – 4, where:

0 = strongly disagree; 1 = disagree; 2 = neutral; 3 = agree; 4 = strongly agree

Items numbered as EO pertain to social stigma; items numbered as ES pertain to self-stigma

Item	*Item text*	**0: strongly disagree**	**1: disagree**	**2: neutral**	**3: agree**	**4: strongly agree**
*EO-1**	Where I work, a person experiencing a voice disorder would be given understanding and support.					
*EO-2**	If I had a voice problem, my colleagues and employers would encourage me to see a vocal health professional.					
ES-1	I would feel inadequate if I went to a vocal health professional for help with my voice.					
*EO-3**	I would feel comfortable telling my peers I was seeing a vocal health professional for a voice disorder.					
ES-2	I would feel worse about myself if I could not solve my voice problems on my own.					
*ES-3**	My view of myself would not change just because I made the choice to see a vocal health professional about my voice.					
ES-4	If I had a voice problem, I would blame myself.					
ES-5	It would make me feel inferior to ask a vocal health professional for help.					
EO-4	My professional reputation would suffer if I went to a vocal health professional.					
EO-5	I worry what potential employers would think if they found out I had seen a vocal health professional for a voice disorder.					

Reminder: for this survey, "vocal health professional" refers to laryngologists/ENTs (Ear, Nose, and Throat doctors), and speech-language pathologists.

F – Feedback

F-1 If there is anything you would like to say about stigma and voice disorders that was not covered by this questionnaire, you can tell us here:

Debrief

Participants in each group will now see their respective debrief forms.
Any participant who indicates that they no longer want their data to be included in the study will see the following message:

Thanks for participating in our study. We're sorry to hear that you no longer feel comfortable including your data in our study.

If you have concerns about the study, you can contact us at the following locations:
Nicole Li-Jessen, principal investigator: nicole.li@mcgill.ca or 514-398-5933
Lisa Martignetti, study coordinator: lisa.martignetti@mail.mcgill.ca or 514-398-6222
Colin Jones, student investigator: colin.jones@mail.mcgill.ca
If you have any ethical concerns or complaints about your participation in this study, and want to speak with someone not on the research team, please contact Ms. Ilde Lepore, Ethics Officer of the McGill Institutional Review Board, at 514-398-8302 or ilde.lepore@mcgill.ca.

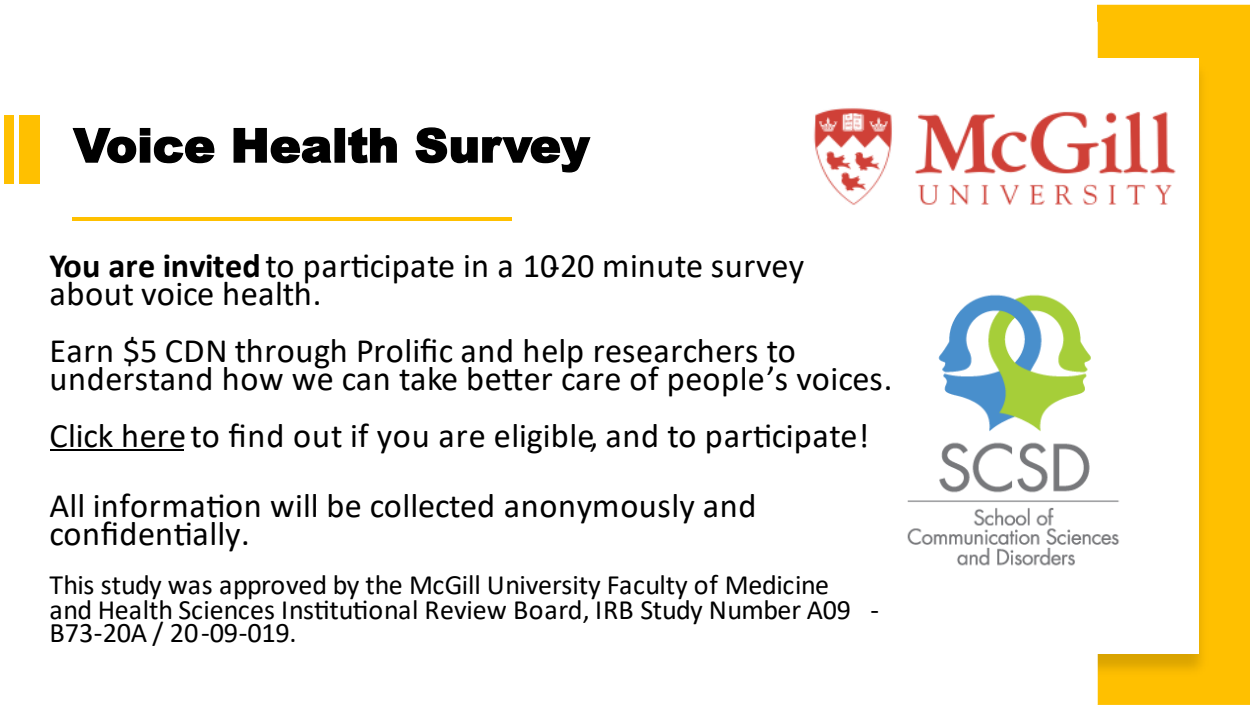
Regardless of responses to the debrief form, all participants will see one of the following end messages, based on participant group:
Performer group end message:

Thank you for participating in our survey! If you would like to enter a draw to win one of fifty $50 gift cards for amazon.ca, follow the link below so we can collect your information and contact you if you win! Your contact information will not be associated with the responses you gave, and will be deleted after the draw, win or lose.
Click here to enter the prize draw.
Control group end message:
Thank you for participating in our survey! You will receive $5 in compensation for your time via Prolific.

7.3 Appendix III. Recruitment Materials

7.3.1 Electronic Advertisement for Vocal Performers

7.3.2 Electronic Advertisement for Controls



7.4 Appendix IV. Organizations who Distributed our Survey

The following organizations were our collaborators in the creation and distribution of our survey:

- Alliance of Canadian Cinema, Television and Radio Artists
- National Association of Teachers of Singing

The following organizations also agreed to distribute our survey after its launch:

- Canadian Country Music Association
- Calgary Musicians' Association - Local 547
- Kingston Musicians' Union - Local 518
- Newfoundland and Labrador Musicians' Association - Local 820

A further 26 unions, guilds, and organizations of professional vocal performers were contacted, but either declined to distribute the survey, or did not respond.

7.5 Appendix V: Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Checklist Item	***Explanation***	***Page Number***
Describe survey design	Describe target population, sample frame. Is the sample a convenience sample? (In "open" surveys this is most likely.)	16, 19-22
IRB approval	Mention whether the study has been approved by an IRB.	15
Informed consent	Describe the informed consent process. Where were the participants told the length of time of the survey, which data were stored and where and for how long, who the investigator was, and the purpose of the study?	21-23
Data protection	If any personal information was collected or stored, describe what mechanisms were used to protect unauthorized access.	Not applicable, we did not collect identifiable personal information
Development and testing	State how the survey was developed, including whether the usability and technical functionality of the electronic questionnaire had been tested before fielding the questionnaire.	15-16
Open survey versus closed survey	An "open survey" is a survey open for each visitor of a site, while a closed survey is only open to a sample which the investigator knows (password-protected survey).	"Open," p21-22
Contact mode	Indicate whether or not the initial contact with the potential participants was made on the Internet. (Investigators may also send out questionnaires by mail and allow for Web-based data entry.)	21-22
Advertising the survey	How/where was the survey announced or advertised? Some examples are offline media (newspapers), or online (mailing lists – If yes, which ones?) or banner ads (Where were these banner ads posted and what did they look like?). It is important to know the wording of the announcement as it will heavily influence who chooses to participate. Ideally the survey announcement should be published as an appendix.	21-22; 75
Web/E-mail	State the type of e-survey (e.g., one posted on a Web site, or one sent out through e-mail). If it is an e-mail survey, were the responses entered manually into a database, or was there an automatic method for capturing responses?	16

Context	Describe the Web site (for mailing list/newsgroup) in which the survey was posted. What is the Web site about, who is visiting it, what are visitors normally looking for? Discuss to what degree the content of the Web site could pre-select the sample or influence the results. For example, a survey about vaccination on a anti-immunization Web site will have different results from a Web survey conducted on a government Web site	43; 76
Mandatory/voluntary	Was it a mandatory survey to be filled in by every visitor who wanted to enter the Web site, or was it a voluntary survey?	22
Incentives	Were any incentives offered (e.g., monetary, prizes, or non-monetary incentives such as an offer to provide the survey results)?	22
Time/Date	In what timeframe were the data collected?	21
Randomization of items or questionnaires	To prevent biases items can be randomized or alternated.	We did not do this across participants.
Adaptive questioning	Use adaptive questioning (certain items, or only conditionally displayed based on responses to other items) to reduce number and complexity of the questions.	16; 18
Number of Items	What was the number of questionnaire items per page? The number of items is an important factor for the completion rate.	16
Number of screens (pages)	Over how many pages was the questionnaire distributed? The number of items is an important factor for the completion rate.	16
Completeness check	It is technically possible to do consistency or completeness checks before the questionnaire is submitted. Was this done, and if "yes", how (usually JAVAScript)? An alternative is to check for completeness after the questionnaire has been submitted (and highlight mandatory items). If this has been done, it should be reported. All items should provide a non-response option such as "not applicable" or "rather not say", and selection of one response option should be enforced.	23
Review step	State whether respondents were able to review and change their answers (e.g., through a Back button or a Review step which displays a summary of the responses and asks the respondents if they are correct).	16
Unique site visitor	If you provide view rates or participation rates, you need to define how you determined a unique visitor. There are different techniques available, based on IP addresses or cookies or both.	View rates and participation rates not provided, See pp22-23 and below
View rate (Ratio of unique survey visitors/unique site visitors)	Requires counting unique visitors to the first page of the survey, divided by the number of unique site visitors (not page views!). It is not unusual to have view rates of less than 0.1 % if the survey is voluntary.	Could not be calculated: site visitor data were not available.

Participation rate (Ratio of unique visitors who agreed to participate/unique first survey page visitors)	Count the unique number of people who filled in the first survey page (or agreed to participate, for example by checking a checkbox), divided by visitors who visit the first page of the survey (or the informed consents page, if present). This can also be called "recruitment" rate.	Could not be calculated: view rate data were not available.
Completion rate (Ratio of users who finished the survey/users who agreed to participate)	The number of people submitting the last questionnaire page, divided by the number of people who agreed to participate (or submitted the first survey page). This is only relevant if there is a separate "informed consent" page or if the survey goes over several pages. This is a measure for attrition. Note that "completion" can involve leaving questionnaire items blank. This is not a measure for how completely questionnaires were filled in. (If you need a measure for this, use the word "completeness rate".)	25
Cookies used	Indicate whether cookies were used to assign a unique user identifier to each client computer. If so, mention the page on which the cookie was set and read, and how long the cookie was valid. Were duplicate entries avoided by preventing users access to the survey twice; or were duplicate database entries having the same user ID eliminated before analysis? In the latter case, which entries were kept for analysis (e.g., the first entry or the most recent)?	23
IP check	Indicate whether the IP address of the client computer was used to identify potential duplicate entries from the same user. If so, mention the period of time for which no two entries from the same IP address were allowed (e.g., 24 hours). Were duplicate entries avoided by preventing users with the same IP address access to the survey twice; or were duplicate database entries having the same IP address within a given period of time eliminated before analysis? If the latter, which entries were kept for analysis (e.g., the first entry or the most recent)?	23
Log file analysis	Indicate whether other techniques to analyze the log file for identification of multiple entries were used. If so, please describe.	23-24
Registration	In "closed" (non-open) surveys, users need to login first and it is easier to prevent duplicate entries from the same user. Describe how this was done. For example, was the survey never displayed a second time once the user had filled it in, or was the username stored together with the survey results and later eliminated? If the latter, which entries were kept for analysis (e.g., the first entry or the most recent)?	Not Applicable, we did not run a "closed" survey.
Handling of incomplete questionnaires	Were only completed questionnaires analyzed? Were questionnaires which terminated early (where, for example, users did not go through all questionnaire pages) also analyzed?	23-24

Questionnaires submitted with an atypical timestamp	Some investigators may measure the time people needed to fill in a questionnaire and exclude questionnaires that were submitted too soon. Specify the timeframe that was used as a cut-off point, and describe how this point was determined.	Not Applicable, we did not do this (although it was a factor considered in data cleaning, see pp23-24)
Statistical correction	Indicate whether any methods such as weighting of items or propensity scores have been used to adjust for the non-representative sample; if so, please describe the methods.	44

This checklist has been modified from Eysenbach G. Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). J Med Internet Res. 2004 Sep 29;6(3):e34 [erratum in J Med Internet Res. 2012; 14(1): e8.]. Article available at https://www.jmir.org/2004/3/e34/; erratum available https://www.jmir.org/2012/1/e8/. Copyright ©Gunther Eysenbach. Originally published in the Journal of Medical Internet Research, 29.9.2004 and 04.01.2012.
This is an open-access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/2.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in the Journal of Medical Internet Research, is properly cited.

7.6 Appendix VI. Item Response Rates and Mean Scores for IMB and Stigma Scales

7.6.1 Item Responses for Information Scale

		definitely false	probably false	not sure	probably true	definitely true	Mean score(*SD*)
DI-1. Well-hydrated vocal folds are less likely to become injured with use.	VP: Control:	1.5% 0.5%	2.0% 3.4%	4.5% 14.8%	41.5% 70.0%	50.5% 11.3%	3.38(0.79) 2.88(0.66)
DI-2*. A performer with good technique does not develop voice problems.	VP: Control:	22.5% 16.3%	31.0% 41.4%	11.5% 21.7%	29.5% 19.7%	5.5% 1.0%	2.36(1.27) 2.52(1.02)
DI-3. Whispering can be harmful to the vocal mechanism.	VP: Control:	6.5% 9.9%	18.5% 35.5%	17.5% 37.9%	26.0% 14.3%	31.5% 2.5%	2.58(1.28) 1.64(0.93)
DI-4*. A family doctor is qualified to diagnose injuries on the vocal folds.	VP: Control:	33.0% 7.9%	32.5% 37.9%	20.0% 32.5%	13.0% 21.2%	1.5% 0.5%	2.83(1.08) 2.32(0.91)
DI-5*. A speech-language pathologist is qualified to prescribe medication (drugs) to an individual with voice disorders.	VP: Control:	22.0% 4.9%	21.0% 26.1%	33.0% 36.0%	16.5% 25.6%	7.5% 7.4%	2.34(1.20) 1.96(1.01)
DI-6. When you speak or sing on a higher pitch, your vocal folds become longer and thinner.	VP: Control:	1.5% 1.0%	6.0% 5.9%	25.5% 41.4%	28.0% 46.3%	39.0% 5.4%	2.97(1.01) 2.49(0.73)
DI-7. The vocal folds open and close during speaking and singing.	VP: Control:	2.0% 0.0%	2.5% 1.0%	13.0% 24.1%	35.5% 56.2%	47.0% 18.7%	3.23(0.91) 2.93(0.68)
DI-8. Hoarseness is a common symptom of work-related voice disorders.	VP: Control:	2.0% 0.5%	4.0% 5.9%	14.5% 20.7%	55.5% 63.5%	24.0% 9.4%	2.96(0.85) 2.75(0.72)
DI-9. Muscle tension in the neck can be a symptom of a voice disorder.	VP: Control:	2.5% 0.0%	4.0% 3.9%	24.0% 36.0%	46.5% 58.1%	23.0% 2.0%	2.84(0.91) 2.58(0.60)
DI-10*. The treatment of choice for early-stage vocal nodules is complete vocal rest until symptoms subside.	VP: Control:	6.0% 0.0%	9.5% 4.4%	26.0% 38.4%	38.0% 50.7%	20.5% 6.4%	1.43(1.1) 1.41(0.68)

*These items are reverse-coded.

7.6.2 Item Responses for Motivation Scale

		strongly disagree	disagree	neutral	agree	strongly agree	Mean score(*SD*)
DM-1*. I do not see a specialist when I have voice problems because I am afraid of what may be found.	VP: Control:	53.0% 36.9%	30.0% 31.0%	14.5% 24.6%	2.0% 7.4%	0.5% 0.0%	3.33(0.83) 2.98(0.96)
DM-2*. I may not seek health care for my voice problem because I anticipate or experience difficulty with accessing public health services.	VP: Control:	37.0% 39.9%	32.0% 32.5%	15.0% 14.8%	11.5% 12.3%	4.5% 0.5%	2.86(1.17) 2.99(1.04)
DM-3*. I have anxiety/fear about going to a specialist for problems with my voice.	VP: Control:	41.5% 37.9%	26.0% 32.0%	11.5% 19.7%	16.5% 10.3%	4.5% 0.0%	2.84(1.26) 2.98(1.00)
DM-4. My voice is an important part of my profession.	VP: Control:	1.0% 15.8%	0.5% 15.8%	2.0% 18.7%	8.0% 35.0%	88.5% 14.8%	3.83(0.58) 2.17(1.31)
DM-5. Speech therapy is a helpful treatment for voice problems.	VP: Control:	2.5% 3.0%	5.0% 6.4%	24.5% 27.1%	34.5% 49.3%	33.5% 14.3%	2.92(1.00) 2.66(0.91)
DM-6. A person with a voice disorder is not likely to solve it alone.	VP: Control:	0.5% 1.0%	5.0% 5.4%	19.5% 19.2%	50.5% 56.7%	24.5% 17.7%	2.94(0.83) 2.85(0.81)
DM-7*. A person should work out their own problems; getting voice therapy would be a last resort.	VP: Control:	47.0% 41.9%	39.5% 44.3%	10.5% 9.4%	3.0% 2.5%	0.0% 2.0%	3.31(0.78) 3.22(0.86)
DM-8*. There is something admirable in the attitude of someone who is willing to cope with their voice difficulties without resorting to professional help.	VP: Control:	57.0% 37.9%	27.0% 35.0%	9.5% 17.7%	5.5% 6.4%	1.0% 3.0%	3.34(0.93) 2.99(1.04)
DM-9*. I may not seek health care for my voice problem because I anticipate or experience difficulty with affording private health services.	VP: Control:	27.0% 30.0%	21.5% 25.6%	14.5% 25.1%	25.0% 15.3%	12.0% 3.9%	2.27(1.40) 2.63(1.18)
DM-10. If I were experiencing a voice problem, my work colleagues would think I should seek professional vocal health services.	VP: Control:	2.0% 2.0%	4.0% 11.3%	16.0% 28.6%	48.5% 43.8%	29.5% 14.3%	3.00(0.89) 2.57(0.94)

*These items are reverse-coded.

7.6.3 Item Responses for Behavioural Skills Scale

		strongly disagree	disagree	neutral	agree	strongly agree	Mean score(*SD*)
DB-1. If I had a vocal health concern, I would intend to seek help from a vocal health professional.	VP: Control:	0.5% 0.5%	2.0% 3.9%	8.0% 12.3%	41.0% 51.7%	48.5% 31.5%	3.35(0.76) 3.1(0.80)
DB-2*. If I was experiencing a voice disorder, I would try to solve it on my own rather than seeking help.	VP: Control:	35.0% 24.1%	36.0% 40.9%	16.0% 17.7%	12.0% 13.3%	1.0% 3.9%	2.92(1.04) 2.68(1.10)
DB-3. If I was experiencing a voice disorder, I would be likely to seek help from a family doctor/general physician.	VP: Control:	11.0% 1.5%	21.5% 5.4%	19.0% 10.8%	38.0% 58.1%	10.5% 24.1%	2.15(1.12) 2.98(0.84)
DB-4. If I was experiencing a voice disorder, I would be likely to seek help from a laryngologist/ENT (Ear, Nose, and Throat doctor).	VP: Control:	0.0% 1.0%	2.0% 5.9%	8.0% 11.8%	40.0% 56.2%	50.0% 25.1%	3.38(0.72) 2.99(0.84)
DB-5. If I was experiencing a voice disorder, I would be likely to seek help from a speech-language pathologist.	VP: Control:	2.0% 5.4%	8.5% 18.2%	30.5% 24.6%	36.5% 42.9%	22.5% 8.9%	2.69(0.98) 2.32(1.04)
DB-6*. If I was experiencing a voice disorder, I would be likely to seek help from an alternative medicine practitioner (e.g., acupuncture, reiki, homeopathy).	VP: Control:	26.0% 40.4%	20.0% 33.0%	19.0% 17.2%	28.0% 7.4%	7.0% 2.0%	2.3(1.31) 3.02(1.03)
DB-7. I would be likely to seek help from a vocal health professional if my voice sounded hoarse or rough.	VP: Control:	3.0% 5.9%	24.0% 42.4%	23.0% 24.6%	34.0% 24.6%	16.0% 2.5%	2.36(1.10) 1.75(0.98)
DB-8. I would be likely to seek help from a vocal health professional if my voice often felt tired after use.	VP: Control:	2.0% 0.5%	17.5% 24.6%	23.0% 24.1%	42.0% 46.3%	15.5% 4.4%	2.52(1.02) 2.30(0.91)
DB-9. I would be likely to seek help from a vocal health professional if using my voice felt painful or uncomfortable.	VP: Control:	1.5% 1.0%	2.0% 4.9%	3.5% 2.5%	36.5% 45.3%	56.5% 46.3%	3.45(0.79) 3.31(0.83)
DB-10. I would be likely to seek help from a vocal health professional if I had to cancel a performance/contract because of voice problems.	VP: Control:	2.0% 3.0%	1.0% 4.4%	5.5% 11.8%	20.5% 43.3%	71.0% 37.4%	3.58(0.81) 3.08(0.97)

*These items are reverse-coded.

7.6.4 Item Responses for Stigma Scale Items

		strongly disagree	disagree	neutral	agree	strongly agree	Mean score(*SD*)
EO-1*. Where I work, a person experiencing a voice disorder would be given understanding and support.	VP: Control:	5.0% 1.0%	15.5% 8.4%	24.0% 19.2%	37.5% 50.7%	18.0% 20.7%	1.52(1.11) 1.18(0.89)
EO-2*. If I had a voice problem, my colleagues and employers would encourage me to see a vocal health professional.	VP: Control:	2.5% 0.0%	5.5% 6.9%	16.5% 21.2%	49.5% 53.2%	26.0% 18.7%	1.09(0.93) 1.16(0.81)
EO-3*. I would feel comfortable telling my peers I was seeing a vocal health professional for a voice disorder.	VP: Control:	5.5% 2.5%	7.5% 4.9%	10.0% 16.7%	42.5% 52.2%	34.5% 23.6%	1.07(1.11) 1.1(0.59)
EO-4. My professional reputation would suffer if I went to a vocal health professional.	VP: Control:	42.5% 59.6%	30.5% 26.1%	14.0% 10.3%	9.5% 3.9%	3.5% 0.0%	1.01(1.13) 0.59(0.83)
EO-5. I worry what potential employers would think if they found out I had seen a vocal health professional for a voice disorder.	VP: Control:	38.0% 49.8%	25.0% 28.6%	14.0% 11.8%	19.5% 9.4%	3.5% 0.5%	1.25(1.25) 0.82(1.00)
ES-1. I would feel inadequate if I went to a vocal health professional for help with my voice.	VP: Control:	45.0% 38.4%	36.0% 46.3%	7.0% 6.9%	9.5% 6.9%	2.5% 1.5%	0.89(1.06) 0.87(0.92)
ES-2. I would feel worse about myself if I could not solve my voice problems on my own.	VP: Control:	36.0% 28.1%	35.0% 40.4%	12.5% 19.2%	14.5% 10.3%	2.0% 2.0%	1.12(1.11) 1.18(1.02)
ES-3*. My view of myself would not change just because I made the choice to see a vocal health professional about my voice.	VP: Control:	3.0% 2.5%	6.5% 5.9%	8.0% 13.8%	37.5% 40.4%	45.0% 37.4%	0.85(1.02) 0.96(0.99)
ES-4. If I had a voice problem, I would blame myself.	VP: Control:	21.5% 33.0%	25.0% 37.4%	24.0% 17.7%	26.0% 10.8%	3.5% 1.0%	1.65(1.18) 1.09(1.01)
ES-5. It would make me feel inferior to ask a vocal health professional for help.	VP: Control:	52.0% 44.8%	35.0% 38.4%	5.5% 10.3%	6.0% 5.9%	1.5% 0.5%	0.70(0.93) 0.79(0.89)

*These items are reverse-coded.

7.7 Appendix VII. Responses to Survey Section F: Feedback

7.7.1 Feedback Comments from Vocal Performers

VP Feedback #1: ENT is not a bad word for me, I remember friends seeing ENT for issues since I was in high school singing in choirs.
VP Feedback #2: When I go through a 'rough patch' I always assume my technique is bad, so would first talk to a vocal coach and adjust my diet to avoid reflux. If I were to think my perceived damage were illness-related or a direct result of sleeplessness, stress or emotional struggle, I would make sure I have vocal rest and whatever meds and hydration is needed. If it interfered more than once in a professional environment where I couldn't perform properly (voiceover or singing) and the problem didn't improve with the above measures, I would get an appt with a specialist. I do HATE the scope, but it's worth it if there's a potential chronic issue or vocal injury.
VP Feedback #3: NO I believe that Voice Care is very important I plan on studying Speech Language Pathology [originally: “Pasthology,” spelling corrected to avoid confusion]
VP Feedback #4: I feel the video game industry doesn't given enough time in studio for a warm-up prior to screaming or strenuous vocal demands. We are expected to warm-up at home on our own but sometimes we travel through the cold to get to work and our muscles tense up a bit. Some directors/producers will save the hardest parts for the actor to record until the end of the session but it often relies on the actor to self-advocate. It can be nerve wracking for younger or less confident actors to speak up.
VP Feedback #5: Performers need to be more aware and up-to-date with how to warm up and cool down, when to hydrate, and taking proper care of their instrument. Professor D'Arcy Smith's Vocal Combat Training is invaluable in this regard.

VP Feedback #6: Although I have never felt shame seeking the help of a speech path or ENT to help with my voice problems (muscle tension dysphonia and general tension in neck/throat) I do feel that it was my fault that it got to the point of losing my high notes as a singer. That if I had been more careful with my technique when speaking or singing, it would not have gotten to that point. I also have to contend with allergies and rhinitis which affect my voice though, and doing over 7 or 8 shows a week on a National tour of a musical is a lot, so in many ways I feel like it is not my fault and I should not be too hard on myself for needing to seek professional help. It has been expensive (Speech Path), but for the long term it is a very important investment in my vocal health.
VP Feedback #7: An aspect that is not addressed here is the roll of colleagues. Because I have no personal experience with a vocal professional, my first line of enquiry would be to consult knowledgeable colleagues. (But perhaps that doesn't align with the central enquiry.)
VP Feedback #8: I think this is a wonderful idea that you were doing this those of us who use our voice a lot get worried that we will lose jobs and I think it's very important to see a voice care specialist.
VP Feedback #9: As a voice artist who teaches vocal warm-ups and vocal health, I greatly appreciate the you are doing this study. I have several gifted colleagues whose voice careers ended because of their voice disorders. I also noticed after the #MeToo movement that a number of female performers struggled with their breath control and vocal health. During the Pandemic, the majority of my coaching clients have requested help with learning a proper vocal warm-up for microphone and how to centre the breath and increase breath capacity. It's been fascinating yet not surprising.
VP Feedback #10: As a professional actor I am self-employed and rarely, in over 30 years at this, do recurring gigs happen. It's job to job. So...having the label of "had vocal problems" hung on me is going to place doubt in producers/engagers minds. Professional help with vocal issues is a necessary part of our work but it, unfortunately, needs to be confidential and private so as to avoid labelling and the accompanying loss of opportunities.

VP Feedback #11: Six day work weeks or 8 show weeks need to be amended in theatre. This would solve some issues of overuse and fatigue that vocalists and actors face because of this gruelling schedule, and usually in Canadian regional theatre, there are no understudies, so the pressure is two fold, because calling out because of fatigue is never an option. Thank-you!
VP Feedback #12: It was hard to answer some of the questions because I'm self employed. I mainly work in animation voice over and some commercial VO and promo VO. I'm not always working with the same people and it's not the same employer from one day to the next - it can change from gig to gig. Some gigs are 1 day and some gigs are multiple days. So some of the questions were tricky to answer.
VP Feedback #13: I believe that stigma of seeing an ENT is less important than access. Many artists have small windows to see an ENT. It's difficult to get a referral and then wait months for an appointment. Private specialists, while more accessible, charge too much for artists to afford.
VP Feedback #14: I try to fix vocal problems myself first, rather than go to a professional - professional is the last resort, depending on what I think the problem is and the severity of it.
VP Feedback #15: It gets worse as you get older.
VP Feedback #16: I disagree with your classifications at the start of this survey. They seem to insinuate that an actor never sings. As an actor who works mainly onstage, I have done many plays, many musicals, many commercials, lots of voice-overs, etc. It's my experience (25 yrs) that a high percentage of actors (80%) have had to sing live as a condition of employment at some point in their professional lives, which often includes taking lessons/coaching. I've done Mirvish musicals and won a Dora award for lead actor in a musical... but I consider myself an actor who sings.
VP Feedback #17: A loud and healthy voice is considered a requirement in the acting & voice industry, yet how to get this voice is expected to come naturally and not through getting help. Having a poor voice is considered a failing in our industry.

VP Feedback #18: Yes, so glad there was this box. I'm a registered SLP and professional actor. Your survey didn't allow for most of my responses.... for example, I'd treat my own minor voice issues; my "work" responds very differently around voice issues based on whether we're talking about acting or SLP work. There is a section where I was forced to say "I don't know" as neutral, where my answer would be more like "it depends", and if I were given a blank in which to explain myself, I would have been able to give more info. There was one section where the numbers and descriptors didn't align, also. If you have any questions, feel free to email [REDACTED] Thanks! Hope the study goes well.
VP Feedback #19: This is a dog-eat-dog business - "survival of the fittest" and "Next!" are common ideas - so one would not (excuse the punning) - shout it from the rafters, "I have a voice problem!"
VP Feedback #20: There is a wider range of vocal help available. As a singer I would feel more comfortable going to musical / vocal coach before seeing an ENT or speech therapist. There are some vocal changes that can be addressed through technique/habits. My recent experience with vocal instability has been resolved by taken workshops using the Linklater technique.
VP Feedback #21: Some of my answers reflect the fact that due to my undergrad training in good vocal use and vocal health, I would believe that vocal disorders were from my own poor vocal technique and 'blame myself' since I feel equipped to self assess and maintain my own vocal health. Also, I make equal income from acting as singing.

VP Feedback #22: The "Perspectives" section had choices of definitely, probably, and not sure. Some items (after extensively studying the voice and various methods including Estill and Classical) are not definitely they are more dependent on the situation as well as the frequency, i.e. whispering isn't terrible for your voice sometime, but extensive whispering rather than speaking or a hoarse whisper is a completely difference scenario entirely.
VP Feedback #23: My voice problem is minor; a form of raspiness from time to time that can both be useful and not useful for a character. To date, I have not been able to learn the root cause as it is physiological, manifesting in a tightening of the throat accompanied by excess mucus.
VP Feedback #24: Wish there was more education for actors and singers about being proactive about voice health.
VP Feedback #25: My own voice problems, when they occur, sometimes feel psychological as much as physical. (I do both singing and VO, but any disorders so far have only been with singing.) Partly for this reason, plus financial limitations, I don't often pursue help because I'm not sure what the best resource is to address both physical & psychological matters, and having previously invested in help that didn't turn out to be effective I'm reluctant to waste limited (at least at the moment) financial resources. But it's a catch-22, since the right treatment would positively affect earning potential. I'm also aware of some people's unfortunate experiences with the experts they consulted, and don't know where to find a trustworthy and complete list of recommended potential resources. The preliminary research I did in the past felt like good resources were scarce and one might as well flip a coin, since there was no central or verified list, just individual results in Google. Perhaps I would find more reliable and diverse results now, but I haven't researched for the past few years because I've been able to do my gigs despite struggling with certain aspects of my voice. Thanks for this research, I hope your results will help people access the effective treatments/therapies that I'm sure are out there somewhere.

VP Feedback #26: If people learn you have recurring vocal problems, it may keep you from being hired.
VP Feedback #27: I feel comfortable admitting I have problems with my voice, but I do find outsiders judge and think it should be a « quick fix ».
VP Feedback #28: Voice instruction in Canada should be made more widely available for everyone, not just in the context of theatre schools or performance programs.
VP Feedback #29: I'm a voice actor, so even a sniffle affects my voice. You can not show up to a gig without having your voice in tip top shape. The client, agency, engineers are all there to cater to your voice and a lot of money has been invested to get the job done, so that can be very stressful. More tools and education on what actors can do to maintain healthy vocal cords and voice would be great. I also not sure if the results of this study will be shared but I'd love to know more.
VP Feedback #30: I learned that there are stigmas and I will be conscientious about this in the future and seek help.
VP Feedback #31: no I never really thought about voice disorders before
VP Feedback #32: No stigma in my mind. The stigma actually lay in asking how many years of vocal training I have had. The ultimate testament of vocal talent and work one was able to do on their own verses being classically trained. Ha. Anyway, All good. Thank you
VP Feedback #33: In some instances having a lisp can be an advantage to play a certain character for a film or TV role.
VP Feedback #34: It would be great if professional performers could see a voice specialist regularly under provincial healthcare without needing a referral.
VP Feedback #35: It's my experience that attitudes have changed over the past 15 years or so. I hope we are more comfortable seeking help from medical professionals.

VP Feedback #36: Lovely survey. Thank you for doing this important work! I think it is important to note how difficult it is to access a Laryngologist or SVS on the East Coast. I'm in PEI and have to go to Halifax. I am working with an SLP here on the island but they have no experience with singing. The restraints placed on SLP's by the college in NS make it hard for professional voice users to continue to work with Glen Nowell at The Voice Clinic in Halifax.
VP Feedback #37: It has been mentioned already, but the accessibility to an ENT or specialist without a general practitioner's referral has been the major obstacle in seeking treatment when vocal health was in question, on top of cost and affordability for private clinics.
VP Feedback #38: I am an SLP who specializes in voice as well as a professional singer. One of the ENTs I work with calls voice therapy, speech therapy as a general term. I have no problem seeking help when I need it. I would go to the GP if I needed to. to get an ENT referral.
VP Feedback #39: Some of the questions were difficult to answer, for example the section where it asked questions like "whispering is harmful to the vocal mechanism" - the answer is more "it can be but also sometimes it isn't" so the scale was difficult to use. Similarly, if you don't have a "workplace" and are a freelancer, some of the questions in the last section were challenging to answer in a helpful manner. Please also reconsider the othering binary gender question.
VP Feedback #40: Perspective. I am a music teacher/performer though most of my income comes from teaching secondary school music. While I perform as much as I can (when the opportunity arises). I do not rely on performance for income and so thought that would be a necessary perspective to share with you for your results. I experienced vocal health issues due to voice overuse from being a band/vocal teacher and sought help from a SLP and Estill Voice Training. My vocal health, control and eagerness to perform, have greatly improved and so have influenced my responses to this survey. Thank you for you studying this important subject.

VP Feedback #41: J'ai des nodules présentement. J'ai dû attendre 11 mois avant de voir un orthophoniste. Je travaille à ouvrir mes cordes vocales pour guérir ces nodules. Je ne parle plus fort comme avant et je fais des exercices pour guérir.
[TRANSLATION OF HIGHLIGHTED PASSAGE ABOVE: "I had to wait 11 months to see a Speech-Language Pathologist."]

VP Feedback #42: Il est très difficile pour l'entourage de comprendre ce qu'est d'avoir un trouble de la voix. C'est difficile pour la famille de comprendre que parfois nous ne pouvons faire une sortie la veille d'un concert ou d'une performance. Toutefois, en leur expliquant, ils finissent par comprendre, mais il faut souvent verbaliser et cela peut devenir difficile de toujours se justifier. Quand tu as un bras cassé, jamais que ton entourage va remettre en question le fait que tu ne peux pas lever un poids avec ton bras. La voix c'est invisible et mal compris des autres autour.

[TRANSLATION OF HIGHLIGHTED PASSAGE ABOVE: "It's very difficult for the people around me to understand what it means to have a voice difficulty"]

C'est un peu hors sujet, mais j'ai remarqué également que l'humidité est un facteur qui joue énormément sur ma voix. J'ai passé une soirée dehors l'été dernier et je ne parlais presque pas. Malgré cela, j'avais perdu une bonne partie de ma qualité vocale (voix enflée, roque, beaucoup d'air qui passait, etc.). On devrait également faire une étude sur le déplacement des cervicales et les effets sur la voix. Je vois un chiropraticien pour mes cervicales et il est fou de voir combien ma voix a guérit plus rapidement avec des soins chiropratiques. Je dis cela comme ça, mais c'est un sujet que j'aimerais beaucoup en savoir davantage!

[TRANSLATION OF HIGHLIGHTED PASSAGE ABOVE: "I see a chiropractor for my neck, and it's crazy to see how much my voice has improved more quickly with chiropractic treatment."]

VP Feedback #43: Voice teachers in the opera industry often blame vocal problems on age and lack of vocal maturity. This is frustrating and I feel completely out of control.

VP Feedback #44: I feel there is not enough weight placed on the health of our voices as actors. It is essential to our job, yet we are not given the time to do proper warm-ups, particularly in film/tv work. I also find that there are very few health professionals that work closely with artists. I would love more information on how to contact vocal support as an actor. Particularly for preventative measures.
VP Feedback #45: I didn't know there *was* stigma associated with voice disorders.
VP Feedback #46: It's time for the actor and voice specialist to be recognized for having an instrument that needs tending and changes over time, use, years and trauma. There is still very little general understanding of how to care and respect the instrument of the voice, particularly if one is not an opera or musical theatre singer. As an actor or voice over artist, there seems little real understanding of how we need to care for our instrument and how this can cost money, that we may or may not have. It is more obviously recognized in larger theatres like the big classical repertory theatres where runs can be long and arduous. But in a general way, actors are still not understood very well - how delicate our instrument is and how it needs tending.
VP Feedback #47: I don't always feel that ENTs are well equipped to deal with patients who are performers. They seem to focus mainly on the physical aspects of the voice as opposed to the techniques related to the voice (breathing, muscle tension, etc.). They can diagnose an issue but not always give patients help with correcting harmful technique.
VP Feedback #48: Generally, at least in the many decades I have spent in theatre, we help and support each other when symptoms or illness arise. I found some of the repeat questions leading - as though I would be expected, eventually, to agree to get help in a certain way. I haven't done many surveys, so perhaps I am unaware of the leanings that would be built in?

VP Feedback #49: I previously had a voice problem which was actually diagnosed by my singing coach. I had been to my family doctor who prescribed rest for my voice loss. I had been teaching theatre classes and the doctor thought I was pushing or straining to be heard (this was not the case, I have a HUGE voice). I had lost most of my entire high register in my singing voice. My new singing teacher asked if I had been tested for GERD. I went to my doctor to request and ear nose and throat specialist, I was sent to another specialist who put a camera down my throat. I got to watch my own vocal cords work (how cool was that - AMAZING) Anyway, it turned out the stress of the high pace of my teaching was causing GERD to happen at night (acid reflux) which was burning my vocal cords. I was then prescribed NEXIUM for 2 years and began a meditation practice and voila - my voice returned first up to the tippy top high A!
VP Feedback #50: My feeling is that the cost of seeking Specialist help might be a concern....whether or not such a thing costs the individual. I would NOT trust my GP to give much help, but would certainly go to my GP with the name of a recommended Vocal Specialist and insist on a referral. A voice that is known to have consistent problems would start to hurt my professional reputation over time....especially if performances had to be cancelled. I might be inclined to keep vocal problems a secret for this reason...
VP Feedback #51: I do mostly Film/TV now and I don't feel worried about my voice issues (I had vocal nodes in the past). But as a Theatre Actor I worry about it much more.
VP Feedback #52: I think young voice actors feel they should do anything to create the right voice to get a part. They 'grind' their vocal cords and cause major problems to get the "sound" they think is perfect for the part. If they get the part, they simply can't maintain it vocally without destroying their vocal cords. When this happens, the more experienced voice actors definitely notice and will often comment amongst themselves. It is toxic
VP Feedback #53: I have found that a few of the ENT specialists in Toronto have very busy schedules and I've had bad experiences a few times. Have always had great experiences and gotten helpful tips from Dr. Hands, who respects his clients' time.

VP Feedback #54: Anyone's first line of treatment would be their family physician or GP. The would then recommend a specialist (ENT). That's how it usually works in Canada.
VP Feedback #55: I strongly agree if I had or have a problem will definitely [originally: "defanately"] see a professional. Thank you stay blessed 🙏
VP Feedback #56: In my line of work, seeing a professional in order to avoid vocal nodules is a MUST. Zero stigma. There is stigma if one does have nodules - indicates poor vocal technique.
VP Feedback #57: At the beginning of my career I had voice nodules and had to be on voice rest for 3-4 weeks. At the time it was something I was proud of because it meant that I had worked so hard that I hurt my voice (I was working on multiple vocally demanding shows at the time and I pushed though even though it was obvious the was a problem). It was proof that I was a hard working actor. There is a culture of "the show must go on" or "you have to leave it all on the floor" that I bought into for so much of my career. I still struggle with that idea of having to push through injury because work is so precious- one cannot just stay home to heal- otherwise you may lose your job. Thank you for your work.

7.7.2 Feedback Comments from Controls

Control Feedback #1: I wish there were more speeches made by people with voice disorders so those who have the disorder could feel less alone. Also, there are sometimes fetishes associated with people who have hoarser, deeper voices. But, they are dealing with difficult situations and deserve to be recognized, not fetishized.
Control Feedback #2: Awareness about voice and speech disorders should be covered in school curriculum to bring awareness in children and remove the stigma or make it feel like a disability
Control Feedback #3: NEVER HAD A VOICE ISSUE. OCCASIONALLY I MIGHT MUMBLE.
Control Feedback #4: I would have to say adding a category for the severity of voice disorder would change your results/stats. And potentially be a little more specific with voice conditions, hoarseness, nasaly voice, quiet tone etc. (unless hoarseness is the only one you are interested in). My voice fluctuates and the hoarseness dissipates on its own. I would never have to see a physician's assistance because it never lingers long enough to seek medical attention.
Control Feedback #5: I have no comments as I am not afraid of the stigma associated with voice disorders
Control Feedback #6: I think men would experience more stigma for a voice disorder because there is a stereotype that they are more assertive and dominating and agentic
Control Feedback #7: the questions were very surprising to me. i didn't know this was something people could feel insecure about
Control Feedback #8: Great survey!
Control Feedback #9: Lots of "double negatives" in the questions, can make it confusing.
Control Feedback #10: I had Tonsillitis removed as a child and am often told I don't speak loud enough. I felt my confidence to be low due to my pitch. My manager once told me if I am not confident my voice is low which [originally: “whichj”] is untrue and I felt bad about the comment.,
Control Feedback #11: I think [people with a voice disorder would suffer from lack of self-esteem

Control Feedback #12: No. It's not an issue I've ever had to consider but see now that it could really be a problem for some.
Control Feedback #13: Vocal disorders may be more common than we know, but they are not spoken of often (if ever) so I learned quite a bit from this exercise - thanks.
Control Feedback #14: i can not think of anything else
Control Feedback #15: i've always found that people are quick to judge a lot about someone's voice as it is a tool that is so commonly used to communicate with one another. It's not like people choose to have voice disorders but sometimes they're just born with it. **Control Feedback #16:** People identify themselves with their voice and maybe if they need to seek help with their voice then it means there is something wrong with their identity as a whole
Control Feedback #17: Everyone's voice is different I don't understand how its hard for people to just accept people as they are.
Control Feedback #18: It was an enjoyable study.
Control Feedback #19: I have family members who have had voice disorders and required professional help. I think having this connection makes me feel very positively about seeking help if needed. That said, I'd have to start with my family doctor and get a referral from there, and that may be more problematic, as accessing my doctor has been difficult.
Control Feedback #20: I have never had a voice disorder so it was challenging to answer some questions without having this experience
Control Feedback #21: No thing specific, this is a fairly unknown topic to me.
Control Feedback #22: It was a very interesting survey because I do have a hoarse voice from time to time, so thanks for helping me participate in this study. Have a good day!
Control Feedback #23: my sister had vocal nodes and it was hard for people to understand why she didnt just talk or sing, so i see the relevance of this study
Control Feedback #24: I had no idea there was a stigma surrounding voice disorders! This survey allowed me to see a different perspective of a profession

Control Feedback #25: Interesting survey, I actually learn a lot about voice disorders through these questions.
Control Feedback #26: Nothing to add. Interesting questions on such an unspoken/uncommon topic.
Control Feedback #27: I don't know how this factors under voice disorders, but something that comes to my mind immediately is gender dysphoria surrounding voice. There's nothing "wrong" with my voice for instance, but hearing myself speak can be a dysphoria trigger and out me to other people, so I have a level of performance I put on to speak to other people.