

**Investigating attitudes and practices toward vocal health in Irish
conservatoires**

by

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**Submitted to the Royal Irish Academy of Music in partial fulfillment of the
requirements for the degree of Master in Music Performance**

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August 2018



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Acknowledgements

I would like to take this opportunity to thank my supervisor, Gráinne Deery, for her constant support and invaluable help over the last few years. The route to the finish line has been unexpectedly scenic, but her support was an anchor in the midst of disruption.

My sincerest thanks also go out to every student and teacher who took time out of their schedules to answer my questionnaires. I am keenly aware of the busy nature of our lives and deeply appreciate their decision to devote time to my research.

To every friend who has smiled warmly and listened to my long excited monologues on the subject of vocal health education, regardless of whether you really were interested, I give my heartfelt thanks. Especially to Owen Gilhooly, the best teacher I have had in any subject all my life. I will be forever grateful for his constant inspiration, friendship, support and guidance.

To my family, I hardly know where to begin. The late night conversations, the consolation when things went wrong, the endless proofreading, the unfailing support, and the communal effort to get me over the last hurdle has been astounding to behold. Thank you to my aunt Noelle for providing me with an exceptionally peaceful office. Dad, you fostered curiosity in two exceptionally nerdy children. Clodagh, your hilarious comments in the margins kept me going in the darkest of days. And finally to my mother, whose support is so vast I feel as though she is woven into the very binding of this project. You believe and inspire in equal measure, thank you.

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Introduction

This dissertation will investigate current practices and attitudes relating to vocal health in Irish conservatoires, namely the Royal Irish Academy of Music (RIAM), Dublin Institute of Technology (DIT), and Cork Institute of Technology (CIT). There is a substantial amount of research and a growing international interest in the area of vocal health and vocal health education. This growing interest coupled with the author's position as a student of an Irish conservatoire and as a private singing teacher, provided an impetus to explore this topic.

Full-time singing students are at a high risk of experiencing voice problems given the demanding nature of their studies, as identified by Myint et al.¹, Miller and Verdolini², Lundy et al.³, and Sapir et al.⁴ Further to this established risk, a significant portion of the literature review will consider the potential benefits of vocal health education as a method of injury prevention among students of classical singing.

Health promotion as a means of preventing injury was discussed at the World Health Organization's 'Global School Initiative: Health-Promoting Schools' in Geneva in

¹ Calvin Myint, Jamie Eaglin Moore, Amanda Hu, Aaron J. Jaworek, Robert T. Sataloff, 'A Comparison of Initial and Subsequent Follow-up Stroboscopedaryngoscopic Examinations in Singers,' *Journal of Voice*, 30(4) (2016).

² Marcie K. Miller, Katherine Verdolini, 'Frequency and Risk Factors for Voice Problems in Teachers of Singing and Control Subjects', *Journal of Voice*, 9(4) (1995), 348-362.

³ Donna S. Lundy, Roy R. Casiano, Paula A. Sullivan, Soham Roy, Jun W. Xue, Joseph Evans, 'Incidence of abnormal laryngeal findings in asymptomatic singing students,' *Archives of Otolaryngology: Head and Neck Surgery*, 121(1), (1999).

⁴ Shimon Sapir, Barbara Mathers-Schmidt, George W. Larson, 'Singers' and non-singers' vocal health, vocal behaviours, and attitudes towards voice and singing: indirect findings from a questionnaire', *European Journal of Disorders of Communication*, 31 (1996).

1995.⁵ In 2004, a group based in the University of North Texas consisting of professionals from the performing arts medicine industry and the music industry collaborated to create the Health Promotion in Schools of Music Project (HPSMP) that aimed to address the challenges set forth by the WHO within the context of musicians' health.⁶ The goals recommended by the HPSMP will be discussed throughout this dissertation in relation to the extensive literature examined.

Many studies have investigated the merits of vocal health education as a preventive measure to avoid vocal injury such as Broaddus-Lawrence et al. in 2000,⁷ Barton and Feinberg in 2008⁸, Zander et al. in 2010⁹, and Ziegler and Johns in 2012.¹⁰ Musicians' health is also being extensively researched by the Conservatoires of the United Kingdom (CUK) in conjunction with the British Association for Performing Arts Medicine (BAPAM) as part of a longitudinal study that began in 2013.¹¹

⁵ World Health Organization Global School Health Initiative, Geneva, 1995 http://www.who.int/school_youth_health/gshi/en/ [accessed 1 August 2018].

⁶ K. S. Chesky, W. J. Dawson, R. Manchester, 'Health Promotion in Schools of Music: Initial Recommendations for Schools of Music', *Medical Problems of Performing Artists*, 21(3) (2006), 142-144.

⁷ Pamela L. Broaddus-Lawrence, Kathleen Treole, Robert B. McCabe, Rose L. Allen, Louise Toppin, 'The Effects of Preventive Vocal Hygiene Education on the Vocal Hygiene Habits and Perceptual Vocal Characteristics of Training Singers', *Journal of Voice*, 14(1) (2000), 58-71.

⁸ Rebecca Barton and Judy R. Feinberg, 'Effectiveness of an Educational Program in Health Promotion and Injury Prevention for Freshman Music Majors,' *Medical Problems of Performing Artists*, 23(2) (2008), 47-53.

⁹ Mark F. Zander, Edgar Voltmer, Claudia Spahn, 'Health Promotion and Prevention in Higher Music Education: Results of a Longitudinal Study,' *Medical Problems of Performing Artists*, 25(2) (2010), 54-65.

¹⁰ Aaron Ziegler, Michael M. Johns, 'Health Promotion and Injury Prevention Education for Student Singers', *Journal of Singing*, 68(5) (2012), 531-541.

¹¹ Aaron Williamon, Stephen Broad, Alan Watson, David Anthony Wasley, Emma Redding, Jane Ginsborg, Helen Reid, 'Musical Impact: A study of the effects of music making on musicians' health and wellbeing' <http://gtr.rcuk.ac.uk/projects?ref=AH/K002287/1> [accessed 1 August 2018].

While there is a wealth of existing and continuing research exploring these issues internationally, there is a distinct lack of literature investigating these issues within an Irish context. The author's preliminary research into the current curricula and prospectuses of the three Irish conservatoires (RIAM, DIT and CIT) indicated that there are variations in the area of vocal health education and medical support for students, which provided a rationale for further research. This dissertation will investigate the situation further, providing an overview of the current situation and recommendations for future development.

In Chapter One the author will discuss current literature outlining the prevalence of voice problems as an occupational risk for singing students. The introduction of health promotion initiatives in schools of music and the concept of health literacy will be discussed, in conjunction with literature exploring students' attitudes and behaviour toward vocal health and health-promotion. The role of the singing teacher in vocal health education will also be discussed.

Chapter Two will address the literature surrounding vocal health education as a potential method of injury prevention. The author will then discuss specific vocal health education programmes that have been introduced internationally, commenting on their structure and the results obtained after their implementation.

Chapter Three will investigate the literature surrounding medical support frameworks in the context of vocal health. The author will discuss the potential benefits of vocal health screening in conservatoires, the literature surrounding students' health information seeking behaviours, and the role of the singing teacher in the context of

medical support. Literature addressing a potential gap in the knowledge of health professionals with regard to vocal health will also be addressed.

Chapter Four will examine the research methods adopted by the author in order to investigate current practices and attitudes relating to vocal health within an Irish context. The author will present a rationale for the decisions made and acknowledge the limitations of the chosen research method.

In Chapter Five the author will present data statements for the two questionnaires used for her investigation. An analysis of the results obtained will outline key themes emerging from the data.

Chapter Six will consider the key themes of the research findings in relation to the extensive literature explored in Chapters One, Two and Three. The author will acknowledge the limitations of the research, in addition to providing recommendations for future research into vocal health education internationally and within an Irish context.

Chapter 1

1.1 Introduction

This chapter will investigate the existing literature identifying the prevalence of voice problems among singers and the increased risk factors they face as part of their occupation. This chapter will also outline the recommendations put forward by the Health Promotion in Schools of Music Project (HPSMP) in the U.S.A and similar recommendations from the German Society of Musician's Medicine (Deutsche Gesellschaft für Musikphysiologie und Musikermedizin, DGfMM).¹² The role played by singing teachers in the context of their students' education will be discussed in addition to students' behaviour toward health-promotion initiatives and engagement with health-promoting activities.

1.2 Risk factors and the prevalence of voice problems in trained singers

Sapir et al. conducted a survey with the aim of providing preliminary information on the differences and similarities between singers and non-singers in vocal health behaviours, general affective/dysphoric tendencies, and feelings and attitudes toward voice and singing.¹³ The sample of 159 female students with a mean age of 21.8 was mostly undergraduates. The survey indicated that the average number of hours of professional voice use per week was 17.2 for singers and only 2.2 for non-singers.

The results showed that singers were significantly more likely to report symptoms of

¹² Chesky et al. 'Health promotion'; Deutsche Gesellschaft für Musikphysiologie und Musikermedizin 'Making music free of pain' <https://dgfmm.org/en/music-physiology-and-musicians-medicine/> [accessed 20 June 2018].

¹³ Affective/dysphoric = general tendencies toward anxiety, mood swings, depression, and worry, that are not related to voice or singing; Sapir et al. 'Singers' and non-singers', 194.

vocal attrition and vocally abusive speech habits than non-singers.¹⁴ The authors suggest that this could be due to a heightened sensitivity or a neurotic attitude towards vocal health on the part of the singers, rendering them more likely to report these issues. The other explanation they propose is that the differences are real and related to the singers' 'excessive voice use or abuse during singing and speaking.'¹⁵

The authors stated that the purpose of their investigation was to establish whether or not there was a difference between singers and non-singers; it was not their intention to find the reasons for those differences, which is why they did not approach the subject in their survey.¹⁶ At no point in the survey did the authors question the knowledge or understanding of any aspect of vocal health. However, despite their stated intentions, they did provide an anecdotal statement suggesting that while we expect singers to experience fewer vocal problems due to their vocal training, this is usually not the case.¹⁷ The substantial amount of singers who reported engaging in vocally abusive speech habits despite their vocal training suggests that they have not been educated about the relevance of their singing technique to the use of their speaking voice. Their reported participation in 'extensive, often strenuous' singing activities despite the fact that their voice is not yet fully trained, indicates either that they have not been made aware of the risk that such behaviour poses to their voice, or that they are aware but are choosing not to apply this knowledge. The authors concluding remarks suggest that their findings 'underscore the need to educate singers about vocal health and vocal hygiene.'¹⁸

¹⁴ Sapir et al. 'Singers' and non-singers', 203.

¹⁵ Ibid.

¹⁶ Ibid., 202.

¹⁷ Ibid., 203.

¹⁸ Ibid.

Since Sapir's survey many other articles have confirmed these findings, such as Phyland and Greenwood who surveyed singers from differing singing styles assessing their experience of vocal impairment.¹⁹ The authors decided to include three distinctive singing styles in their survey in an effort to account for variables such as the amount and nature of singing training and experience, the amount and nature of singing demands, and the performance environments occupied by different singers. They surveyed seventy-nine opera singers, fifty-seven musical theatre singers and thirty-one contemporary singers (predominantly nightclub performers of jazz, folk and rhythm-and-blues rather than rock singers). A control group of eighty-six non-singers were also surveyed. No significant difference was found between singing styles regarding the prevalence of, or perception of, vocal impairment.²⁰ However, it was discovered that a significantly higher number of singers reported diagnosed vocal impairments compared to non-singers.²¹ In light of this statistically significant discovery made among a diverse group of singers with varying levels of vocal training, the authors note an 'obvious need for the development and implementation of education programs for the prevention and management of voice disorders among professional singers.'²²

¹⁹ DJ Phyland, J. Oates, and K.M. Greenwood, 'Self-reported voice problems among three groups of professional singers', *Journal of Voice*, 13 (1999), 602-611.

²⁰ *Ibid.*, 607.

²¹ *Ibid.*

²² *Ibid.*

Tepe et al. discovered that over half the respondents to a vocal hygiene questionnaire given to young choir singers (aged 3-25 years) reported vocal difficulties.²³ 29.4% of the sample reported that they had received vocal training (though the level and frequency of lessons was not queried). Of this sample, behaviour and circumstances thought to adversely affect vocal health were no less common than in those who had not received any lessons.²⁴ This provides further evidence that vocal training alone may not guarantee sufficient understanding of vocal health.

Miller and Verdolini surveyed 125 singing teachers and found similar results to Phyland and Greenwood, that 64% of singing teachers reported past voice issues in comparison to only 33% of the non-singer control sample.²⁵ Having a past voice problem increased the likelihood of having a current voice problem by a factor of five. It was also discovered that 47% of those reporting current vocal issues were using medications with drying effects. In addition to that, females were twice as likely to report a voice problem than males. This is consistent with other studies suggesting women are more at risk for voice problems than men.²⁶ Miller and Verdolini suggest that the risk factors identified by them (namely past vocal pathology, drying medications, and gender differences) may ‘further be useful for developing targeted prophylactic and treatment programs for professional voice users.’²⁷

²³ Emily S. Tepe, Ellen S. Deutsch, Quiana Sampson, Stephen Lawless, James S. Reilly, and Robert T. Sataloff, ‘A Pilot Survey of Vocal Health in Young Singers’, *Journal of Voice*, 16(2) (2002), 244-250.

²⁴ Tepe et al. ‘A Pilot Survey’, 245.

²⁵ Miller and Verdolini, ‘Frequency and Risk Factors’, 348-362.

²⁶ Eric J. Hunter, Kristine Tanner, Marshall E. Smith, ‘Gender differences affecting vocal health of women in vocally demanding careers’, *Logopedics Phoniatics Vocology*, 36(3) (2011), 128-136.

²⁷ Miller and Verdolini, ‘Frequency and Risk Factors’, 348.

Kwok and Eslick conducted a systematic review in 2018 of the published research relating to the impact and prevalence of voice problems among professional singers.²⁸ The authors cite risk factors applying specifically to singers over other professional voice users including performance demands, frequent travel, stress and anxiety, venue acoustics and allergens, medication use and abuse, and improper vocal technique.²⁹ With regard to stress and anxiety, they highlight the potentially significant influence psychological factors can have on professional singers such as increased vocal strain, muscle tension, hyperfunction of the vocal folds, and an increased risk of gastro-oesophageal reflux disease (GORD). Their systematic review indicated that singers are twice as likely to experience hoarseness as non-singers. It showed a consistent increased risk of ‘laryngeal pathologies and symptoms associated with overuse and misuse,’ specifically citing hoarseness, GORD, Reinke’s oedema,³⁰ and polyps.³¹ The authors suggest that future research should investigate ‘exposure variables’ such as amount and type of warm-up, length of singing, and type of singing.³² They propose that acquiring this data will assist in the development of ‘more tailored educational tools to enable more consistent vocal performance in voice professionals.’³³

1.3 The introduction of health-promotion in schools of music

²⁸ Michelle Kwok, Guy D. Eslick, ‘The Impact of Vocal and Laryngeal Pathologies Among Professional Singers: A Meta-analysis’, *Journal of Voice* (2018) Article in Press <https://doi.org/10.1016/j.jvoice.2017.09.002> [accessed 20 July 2018], 1-8.

²⁹ Kwok and Eslick, ‘Vocal and Laryngeal Pathologies’, 1.

³⁰ Reinke’s oedema = a build-up of fluid just underneath the surface lining of the vocal fold.

³¹ Polyp = a vocal fold mass, usually unilateral (i.e. found on one of the vocal folds), with a prominent feeding blood vessel along the superior surface of the vocal fold entering the base of the polyp.

³² Kwok and Eslick, ‘Vocal and Laryngeal Pathologies’, 7.

³³ *Ibid.*, 8.

In addition to the specific risk factors and high incidence of vocal issues faced by singers, there is an established prevalence of both physiological and psychological playing-related health issues among university music students in general (Kreutz et al. 2008,³⁴ Spahn et al. 2002,³⁵ Spahn et al. 2004,³⁶ and Williamon and Thompson 2006).³⁷ In 2004, professionals from many different disciplines within music and performing arts medicine convened at a national conference in the University of North Texas to address the goal of preventing ‘occupational injuries associated with learning and performing music.’³⁸ The recommendations resulting from this conference were validated by the Board of Directors of the Performing Arts Medicine Association in 2005 and subsequently reviewed by the Executive Committee of the National Association of Schools of Music (NASM).³⁹ Their recommendations for action were as follows:

1. Adopt a health promotion framework
2. Develop and offer an undergraduate ‘occupational health’ course for all music majors
3. Educate students about hearing loss as part of ensemble-based instruction
4. Assist students through active engagement with health care resources⁴⁰

³⁴ G. Kreutz, J. Ginsborg, A. Williamon, ‘Music students’ health problems and health-promoting behaviours’, *Medical Problems of Performing Artists*, 23(1) (2008), 3-11.

³⁵ C. Spahn, B. Richter, I. Zschocke, ‘Health attitudes, preventive behavior, and playing-related health problems among student musicians’, *Medical Problems of Performing Artists*, 17, (2002), 22-28.

³⁶ C. Spahn, S. Strukely, A. Lehmann, ‘Health conditions, attitudes towards study, and health at the beginning of university study: Student musicians in comparison with other student populations’, *Medical Problems of Performing Artists*, 19 (2004), 26-33.

³⁷ A. Williamon and S. Thompson, ‘Awareness and incidence of health problems among conservatoire students’, *Psychology of Music*, 34(4) (2006), 411-430.

³⁸ Chesky et al. ‘Health Promotion’, 142.

³⁹ Ibid.

⁴⁰ Ibid., 143.

Regarding the process of adopting an effective health promotion framework, the authors advocate substantial involvement from the music school faculty in addition to ‘interdisciplinary collaborative strategies with groups and individuals outside of music’.⁴¹ The authors state that schools of music have the power to influence student behaviour through their ‘collective values, beliefs, and actions.’⁴² They also emphasise the importance of communication between the music faculty and student health centres, as it is extremely important that music students know where to seek help if needed.⁴³

The German Society for Musician’s Medicine (DGfMM) made similar recommendations that have been followed by music universities across Germany. The DGfMM recognise the established prevalence of both physiological and psychological playing-related problems in musicians. They also recommend that ‘comprehensive care for musicians is only possible through interdisciplinary discourse’ with ‘a foundation in hard science’.⁴⁴ Their recommended preventive courses have been included in the curricula of German universities of music over the last decade. However, there are differences between the classes offered at each university and whether the classes are electives or compulsory.⁴⁵

1.4 Health promotion and health literacy

⁴¹ Ibid.

⁴² Ibid., 142.

⁴³ Ibid., 143.

⁴⁴ Deutsche Gesellschaft für Musikphysiologie und Musikermedizin, ‘Making music free of pain’ <https://dgfmm.org/en/music-physiology-and-musicians-medicine/> [accessed 1 June 2018]

⁴⁵ C. Spahn, E. Voltmer, A. Mornell, M. Nusseck, ‘Health status and preventive health behavior of music students during university education: Merging prior results with new insights from a German multicenter study’ *Musicae Scientiae*, 21(2) (2017), 215.

The first International Conference on Health Promotion held in Ottawa in 1986 defined health promotion as ‘the process of enabling people to increase control over, and to improve, their health.’⁴⁶ The focus of the Ottawa Charter for Health Promotion was to promote the creation of health-centred settings that would enable people to have increased control over their health and its improvement.⁴⁷ The HPSMP was one of the many results of the Ottawa Charter, calling on schools of music to introduce a health-promotion framework within their institutions.⁴⁸ At subsequent WHO conferences in 1997 and 2005 the definition of health promotion was updated to ‘the process of enabling people to increase control over their health and its determinants, and thereby improve their health.’⁴⁹ Here they define these ‘determinants’ of health as social, economic, and environmental conditions.⁵⁰

Nutbeam defines health literacy as a composite term used to describe a range of outcomes to health promotion, and argues that health education is therefore directed toward improving health literacy.⁵¹ He addresses the individual’s health knowledge, behaviour, attitude and personal skill within the idea of being health literate. He also addresses the community beyond the individual, maintaining that comprehensive health literacy must also include alterations in social norms, public opinion and public policy. He notes that large campaigns promoting specific health initiatives (such as

⁴⁶ World Health Organisation, ‘Milestones in Health Promotion: Statements from Global Conferences’, Geneva, http://www.who.int/healthpromotion/Milestones_Health_Promotion_05022010.pdf [accessed 1 July 2018] 5.

⁴⁷ Ibid.

⁴⁸ Chesky et al. ‘Health Promotion’, 143.

⁴⁹ World Health Organisation, ‘Milestones in Health Promotion: Statements from Global Conferences’, Geneva, http://www.who.int/healthpromotion/Milestones_Health_Promotion_05022010.pdf [accessed 1 July 2018] 29.

⁵⁰ Ibid.

⁵¹ Don, Nutbeam, ‘Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century,’ *Health Promotion International*, 15(3) (2000), 259.

maternal health and promoting immunisation) were originally focused on the transmission of information, which addressed the behaviour of the individual ‘and failed to take account of the social and economic circumstances.’⁵² This approach mostly failed to achieve substantial changes in behaviour. A more comprehensive approach, such as the campaign to reduce smoking, addressed the ‘underlying social and environmental determinants’ of the individual’s behaviour and has resulted in concrete behavioural change.⁵³ He identifies three ways in which an individual’s health outcome can be altered: healthy individual lifestyle, effective health services, and healthy work environments. The HPSMP goals address these three categories aiming to educate students to improve their individual lifestyle, providing active engagement with health services, and changing the culture and beliefs of their work environment.

1.5 The role of the singing teacher in vocal health education

Little of the currently available research includes the singing teacher as part of either the development of health promotion initiatives or the reinforcement of their students’ vocal health education, despite recommendations from Chesky et al. highlighting the importance of music faculty participation. Studies have advocated for the need to involve teachers in the prevention of playing-related problems (Palac 2008, Guptill and Zaza 2010, Petty 2012).⁵⁴ Furthermore, the lack of teacher involvement is noted

⁵² Ibid., 260.

⁵³ Ibid.

⁵⁴ Judy Palac, ‘Promoting Musical Health, Enhancing Musical Performance: Wellness for Music Students’, *Music Educators Journal*, 94(3) (2008), 18-22; Christine Guptill, Christine Zaza, ‘Injury Prevention: What Music Teachers Can Do’, *Music Educators Journal*, 96(4) (2010), 28-34; Brian E. Petty, ‘Health Information-Seeking Behaviors Among Classically Trained Singers’, *Journal of Voice*, 26(3) (2012), 330-335.

as a potential limitation to comprehensive health-promotion education by many of the studies discussed in Chapter Two.

In 2016, Norton published an article outlining the rationale for involving instrumental/vocal teachers in health promotion. She denotes two types of prevention in this article: *primary prevention* referring to avoiding the onset of preventable playing-related problems, and *secondary prevention* referring to raising awareness of playing-related problems so that they can be identified and dealt with.⁵⁵ In the context of the Chesky et al. recommendations, primary prevention is addressed by the first three HPSMP goals, while secondary prevention is addressed by the fourth goal. Norton surveyed 496 teachers investigating their health-related experiences, beliefs and behaviours, and conducted twelve semi-structured interviews with respondents from the survey.⁵⁶ 84% of all survey respondents believed that they were at least partially responsible for their students' health and wellbeing and only 14% indicated that they have never encountered a student with a playing-related problem.⁵⁷ Results from the interviewees indicated that:

‘Teachers are ideally placed to deliver health-related information, that it is reasonable and appropriate to ask them to do so, but that current training would not adequately equip a teacher to safely and effectively carry out a health promotion role.’⁵⁸

⁵⁵ Naomi C. Norton, ‘Health Promotion for Musicians: Engaging With Instrumental and Vocal Teachers’, *Arts and Humanities as Higher Education*, (2016) <http://www.artsandhumanities.org/journal/health-promotion-for-musicians-engaging-with-instrumental-and-vocal-teachers/> [accessed March 1 2018], 3.

⁵⁶ Norton ‘Health promotion for musicians’, 7.

⁵⁷ *Ibid.*, 8.

⁵⁸ *Ibid.*

This study reaffirms previous findings (Kreutz et al. 2008,⁵⁹ Spahn et al. 2002,⁶⁰ Spahn et al. 2004,⁶¹ and Williamon and Thompson 2006),⁶² that playing-related problems are very common among student musicians. Due to this established trend, Norton recommends that it might be necessary to focus initially on secondary prevention.⁶³

1.6 Preventive health behaviour in third-level music students

Recent studies have shown that it is important to understand the preventive behaviour of students studying at third-level in order to better inform their preventive health education.⁶⁴ Spahn et al. showed in 2004 that music students differ from students of other disciplines (such as medicine, sport, and psychology) in their attitudes toward health, their higher degree of health impairment, their considerably stronger identification with their subject, and their heightened commitment to work.⁶⁵ As a result of these conclusions, Spahn et al. conducted a study in 2005 using a combined sample of students from both Freiburg University of Music and Zurich University of Music to investigate what attributes music students had that would affect the

⁵⁹ Kreutz et al., 'Music students' health problems', 3-11.

⁶⁰ Spahn et al., 'Health attitudes, preventive behavior', 22-28.

⁶¹ Spahn et al., 'Health conditions, attitudes towards study', 26-33.

⁶² A. Williamon and S. Thompson, 'Awareness and incidence of health problems', 893-909.

⁶³ Norton 'Health promotion for musicians', 4.

⁶⁴ Liliana S. Araújo, David Wasley, Rosie Perkins, Louise Atkins, Emma Redding, Jane Ginsborg, Aaron Williamon, 'Fit to Perform: An Investigation of Higher Education Music Students' Perceptions, Attitudes, and Behaviors toward Health', *Frontiers in Psychology*, 8 (2017), 1-19; Rosie Perkins, Helen Reid, Liliana S. Araújo, Terry Clark, Aaron Williamon, 'Perceived Enablers and Barriers to Optimal Health among Music Students: A Qualitative Study in the Music Conservatoire Setting', *Frontiers in Psychology*, 8 (2017), 1-15; Claudia Spahn, Edgar Voltmer, Adina Mornell, Manfred Nusseck, 'Health status and preventive health behavior of music students during university education: Merging prior results with new insights from a German multicenter study', *Musicae Scientiae*, 21(2) (2017), 213-229.

⁶⁵ Spahn et al., 'Health conditions, attitudes towards study', 26-33.

probability of their engagement with preventive measures.⁶⁶ The authors cite a concept in health psychology known as the construct of ‘health locus of control’ (LOC) originally developed by Rotter in 1966 and later further differentiated by Levenson in 1974, and Wallston and Wallston in 1982.⁶⁷ Wallston and Wallston identified three control dimensions toward illness and health:

1. The attitude that illness and health cannot be controlled and must be left to destiny (external chance LOC)
2. The attitude that illness and health can be controlled by oneself (internal LOC)
3. The attitude that illness and health can be controlled by other persons (external powerful-others LOC)⁶⁸

Spahn et al. use these three groupings with relation to university students, hypothesising that students in the second grouping (internal LOC) will have a high degree of initiative and will therefore be more likely to engage in preventive behaviour.⁶⁹ They compared their sample of music students to a sample of medical students from the University of Freiburg Medical School and used a control group of a random sample from the general population. They found that music students showed a significantly higher internal LOC than both the control sample and the medical students. Internal LOC by itself, contrary to their hypothesis, was not a sole predictor

⁶⁶ Claudia Spahn, Thorsten Burger, Horst Hildebrandt, Karin Seidenglanz, ‘Health Locus of Control and Preventive Behaviour Among Students of Music’, *Psychology of Music*, 33(3) (2005), 256-268.

⁶⁷ Julian B. Rotter, ‘Generalized expectancies for internal versus external control of reinforcement’, *Psychological Monographs: General and Applied*, 80(1) (1966), 1-28; Hannah Levenson, ‘Activism and Powerful Others: Distinctions within the Concepts of Internal–External Control’, *Journal of Personality Assessment*, 38 (1974), 377-83; K.A Wallston and B.S. Wallston, ‘Who Is Responsible for Your Health? The Construct of Health Locus of Control’, in G.S. Sanders and J. Suls (eds.) *Social Psychology of Health and Illness*, (New York: Erlbaum, 1982), 65-95.

⁶⁸ Wallston and Wallston ‘The Construct of Health Locus of Control’, 65-95.

⁶⁹ Spahn et al., ‘Health Locus of Control’, 257.

of increased preventive behaviour. Instead they found that each grouping only became a predictor of preventive health behaviour when it was combined with a corresponding health status. 61% of music students had previously experienced a mixture of physiological and psychological playing-related health problems. The biggest predictor of engagement in preventive behaviour was shown to be a combination of high internal LOC and a previous playing-related problem.

In 2017, Spahn et al. conducted a nationwide study across German universities of music to ascertain the health status and preventive health behaviour of music students. This study confirmed the aforementioned control dimensions toward illness and health when the health status of the students within each group was classified as follows:

1. Students identifying with an external chance LOC had no playing-related problems and did not engage with preventive activities
2. Students identifying with an internal LOC had a low level of playing-related problems and most of them engaged with preventive activities
3. Students identifying with an external powerful-others LOC had a high level of playing-related problems and were all taking medication⁷⁰

The authors note that from the perspective of prevention education the second grouping represented the most optimal of the three, given that they only require training to maintain health behaviour. The first group would need motivation to change their attitudes, which has proved challenging so far in prevention education (as will be discussed in Chapter Two). The third group would need secondary prevention in the form of treating their health problem followed by motivation to

⁷⁰ Spahn et al., 'Health status and preventive health behaviour', 223.

engage in preventive activity in order to stop a relapse of their playing-related health problem.⁷¹

Spahn et al. conducted three surveys over the course of the students' university education and found that engagement with preventive activities increased by varying degrees within all three groupings as they progressed through their education. The most significant difference was shown between the first and second survey where the level of engagement with preventive activities increased from 51% to 78%. The authors note that this demonstrated 'a fair amount of students could be motivated to engage in preventive activities during the first year of university education.'⁷²

The authors note that despite this demonstrable increase in preventive activities, there was no corresponding decrease in playing-related problems.⁷³ They theorise that students with these playing-related problems would benefit from more effective medical help and recommend that future studies investigate whether or not students are well informed about appropriate treatment programmes, or how to get in contact with the musicians' medicine programmes at their schools.⁷⁴ Spahn et al. conclude by warning that there are still 'alarmingly high' numbers of students with playing-related health problems and a lack of knowledge as to how to prevent these problems 'even towards the end of their university education.'⁷⁵ This is in line with Norton's suggestion that perhaps secondary prevention should be our initial focus.

⁷¹ Ibid., 216.

⁷² Ibid., 221.

⁷³ Ibid., 226.

⁷⁴ Ibid.

⁷⁵ Ibid., 227.

Araújo et al. carried out a comprehensive study investigating preventive health behaviour of conservatoire students mainly studying in the Western classical tradition in nine conservatoires in the U.K. and one in southern Switzerland.⁷⁶ Their study showed poor engagement in health-promoting behaviour and low self-rated health indicating a poor overall health status. Students' engagement in health responsibility and stress management behaviour was also very low. The authors state that this is significantly troubling in a field that is 'characterised by constant high pressure and competitiveness.'⁷⁷ They argue that this established poor level of overall health combined with low engagement with stress management and tendencies toward perfectionism creates an 'alarming mental health forecast.'⁷⁸ This is in line with previous studies (Spahn et al. 2002, Spahn et al. 2004, Zander et al. 2010 and Spahn et al. 2017) identifying significant psychological issues in the music student population in comparison with student populations of other disciplines.⁷⁹ When combined with the potentially serious effect psychological factors can have on the voice, as identified by Kwok and Eslick, this may also create an alarming vocal health forecast.⁸⁰

Araújo et al. reference Nutbeam's definition of health literacy, recognising the importance of the conservatoires and music schools in increasing 'individual and institutional health literacy.'⁸¹ They note that their study provides a picture of health-

⁷⁶ Araújo et al., 'Fit to Perform', 1-19.

⁷⁷ Ibid., 14.

⁷⁸ Ibid.

⁷⁹ Spahn et al., 'Health attitudes, preventive behavior', 22-28; Spahn et al., 'Health conditions, attitudes towards study', 26-33; Zander et al., 'Health Promotion and Prevention in Higher Music Education', 54-65; Spahn et al., 'Health status and preventive health behaviour', 213-229.

⁸⁰ Kwok and Eslick, 'Vocal and Laryngeal Pathologies', 1.

⁸¹ Araújo et al., 'Fit to Perform', 15.

promoting behaviour demonstrated by students attending conservatoires in the U.K. and Switzerland, but that more studies would be needed to ‘explore patterns of perceptions, attitudes, and behaviours, toward health at an international level with cross cultural representation.’⁸²

Perkins et al. also conducted a study in the U.K. examining how students experience health and wellbeing in the conservatoire setting. They use Nutbeam’s three categories of how an individual’s health outcome can be affected (namely individual lifestyle, effective health services, and healthy working environments). They carried out twenty semi-structured interviews with students currently attending or recently graduated from U.K. conservatoires. Their findings indicated complex and contradictory responses for each of Nutbeam’s three categories. Students reported elements of both healthy and unhealthy lifestyles, adequate and inadequate support systems, and helpful and unhelpful aspects of the conservatoire work environment. Given the variations of responses across all conservatoires, the authors conclude the need for further research into the ‘levels of health literacy among music students and how this impacts upon their perception and attitudes toward health and wellbeing.’⁸³ The authors suggest that further research is also conducted to ascertain what individual characteristics and variables musicians experience that may affect their engagement with health-promoting behaviour. They conclude that there is a need to raise awareness of health promotion programmes across U.K. conservatoires, along with a need for further development of said programmes and more effective integration into conservatoire curricula.⁸⁴

⁸² Ibid.

⁸³ Perkins et al., ‘Perceived Enablers and Barriers’, 12.

⁸⁴ Ibid., 13

1.7 Conclusion

The literature review showed consistent findings of increased risk and prevalence of voice problems in singers identified by Sapir et al., Phylard and Greenwood, Tepe et al., Miller and Verdolini, and Kwok and Eslick. All authors of these articles concluded by suggesting vocal health education as a preventive measure for singers. Many of them also advocated increased availability for early detection and treatment of vocal health issues. A lack of correlation between vocal training and knowledge of vocal health was consistent across many studies, suggesting that vocal health may not adequately be addressed by vocal training alone. Norton's data preliminarily suggests that further education would be needed before teachers could play an active role in health promotion. There is a distinct lack of studies investigating this potential gap in the health knowledge of teachers, and further research is recommended.

Health promotion conferences have discussed ways to approach occupational health issues and have recommended increased preventive education, changes in institutional culture and behaviour, and increased availability of treatment options. There are few studies investigating the behaviour of music students toward health-promotion and this area requires further exploration. These studies suggest that music students differ in certain ways from students of other disciplines, which should inform the design of their preventive education curriculum. The three groupings presented by Spahn et al., if corroborated by further cross cultural research, could constructively inform the method of primary and secondary prevention education introduced by schools of music.

Chapter 2

2.1 Introduction

This chapter will explore literature investigating vocal health education as a method of injury prevention. The author will then address studies conducted by Broaddus-Lawrence et al.,⁸⁵ Barton and Feinberg,⁸⁶ Zander et al.,⁸⁷ and Ziegler and Johns,⁸⁸ that introduced educational programmes in an effort to prevent injury as recommended by the HPSMP and DGfMM. The studies will be discussed chronologically as per the year of publication, first outlining the structure and content followed by a discussion of the results.

2.2 Vocal health education as a method of injury prevention

Achey et al. conducted a survey of classical singing students in two American conservatoires, assessing their compliance with vocal hygiene practices and the relationship between self-reported compliance and self-reported singing voice handicap.⁸⁹ Their primary hypothesis was that the singers who paid increased attention to good vocal hygiene practices would also report reduced singing voice handicap.⁹⁰ Using eleven factors of vocal hygiene, the survey asked students how often they considered each factor in both performance and nonperformance periods.⁹¹ Students reported considering all eleven factors more frequently when preparing for

⁸⁵ Broaddus-Lawrence et al., 'Effects of Preventive Vocal Hygiene Education', 58-71.

⁸⁶ Barton and Feinberg, 'Effectiveness of an Educational Program', 47-53.

⁸⁷ Zander et al., 'Health Promotion and Prevention in Higher Music Education', 54-65.

⁸⁸ Ziegler and Johns, 'Health Promotion and Injury Prevention', 531-541.

⁸⁹ Meredith A. Achey, Mike Z. He, Lee M. Akst, 'Vocal hygiene habits and vocal handicap among conservatory students of classical singing', *Journal of Voice*, 30(2) (2016), 192-197.

⁹⁰ *Ibid.*, 192.

⁹¹ *Ibid.*, 197.

performances than when not preparing for performances.⁹² The results indicated that overall attention to vocal hygiene factors did not appear to correlate with self-reported voice handicap, thus contradicting their initial hypothesis.⁹³ The exception to this overall result was that greater consideration of stress reduction correlated significantly with increased vocal handicap.⁹⁴ The authors concluded that the benefits of preventive vocal hygiene practices may currently be overstated and that lack of adherence to good vocal hygiene may only be playing a small part in increasing the risk of vocal injury in conservatoire students of classical singing.⁹⁵

The authors acknowledge several limitations to this study, such as the method of self-reporting, stating:

It cannot be ruled out that those who are more attentive to vocal hygiene may also be more sensitive to changes in the voice, which would result in higher scores for both hygiene and handicap.⁹⁶

They also highlight the recent research by Castelblanco et al. proposing that self-reported vocal handicap may be a poor predictor of actual vocal fold pathology (any deviation from healthy or normal condition vocal folds) as identified by clinicians.⁹⁷ Castelblanco et al. used a sample of forty-seven professional singers and measured their self-perceived vocal health against actual vocal fold pathology as seen on stroboscoped laryngoscopy (a technique that provides a highly magnified view of the

⁹² Ibid., 195.

⁹³ Ibid., 194.

⁹⁴ Ibid.

⁹⁵ Ibid., 195-196.

⁹⁶ Ibid.

⁹⁷ Liliana Castelblanco, Michael Habib, Daniel J. Stein, André de Quadros, Seth M. Cohen, Jacob Pieter Noordzjj, 'Singing Voice Handicap and Videostroboscoped Laryngoscopy in Healthy Professional Singers', *Journal of Voice* 28(5) (2014), 608-613.

vocal folds that is video documented). Despite the fact that all singers in this study identified themselves as being vocally healthy, laryngeal abnormalities were relatively common.⁹⁸ Castelblanco et al. state:

It is difficult for even professional singers, who are supposedly more aware of their vocal health, to reliably assess how their voice is functioning.⁹⁹

The sample that Castelblanco et al. drew this observation from was thirty-one years; in comparison to the twenty-two years mean age of the Achey et al. sample. If professional singers with more experience and training overall have demonstrated the inconsistency of self-reported vocal handicap, then this calls into question the conclusions drawn by Achey et al. Castelblanco et al. also indicate that perceived handicap might in fact be related to problems with vocal technique rather than the physiological health of the vocal folds themselves.¹⁰⁰

Another limitation that Achey et al. acknowledge is the wording of the survey questions. The students were asked to report how often they consider factors of vocal health but their actual health-promoting practices were not assessed. This is particularly relevant with regard to the correlation the authors identified between consideration of stress reduction and an increased vocal handicap. If the students were claiming increased consideration of stress reduction but not engaging effectively with established stress management techniques and coping skills, then it would explain the increased vocal handicap. However, assessing the actual practices of the students was beyond the scope of the Achey et al. study. The authors state that this remains a goal

⁹⁸ Castelblanco et al. 'Singing Voice Handicap', 611.

⁹⁹ Ibid., 613.

¹⁰⁰ Ibid., 613.

for future studies.¹⁰¹ This author would also maintain that the questions did not investigate knowledge levels of the students with regard to vocal health practices. The students were questioned on whether or not they considered the different factors, but were not asked to demonstrate knowledge or understanding about why they should be considering them. The students demonstrated fluctuating behaviour during performance periods in comparison with nonperformance periods. This suggests either a lack of understanding about some of the vocal health practices, or a deliberate choice to engage in vocally abusive behaviour despite the risks involved. Either hypothesis being proven true could potentially alter the conclusion of the article.

Braun-Janzen and Zeine conducted one such study when they investigated singers' interest and knowledge levels of vocal function and dysfunction.¹⁰² They used a detailed survey sampling a mixed group of both amateur and professional singers with a mean age of thirty-nine. Due to the thorough nature of the questionnaire, it was discovered that the perceived knowledge levels indicated by the singers did not match their level of understanding. This was discovered through a series of 'true or false' questions presented within the questionnaire. The authors concluded that many singers did not have a 'thorough or even basic understanding of vocal function and dysfunction,' and that they could benefit from education in this area.¹⁰³ They also established that a significant majority of respondents indicated a high level of interest in expanding their knowledge of vocal health.¹⁰⁴

¹⁰¹ Achey et al. 'Vocal Hygiene Habits,' 195.

¹⁰² Colleen Braun-Janzen, Lina Zeine, 'Singer's interest in and knowledge levels of vocal function and dysfunction: survey findings', *Journal of Voice*, 23(4) (2009), 470.

¹⁰³ Braun-Janzen, Zeine, 'Singers' interest in', 482.

¹⁰⁴ *Ibid.*, 472.

Kwak et al. also performed a study investigating levels of vocal knowledge and understanding among classical singing students in 2014.¹⁰⁵ They gave undergraduate, master's, and doctoral/young artist singers an eighty point questionnaire assessing knowledge of vocal anatomy, physiology, and voice care, in addition to questions on medical referral pathways.¹⁰⁶ The students achieved an average of just above 50% on this test, and all expressed significant interest in expanding their knowledge. There was also no significant difference in results across the three levels of training.¹⁰⁷

From a health literacy standpoint, the Achey et al. study represented a focus on the individual's lifestyle. Consideration of vocal hygiene practices alone may therefore not be enough to fully alter the health outcome of singing students. The health promotion initiatives discussed in Chapter One advocate a more holistic approach to the health education of music students, including effective health support services and healthy work environments in addition to the individual's healthy lifestyle. Given that the three categories are recommended together, we have yet to discover the effect of a comprehensive health promotion framework on the health outcomes of singing students. There are few studies exploring the various types of vocal health education provided by schools in countries such as the U.K., Germany, and the U.S.A. This remains relevant for future research.

One such study performed by Latham et al. in 2017 investigated the variation of instruction in vocal health provided by graduate programmes of singing in the

¹⁰⁵ Paul E. Kwak, C. Richard Stasney, Jeremy Hathway, Charles G. Minard, Julina Ongkasuwan, 'Knowledge, Experience, and Anxieties of Young Classical Singers in Training', *Journal of Voice*, 28(2) (2014), 191-195.

¹⁰⁶ *Ibid.*, 192.

¹⁰⁷ *Ibid.*, 193.

U.S.A.¹⁰⁸ They surveyed faculty members of the National Association of Schools of Music (NASM) who provide graduate-level programmes for vocal performance, investigating how their students received vocal health education. They found that 95% of schools surveyed provided vocal health instruction and that almost all of these schools included that instruction within a vocal pedagogy module. Furthermore, 29% of those modules were electives, meaning that if students chose to focus on vocal performance without vocal pedagogy they did not learn about vocal health. However, attitudes toward the benefit of vocal health education were almost unanimous among teachers with 99% of respondents agreeing that vocal health instruction should be provided to graduate-level students. They listed ‘limited time in the curriculum, lack of financial support, and lack of availability of medical professional[s]’ as the top three barriers to providing more health instruction.¹⁰⁹ The authors acknowledge that their study is limited to information provided by graduate-level programmes and they recommend a similar investigation into undergraduate-level programmes.¹¹⁰

2.3 Studies introducing prevention programmes

2.3.1 Structure and method of the studies

Broaddus-Lawrence et al. conducted a study in East Carolina University in 2000 using a sample of eleven undergraduate students. The hypothesis was that if student singers were educated about vocal hygiene it would prevent vocally abusive behaviour thereby preventing possible vocal problems.¹¹¹ The first author, Broaddus-

¹⁰⁸ Latham, Katherine, Messing, Barbara, Bidlack, Melissa, Merritt, Samantha, Zhou, Xian, Akst, Lee M., ‘Vocal Health Education and Medical Resources for Graduate-level Vocal Performance Students’, *Journal of Voice*, 31(2) (2017), 1-7

¹⁰⁹ Latham et al. ‘Vocal Health Education’, 1.

¹¹⁰ Ibid.

¹¹¹ Broaddus-Lawrence et al., ‘Effects of Preventive Vocal Hygiene Education’, 58.

Lawrence, taught the vocal hygiene program using one-hour sessions over the course of four weeks. During the four sessions she covered:

1. Introduction to the anatomy and physiology of the laryngeal mechanism
2. Vocal abuse and misuse
3. Vocal pathologies and voice disorders
4. Healthy vocal technique¹¹²

The students were given a pre-instruction survey, a survey immediately after the final class, and a follow-up survey six weeks after they completed the programme.

Barton and Feinberg conducted a study in the University of Indianapolis in 2008 with a similar hypothesis: that educating undergraduate music students about health-promotion would prevent possible future injury.¹¹³ Twenty-six undergraduate music students with an equal representation of instrumentalists and vocalists attended the eight-week course on a weekly basis. It was designed in collaboration between the occupational health department and the music school, and was taught by an occupational health professor with extensive experience in music. Course content covered knowledge of effective health promotion and preventive strategies, dealing with performance anxiety, knowledge of medical problems commonly seen in musicians, and the ability to apply this knowledge to music playing and other daily activities.¹¹⁴ The students were given a pre-instruction survey, a survey immediately after course completion, and a follow-up survey six weeks later.

¹¹² Ibid., 70.

¹¹³ Barton and Feinberg, 'Effectiveness of an Educational Program', 47.

¹¹⁴ Ibid.

Zander et al. established that there was a prevalence of both psychological and physiological problems among students in the first few semesters of higher music education at the Freiburg University of Music, and elected to introduce a preventive health promotion curriculum to tackle this issue. They conducted a longitudinal study in 2010 to test the effectiveness of their preventive curriculum.¹¹⁵ 247 undergraduate students, twenty-two of which were vocalists, received ‘Musician-Specific Health Promotion’ classes during the first two semesters of their first year at university.¹¹⁶ The students were divided into a control group and an intervention group. The course was delivered to the intervention group in ‘practice-oriented’ seminars to small class sizes of twelve or thirteen students at a time.¹¹⁷ The seminars lasted for forty-five minutes each and the total instruction amounted to thirty-two hours. Course content included the physiological fundamentals of making music, lectures in the Feldenkreis method, instrument-specific risk areas, preparing for performance, and dealing with external performance conditions.¹¹⁸ The students were given three questionnaires pre-instruction, the same questionnaires directly after course completion, and the same questionnaires one year later.¹¹⁹

Ziegler and Johns conducted a study at Emory University in 2012 under the same principle of health-promotion and injury prevention as laid out by the WHO and the HPSMP. They introduced an advanced seminar taken twice weekly over the course of fourteen weeks. The sample of nine seminar students consisted of final year undergraduate vocal students and students completing masters in choral conducting.

¹¹⁵ Zander et al., ‘Health Promotion and Prevention in Higher Music Education’, 58.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

¹¹⁹ Ibid.

The seminar used a multi-disciplinary approach, featuring a laryngologist, psychologist, physiologist, singing teacher and singer.¹²⁰ By the end of the seminar series the authors expected seminar students to demonstrate more knowledge than the two groups who did not take the seminar, and as much knowledge as a group of medical professionals specialising in voice care.¹²¹ A questionnaire was given to the seminar students post-instruction and the same questionnaire was given to a sample of medical professionals. As a control method, the same questionnaire was also given to a group of vocal music undergraduates and a group of instrumental music undergraduates from the university who did not attend the seminar.

2.3.2 Results of the studies

All four studies consistently found that students considered the new information interesting and beneficial, regardless of whether having the information caused a statistically significant change in behaviour. This shows a consistent interest from music students in matters of vocal health education, as previously indicated by the Braun-Janzen and Zeine, and Kwak et al.¹²²

The Broaddus-Lawrence study reported minimal changes in behaviour post course completion and even cited some instances where vocally abusive behaviour increased. The authors suggest one of the reasons for this result could be the six-week gap between surveys where there was no reinforcement of the ideas introduced in the course. They propose the potential benefits of the private singing teacher reinforcing

¹²⁰ Ziegler and Johns, 'Health Promotion and Injury Prevention', 534.

¹²¹ Ibid.

¹²² Braun-Janzen and Zeine, 'Singers interest in', 479-482; Kwak et al., 'Knowledge, Experience, and Anxieties', 191-195.

the materials as part of the students' singing lessons for one semester in order to 'encourage long-term recall and application of the concepts'¹²³.

Barton and Feinberg noted an immediate change in certain practice and performance issues but that general health and lifestyle changes had minimal to no change at all according to the survey taken immediately post course completion. However, further improvements in general health and lifestyle behaviour were evident in the follow-up survey six weeks later.¹²⁴ The authors propose this result suggests that practical content related to practice and performance habits are easier to achieve and sustain than behavioural changes, which take longer to implement.¹²⁵ The authors suggest the need for 'periodic reinforcement of the importance of using these strategies throughout the educational curriculum.'¹²⁶ They also raise the issue of the role of the major instrument teacher in supporting the students' adherence to the strategies outlined in the course, suggesting that it could have a significant impact on the attitude of the student toward taking the time to make prevention work.¹²⁷

Zander et al. recorded a positive response to their course content from 85% of students.¹²⁸ A change in behaviour toward increased engagement in preventive health measures was noted in the intervention group after they finished the curriculum.¹²⁹ The main preventive effects noted by the authors as a result of the given curriculum were in the area of psychological health. Students in the intervention group were able

¹²³ Broaddus-Lawrence et al., 'Effects of Preventive Vocal Hygiene Education', 66.

¹²⁴ Barton and Feinberg, 'Effectiveness of an Educational Program', 50.

¹²⁵ Ibid., 52.

¹²⁶ Ibid.

¹²⁷ Ibid.

¹²⁸ Zander et al, 'Health Promotion and Prevention in Higher Music Education', 58.

¹²⁹ Ibid., 61.

to maintain or slightly improve their ability to concentrate and their psychological stability, whereas those in the comparison group got significantly worse in those areas. The psychological health of female students in the control group was significantly worse than male students.¹³⁰ The authors attribute the success of the psychological aspects of the curriculum to the teaching style of that particular lecturer, her personal relationship with the students, and the ‘open approach’ she took when addressing difficult topics.¹³¹ There was no statistically verifiable improvement in physical symptoms as a result of the preventive curriculum.¹³² The authors suggest that some of the limitations of their study could be explained by the lack of time-intensity in their curriculum and the lack of reinforcement at the individual level, due to the group teaching nature of the modules.¹³³

Seminar students in the Ziegler and Johns investigation showed a significant increase in knowledge and application of good vocal health practices post course completion.¹³⁴ There was also no difference in knowledge scores between the seminar students and the medical voice care professionals, as was hypothesised by the authors of the study. The results of the control group (undergraduates from the same university who did not take the seminar) were extremely poor. The authors noted in particular that there was little difference between the results of the vocalist and the instrumentalist undergraduates who did not attend the seminar, suggesting that vocalists were not exposed to health information specific to their instrument as part of

¹³⁰ Ibid.

¹³¹ Ibid., 62.

¹³² Ibid., 60.

¹³³ Ibid., 63-64.

¹³⁴ Ziegler and Johns, ‘Health Promotion and Injury Prevention’, 536.

their undergraduate course.¹³⁵ This result reinforces the lack of correlation between vocal lessons and vocal health knowledge, as explored in Chapter One.

The studies discussed in this chapter took different approaches toward creating and administering their prevention programmes. The Broaddus-Lawrence study had the shortest programme taught solely by the first author who is a member of the Department of Communication Sciences and Disorders at East Carolina University. The authors state that the vocal hygiene programme was designed based on ‘previous research’ but collaboration with any other faculty is not mentioned in the article.¹³⁶ Their programme focused solely on vocal hygiene without the inclusion of any preventive methods for psychological playing-related problems. The Barton and Feinberg study was double the length of the Broaddus-Lawrence study and was designed in collaboration between the occupational health department and the music department.¹³⁷ They addressed preventive strategies for both physiological and psychological playing-related problems. The Zander et al. preventive course took place over the longest period of time but consisted of shorter seminars. The authors state that two physicians taught the seminars and that both had backgrounds in psychosomatic training and qualifications in the field of musicians’ medicine. While they do not specifically name the seminar tutors, it is assumed that they are from the Freiburg Institute for Musicians’ Medicine (as one of the authors is the director of this institute).¹³⁸ They also addressed preventive strategies for both physiological and psychological playing-related problems. The Ziegler and Johns study was the most detailed course, taught by many experts across the field of voice care in addition to

¹³⁵ Ibid., 537.

¹³⁶ Broaddus-Lawrence et al., ‘Effects of Preventive Vocal Hygiene Education’, 60.

¹³⁷ Barton and Feinberg, ‘Effectiveness of an Educational Program’, 48.

¹³⁸ Zander et al, ‘Health Promotion and Prevention in Higher Music Education’, 58.

music faculty members. They did not specifically mention a psychological subject of study but they did include a psychologist as one of their tutors, suggesting a possible psychological component. Chesky et al., when making their HPSMP recommendations, stated:

Music school faculty need to become substantially involved in the prevention of injuries. Interdisciplinary and collaborative strategies with groups and individuals outside of music need to be initiated. However, reliance on these outside professionals without the essential involvement of music faculty will ultimately fail.¹³⁹

According to the results of studies conducted thus far, it seems Chesky et al. were correct in thinking that the efficacy of these prevention programmes would be tied to their collaboration with relevant faculties, and their teaching approach. However, further studies will be needed to investigate the merits of different teaching approaches and how they might be combined with effective support services and healthy work environments as discussed in Chapter One.

One aspect that is not mentioned in any of the studies discussed in this chapter is the question of cost-effectiveness. Sataloff's recommendation that the cost-effectiveness of these programmes should be investigated prior to their 'widespread implementation' is a valid one, especially given that the studies achieving best results are using multi-disciplinary methods including the use of staff outside of the music faculty. The only study to briefly mention this issue is Ziegler and Johns who observe that 'insurance coverage poses an obstacle to pursuing management of voice

¹³⁹ Chesky et al. 'Health promotion', 143.

problems.’¹⁴⁰ This statement does not refer to the cost-effectiveness of the vocal health education programme itself, but it does bring to mind the potential cost implications faced by the individual singer, which will be discussed further in Chapter Three.

2.4 Conclusion

The role of the teacher as a potentially significant element in successful injury prevention education was identified by three of the studies in this chapter, suggesting that successful health-promoting music faculties should seek to involve the singing teacher wherever possible. The most successful study in this chapter (Ziegler and Johns) was powered by a multi-disciplinary approach. This provides preliminary evidence to confirm the recommendations of Chesky et al. in Chapter One, suggesting multi-disciplinary approaches would be vital to effective health-promotion. Further evidence that there is a lack of correlation between vocal lessons and vocal health knowledge is provided again in this chapter, as is the fact that students continue to demonstrate a significant interest in vocal health education.

The quantity of studies investigating the efficacy of preventive voice care programmes remains limited and therefore any conclusions being drawn from those conducted so far are preliminary. Further studies are needed in this area both internationally and within an Irish context.

¹⁴⁰ Ziegler and Johns, ‘Health Promotion and Injury Prevention’, 537.

Chapter 3

3.1 Introduction

This chapter will investigate the health information-seeking behaviours (HISBs) of classical singers, particularly focusing on the role of the teacher as a source of educational and medical information for their students.¹⁴¹ The literature surrounding medical support frameworks in the context of vocal health will be considered, in addition to the potential benefits of screening to aid in early detection and prevention of vocal injury. The knowledge of vocal health demonstrated by clinicians in university health settings will also be explored.

3.2 Health information-seeking behaviours of singers

It is important to consider the health information-seeking behaviours (HISBs) exhibited by singing students in order to inform the greater context of their attitude towards health promotion. According to Lundy et al., ‘early identification of vocal difficulties in the professional voice user is critical to preventing long-term disability.’¹⁴² However, an investigation by Bastian et al. in 1990 discovered that the average time between onset of symptoms and initial diagnosis of vocal nodules in a group of singers was twenty-seven months.¹⁴³

Petty conducted a survey in 2012 identifying a trend in HISBs of singers in comparison to a non-singer control sample. Singers were over twice as likely to

¹⁴¹ Petty, ‘Health Information-Seeking Behaviors’, 330-335.

¹⁴² Lundy et al. ‘Abnormal laryngeal findings’, 69.

¹⁴³ R, Bastian, A. Kreider, K. Verdolini-Marston, ‘Simple vocal tasks for detecting vocal fold swelling’, *Journal of Voice* 4 (1990), 219-226.

consult a singing teacher about a vocal problem first before seeking medical advice.¹⁴⁴ Of the sample of 151 singers, 75% of singers younger than twenty years old consulted their singing teacher about a vocal problem before any other professional.¹⁴⁵ Singers were also twelve times more likely to have encountered incorrect or incomplete information about voice-related issues than non-singers.¹⁴⁶

Weekly et al. performed a study in 2018 surveying an international sample of amateur and professional voice users on their rationales for seeking or not seeking medical attention.¹⁴⁷ They distributed the survey online and received responses from twenty-five countries with the average respondent age being between 40-49. 39% of the respondents who chose to seek medical assistance when faced with a vocal problem chose to see their voice teacher, while 48% chose to see an otolaryngologist. Students were more likely to see a voice teacher than an otolaryngologist, which is in line with the data from Petty's 2012 survey. 24% of respondents chose not to seek medical assistance at all. When asked why respondents chose not to seek medical assistance, 34% responded that medical insurance was a factor in their decision. The authors conclude by suggesting that health programmes at colleges and universities should include vocal health screening combined with mandatory vocal health education.¹⁴⁸

With regard to effective health literacy, Nutbeam maintains that 'access to, appropriate provision and appropriate use of health services are acknowledged as

¹⁴⁴ Petty, 'Health Information-Seeking Behaviors', 331.

¹⁴⁵ Ibid., 331.

¹⁴⁶ Ibid., 332 .

¹⁴⁷ Edrie Means Weekly, Linda M. Carroll, Gwen S. Korovin, Rachele Fleming, 'A Vocal Health Survey Among Amateur and Professional Voice Users', *Journal of Voice*, 32(4) (2018), 474-478.

¹⁴⁸ Ibid., 478.

important determinants of health status,' as is echoed by the fourth goal of the HPSMP.¹⁴⁹ Norton's study notes the significant role played by teachers in 'establishing how, when and where students seek help.'¹⁵⁰ She highlighted the need for teachers to be aware of the available health resources they can refer their students to.¹⁵¹ Norton maintains that secondary prevention should perhaps become the initial focus given the high incidence of playing-related problems seen in both students and instrumental/vocal teachers (66% of all teachers in her survey reported experiencing 'physical symptoms that interfere with their ability to play/sing').¹⁵² If teachers are to become more involved in primary prevention for their students, they may initially need assistance in secondary prevention of their own health issues.¹⁵³ An effective medical referral framework within conservatoires could address this need for secondary prevention in both students and teachers.

3.3 Medical referral frameworks in schools of music

As discussed in Chapter One, the prevalence of playing-related health problems at the beginning of university studies is very high and will affect students' attitudes toward preventive health behaviour. Spahn et al. recommended investigation on improving the ways in which students could access medical assistance and whether it is possible to 'screen students at the beginning of their education in order to offer appropriate procedures.'¹⁵⁴ This suggestion, while relevant to all schools of music, may not be possible for those who do not have access to a medical practice or voice specialist.

¹⁴⁹ Nutbeam., 'Health Literacy as a Public Health Goal', 261; Chesky et al. 'Health promotion', 143.

¹⁵⁰ Norton 'Health promotion for musicians', 5.

¹⁵¹ Ibid.

¹⁵² Ibid., 7.

¹⁵³ Ibid., 4.

¹⁵⁴ Spahn et al., 'Health status and preventive health behaviour', 227.

Spahn et al. note that the universities of music in Freiburg, Munich and Leipzig all offer musicians' medicine programmes.¹⁵⁵

Latham et al. also investigated the support services available to graduate-level students in the U.S.A. They discovered that 78% of schools had a relationship with a physician or medical practice. Of those schools, 26% described the relationship as 'formal' and 44% described it as 'informal'. Of the schools without a physician relationship, the main reported barriers to such a relationship were that it would be 'too expensive' or that the school 'encouraged its students to be empowered to find their own physician.'¹⁵⁶ This concern relating to the potential cost of such a programme reaffirms Sataloff's recommendation of further research into the area.¹⁵⁷

The conflicting reports from students in the 2017 Perkins et al. study suggest further research is needed to ascertain what support services are available in U.K. based universities of music.¹⁵⁸ This gap in research is also indicated by a 2013 study conducted by Atkins in which staff members from U.K. conservatoires were interviewed about what occupational health and wellbeing resources were available within their institutions.¹⁵⁹ Atkins' data often indicated little or no knowledge of

¹⁵⁵ Spahn et al., 'Health status and preventive health behaviour', 226.

¹⁵⁶ Latham et al. 'Vocal Health Education', 4.

¹⁵⁷ Robert Thayer Sataloff, *Treatments of voice disorders* (San Diego: Plural Publishing, 2005), 340.

¹⁵⁸ Perkins et al., 'Perceived Enablers and Barriers,' 1-15.

¹⁵⁹ Louise Atkins, 'Occupational health and wellbeing in the UK conservatoire sector: staff perspectives,' in *Proceedings of the International Symposium on Performance Science*, A. Williamon and W. Goebel (eds.) (Utrecht: European Association of Conservatoires, 2013), 243–248.

conservatoire-wide initiatives, with interviewees from one institution simultaneously denying and confirming the existence of one such initiative.¹⁶⁰

This author is unaware of any similar study into the medical referral frameworks available to music students within an Irish context. This remains a goal for future studies.

3.4 Vocal health screening

Richard Sataloff, an expert in the field of vocal health, strongly advocates for preventive voice care education for singers including ‘early detection efforts such as vocal evaluations and education in the schools and the workplace.’¹⁶¹ Clark et al. discuss the potential benefits of health screening in conservatoires, highlighting the fact that the use of screening to aid in injury prevention has already been employed successfully in the area of sport and dance.¹⁶² They claim that:

The comparative infancy of music-specific research may in part be because much of what has been learned about the musician’s body has come from research focusing predominantly on treatment of, and rehabilitation from, injury.¹⁶³

While there is much to be learned from research into the treatment of injury, the authors point out that this attitude has led us to create a ‘treatment-oriented culture.’¹⁶⁴ The article focuses on general conservatoire music students rather than

¹⁶⁰ Ibid., 145.

¹⁶¹ Sataloff, *Treatments of voice disorders*, 340.

¹⁶² Terry Clark, Aaron Williamon, Emma Redding, ‘The value of health screening in music schools and conservatoires’, *Journal of Clinical Rheumatology*, 32 (2013), 497-500.

¹⁶³ Ibid., 497.

¹⁶⁴ Ibid.

vocal students specifically, but the authors emphasise the importance of instrument-specific screening programmes in order to achieve the best results.¹⁶⁵

A number of studies have been conducted with regard to screening singers in particular, all of which conclude by emphasising the vital importance of baseline screening at the beginning of each singer's vocal education (Elias et al.,¹⁶⁶ Lundy et al.,¹⁶⁷ Sataloff et al.,¹⁶⁸ and Myint et al.)¹⁶⁹. Elias et al. conducted a study in 1997 using stroboscovideolaryngoscopic (SVL) examinations¹⁷⁰ on sixty-five healthy singing students at an advanced operatic conservatoire in Pennsylvania.¹⁷¹ Their study showed abnormal laryngeal findings in 58% of students despite students presenting as asymptomatic.¹⁷² A study conducted by Lundy et al. in 1999 used SVL examinations on sixty-five healthy singing students in the University of Miami and showed 87% abnormal laryngeal findings in the students.¹⁷³ Sataloff et al. conducted SVL examinations on seventy-six healthy singing teachers at the 2008 convention of the National Association of Teachers of Singing, which revealed 86% abnormal laryngeal findings.¹⁷⁴ Sataloff et al., as a result of their data and the data gleaned by the aforementioned studies (among many others), conclude that laryngeal abnormalities

¹⁶⁵ Ibid., 498.

¹⁶⁶ Maria E. Elias, Robert T. Sataloff, Deborah C. Rosen, Reinhardt J. Heuer, Joseph R. Spiegel, 'Normal Stroboscovideolaryngoscopy: Variability in Healthy Singers', *Journal of Voice*, 11(1) (1997), 104-107.

¹⁶⁷ Lundy et al. 'Abnormal laryngeal findings', 69-77.

¹⁶⁸ Robert T. Sataloff, Mary J. Hawkshaw, Jennifer L. Johnson, Brienne Ruel, Allen Wilhelm, Deborah Lurie, 'Prevalence of Abnormal Laryngeal Findings in Healthy Singing Teachers,' *Journal of Voice*, 26(5) (2012), 577-583.

¹⁶⁹ Myint et al., 'Stroboscovideolaryngoscopic Examinations in Singers', 472-477.

¹⁷⁰ a technique that provides a highly magnified view of the vocal folds that is video documented

¹⁷¹ Elias et al., 'Normal Stroboscovideolaryngoscopy'.

¹⁷² Ibid., 105.

¹⁷³ Lundy et al. 'Abnormal laryngeal findings', 71.

¹⁷⁴ Sataloff, 'Prevalence of Abnormal Laryngeal Findings', 577-578.

occur commonly in singers and are not necessarily always causing problems. They advise physicians to exercise caution when determining a causal relationship between a laryngeal abnormality and a patient's voice complaint, unless the physician has a baseline examination for comparison. This is so that 'long-standing, asymptomatic "abnormalities" can be distinguished from clinically significant new findings when patients present with voice complaints.'¹⁷⁵ In the case of SVL examinations, the aforementioned 'treatment-oriented culture' could be potentially dangerous if a physician were to advise treatment of a conceivably benign vocal abnormality.

In 2016 Myint et al. confirm the cautionary advice presented by Sataloff et al. after conducting a study in which they compared initial baseline SVL examinations of asymptomatic patients with follow-up examinations of patients presenting with acute voice complaints.¹⁷⁶ They found at least one or more laryngeal abnormalities in 90.2% of initial screenings and 94.9% in the follow-up examinations, showing significantly higher abnormalities than previous studies.¹⁷⁷ The authors attribute the higher percentage of observed laryngeal abnormalities to the improvement in imaging technologies, their increased experience in interpreting SVL examinations, and their more inclusive definition of 'abnormality'.¹⁷⁸ The authors reaffirm the importance of professional voice users having a baseline SVL while healthy in order to establish what should be considered 'normal' for them. This will in turn inform their physician on what potential new pathology is affecting them if they were to present with an acute voice complaint, which would more accurately inform a patient's treatment.¹⁷⁹

¹⁷⁵Ibid., 582-583.

¹⁷⁶Myint et al., 'Stroboscovideolaryngoscopic Examinations in Singers', 472.

¹⁷⁷Ibid.

¹⁷⁸Ibid., 474-475.

¹⁷⁹Ibid., 476.

Clark et al. mention that the Conservatoires of the United Kingdom (CUK) are working together to develop shared screening programmes for instrumental and vocal students, early iterations of which are being provided at the Royal College of Music (RCM) and Trinity Laban Conservatoire for Music and Dance.¹⁸⁰ This initiative is one of many elements being investigated as part of ‘Musical Impact,’ the significant longitudinal study conducted by the CUK and BAPAM.¹⁸¹

Screening would be of significant benefit to vocal students, especially given the discoveries of the many studies discussed in this chapter. However, the cost implications may hinder the progression of this type of programme internationally, particularly within an Irish context. The investigation of these implications remains a goal for future studies.

3.5 University health setting clinicians’ knowledge of vocal health

There are extremely few studies investigating the knowledge levels of clinicians who treat singing students in university health settings. It is definitely an area of research that requires further exploration given the importance placed on ‘effective support services’ within the context of health literacy. A recent study by McKinnon-Howe and Dowdall investigated this topic in the Boston area schools of music in the U.S.A.¹⁸² The authors maintain that the outcome of any performance-related issue students may face is affected by the student’s decision to seek medical attention, the

¹⁸⁰ Clark et al. ‘The value of health screening’, 498.

¹⁸¹ Williamon et al. ‘Musical Impact’.

¹⁸² Leah McKinnon-Howe, Jamie Dowdall, ‘Identifying Knowledge Gaps in Clinicians Who Evaluate and Treat Vocal Performing Artists in College Health Settings’, *Journal of Voice*, 32(3) (2018), 1-9.

timing of the evaluation, and the ‘knowledge and expertise of the treating clinician’.¹⁸³ They administered a web-based survey to twenty-eight clinicians containing three clinical scenarios, with the aim of identifying the approach used to evaluate and treat vocal performers, and to ascertain what factors may influence referral patterns to voice specialists.¹⁸⁴ The results showed specific knowledge gaps with 36% of respondents incorrectly identifying appropriate vocal hygiene measures, 56% of respondents failing to identify symptoms of vocal haemorrhage, and 84% failing to identify indications for referral to a voice specialist. One of the more distressing results indicated that 20% of respondents would have given advice to a patient experiencing symptoms of vocal haemorrhage that would not only have misdiagnosed the issue, but also would have increased the patient’s risk of rebleeding.

The results also showed that 60% of respondents were not confident in treating vocal performing artists and the remaining 40% were only somewhat confident. 4% of respondents indicated that they were not sure they had ever evaluated a vocal performing artist in a clinical setting. The authors maintain that this statistic raises the question of whether clinicians routinely ask patients with a voice complaint how they use their voice other than for speaking, suggesting that the importance of taking a comprehensive history is perhaps not fully understood in the context of a voice complaint.¹⁸⁵ McKinnon-Howe and Dowdall note that performing arts medicine is not currently integrated into medical school or advanced practice nursing curricula. They

¹⁸³ Ibid., 1.

¹⁸⁴ Ibid.

¹⁸⁵ Ibid., 6.

cite organisations such as the Voice Foundation and the Performing Arts Medicine Association as ideally placed to address this knowledge gap.¹⁸⁶

3.6 Conclusion

It is clear from the studies discussed in this chapter that students are more likely to actively seek medical advice from their singing teacher than from a medical professional when it comes to a vocal health problem. This solidifies the importance of the singing teacher in the context of their students' vocal health education.

The fourth HPSMP goal maintains the importance of active engagement with healthcare resources, and Nutbeam emphasises the effective support services as a determinant of health status. However, there are surprisingly few studies investigating the available vocal health medical referral frameworks, given the aforementioned importance of these health services to the student singing population. This remains a goal for future studies, in particular within an Irish context.

The role of baseline vocal health screening as part of these medical referral frameworks must be considered, as Sataloff et al. and the many other studies discussed in this chapter emphasised their importance. Investigating the cost implications of introducing baseline vocal health screening remains a goal for future studies both internationally and within an Irish context.

The role of the university health clinician in correctly identifying and referring vocal health issues is vital in preventing long-term vocal disability.¹⁸⁷ Further studies are

¹⁸⁶ Ibid., 8.

also required to investigate this potential knowledge gap both internationally and within an Irish context.

¹⁸⁷ Lundy et al. 'Abnormal laryngeal findings', 69-77.

Chapter 4: Methodology

4.1 Introduction

This chapter will outline the process of selecting and designing a research method to investigate what the current practices and attitudes toward vocal health are within the three Irish conservatoires (DIT, CIT, and RIAM). The author will outline the rationale for choosing a questionnaire and discuss the advantages and disadvantages of that research method. The structure and design of the two questionnaires created by the author will be discussed, along with the relevant ethical considerations. The procedure of piloting the questionnaire and its online distribution will also be outlined. Finally, the methods of data analysis will be addressed. The questionnaires can be found in Appendix A.

4.2 Preliminary research

The author explored the three conservatoires' websites, their publicly available module descriptions, and their course handbooks in an effort to establish what formal vocal health education or medical support framework was provided to students. There was a lack of documentary evidence mentioning either of these issues specifically, which provided a rationale for further research. The author then contacted the heads of vocal faculty by email seeking similar information regarding formal vocal health practices within their conservatoires. Of the responses received, it became clear that a comprehensive response would not be possible via email. This provided a rationale for investigating other avenues of research in order to obtain the desired data.

4.3 Selecting participants

The author carefully considered the selection of a target population to adequately represent the attitudes and practices toward vocal health within Irish conservatoires. In an effort to provide a comprehensive representation of these attitudes and practices, the author decided that a selection of both vocal faculty teachers and singing students would best inform the data. The author also considered that one conservatoire may not accurately convey the practices and attitudes toward vocal health within the greater Irish context and therefore decided to include participants from the three conservatoires that provide full-time degrees in vocal performance (DIT, CIT, and RIAM).

4.4 Selecting a research method

The author originally contemplated using semi-structured interviews in order to obtain data from vocal faculty teachers. Cohen, Manion and Morrison state that interviews as a method of data collection allow the respondents to discuss their interpretations of the world they inhabit and ‘to express how they regard situations from their own point of view.’¹⁸⁸ The method would be beneficial in this research area due to the apparent lack of documentary evidence in the field of vocal health education and medical support for singing students in Ireland. However, the very small sample size meant that potential interviewees were not confident enough that their responses would remain anonymous. In addition to this, the time restrictions identified by potential interviewees suggested that this method would be difficult to coordinate with their schedules.

¹⁸⁸ Louis Cohen, Lawrence Manion, Keith Morrison, *Research Methods in Education*, 6th edition, (London and New York: Routledge Falmer, 2007), 349.

After considering various other methodologies of research, the author established that a comprehensive sampling within Ireland and anonymity of participants were paramount, therefore concluding that a questionnaire would be the most appropriate research method to collect this information.

4.5 Advantages and disadvantages of the questionnaire

Cohen, Manion and Morrison note the benefits of using a questionnaire, including that it can be administered without the presence of the researcher, that it provides structured data, and that it can be comparatively straightforward to analyse.¹⁸⁹ They also note that because of volunteer participation, ‘greater authenticity of responses may be obtained.’¹⁹⁰ The use of a questionnaire would also be beneficial given the geographical consideration that one conservatoire is much farther away than the other two. The use of a questionnaire would also provide assured anonymity to both teachers and students.

Kothari identifies possible limitations to this method including low rate of return, the difficulty of interpreting omissions or ambiguous replies, and loss of control over the questionnaire once it is sent.¹⁹¹ Kenett cites the self-reporting nature of questions as a possible limitation, given that the respondents’ understanding of a question may not match how the researcher intended the question to be understood.¹⁹²

¹⁸⁹ Ibid., 321.

¹⁹⁰ Ibid., 230.

¹⁹¹ C. R. Kothari, *Research methodology: methods & techniques*. 2nd ed. (New Delhi: New Age International, 2004), 101.

¹⁹² R. Kenett, ‘On the Planning and Design of Sample Surveys,’ *Journal of Applied Statistics*, 33(4) (2006), 406

4.6 The online questionnaire

The author decided to create the questionnaire using the website surveymonkey.com, as recommended by Cohen et al. and Basit.¹⁹³ A monthly subscription provided basic data analysis and the ability to create questionnaires more than ten questions long, both of which were significant advantages to the researcher.

Berends states that online surveys can be ‘designed in ways that are more aesthetically appealing to respondents – providing motivation for them to complete the questionnaire.’¹⁹⁴ The Survey Monkey software was easy to navigate and provided the author with the option to preview the survey using a desktop view, a smartphone view, and a tablet view. This allowed the author to design the questionnaire with no discrepancies in aesthetics across all platforms, ensuring that it would be aesthetically appealing and functional for all participants.

4.7 Designing the questionnaires

The author read extensively within the field of vocal health education and decided to use certain elements of three studies discussed in the literature review, namely Braun-Janzen and Zeine, Achey et al., and Latham et al.¹⁹⁵ The author took great care in crafting the questions of both questionnaires in order to obtain the most comprehensive and relevant data, while also ensuring that neither questionnaire was too long, overly intrusive, or complicated.

¹⁹³ Cohen et al., *Research Methods*; Tehmina Basit, *Conducting Research in Educational Contexts* (London and New York: Continuum, 2010).

¹⁹⁴ Mark Berends, ‘Survey Methods in Educational Research’, in Judith L. Green, Gregory Camilli and Patricia B. Elmore (eds), *Handbook of Complementary Methods in Education Research* (USA: American Educational Research Association, 2006), 631.

¹⁹⁵ Braun-Janzen, Zeine ‘Singers’ interest in’, 479-482; Achey et al. ‘Vocal Hygiene Habits,’ 192-197; Latham et al. ‘Vocal Health Education’, 1-7.

The author designed a question to be included in both questionnaires, in order to gain a consensus among teachers and students with regard to three specific opinions on vocal health education and medical support. This question was designed based on a similar method used by Latham et al.¹⁹⁶

4.7.1 Structure and design of the teacher questionnaire

The author designed the teacher questionnaire with the primary objective of discovering what formal vocal health education they perceived to be available at their conservatoires (DIT, CIT, and RIAM). The author took into account the potential time restrictions highlighted by the heads of vocal faculty when designing this questionnaire. Therefore, the questionnaire was very brief and concise, comprising of one page and only five questions (seen below in Figure 1).

The three questions marked with an asterisk (*) were compulsory, while the two open-ended questions were optional. The author included these open-ended questions to provide respondents with the opportunity to elaborate. Question 4 is the question the author decided to include in both questionnaires. The first two statements relate to opinions regarding vocal health education and the third statement relates to the available medical support provided by conservatoires. Respondents were asked to rate their opinion on a five-point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree.’

¹⁹⁶ Latham et al. ‘Vocal Health Education’, 1-7.

* 1. Which conservatoire are you currently a vocal faculty member of?

- DIT
- CIT
- RIAM

* 2. Is formal instruction in vocal health provided as part of any undergraduate or postgraduate vocal performance degree at your conservatoire?

- Yes
- No
- Don't know

3. If you answered 'yes' or 'no' in Question 2 please provide any relevant details below:

* 4. Please select the choice that best describes your opinion about the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
'Vocal performance students should receive vocal health education'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Knowledge of vocal physiology and vocal health can prevent singers from injuring their voices'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'If my student experiences symptoms of ill vocal health and needs medical advice, I know what support is available to them in this conservatoire'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. If you have any further comments you feel are relevant to this research, please provide details below:

Figure 1 – Teacher Questionnaire

4.7.2 Structure and design of the student questionnaire

The author designed the student questionnaire with the central aim of discovering the levels of vocal health knowledge and understanding reported by full-time singing students at DIT, CIT and RIAM. The small sample size available to the author allowed for a semi-structured questionnaire including both quantitative and qualitative questions without it resulting in an overwhelming amount of data to analyse. The author was free to include ‘other – please specify’ options in many of the closed questions allowing for more comprehensive results.

The questionnaire comprised of four parts. Part I obtained students’ demographic information including their degree level, their teaching experience and the conservatoire they attend. It also investigated their perceived knowledge levels of vocal health (seen in Figure 2 below), discovered from what sources they obtained their vocal health information, and asked them to respond to the same three statements used in the Teacher Questionnaire (using the same five-point Likert scale).

Part I			
* 10. Please indicate your level of knowledge in the following areas:			
	No knowledge	Some knowledge	Thorough understanding
Anatomy and physiology of voice production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocal disorders related to vocal abuse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocal hygiene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocally abusive behaviour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Symptoms of ill vocal health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 2 – Students’ perceived knowledge levels

Part II was modeled on an aspect of the questionnaire distributed by Braun-Janzen and Zeine, using a series of 'true or false' questions with the aim of discovering if the students' level of understanding matched their level of perceived knowledge.¹⁹⁷ The author designed three vocal health statements correlating to each of the five categories used to investigate students' perceived knowledge in Part I. This resulted in a total of fifteen statements to which respondents were allowed to answer 'true,' 'false,' or 'don't know.'

Part III of the questionnaire was modeled on an aspect of the Achey et al. study, where they used a Likert scale asking students how often they considered factors of vocal health in performance and non-performance periods. The author used a similar approach and the same Likert scale, but altered the wording of the questions. The first question asked respondents to indicate how they behaved in a number of activities during a 'typical week' with the activities phrased as a series of first-person statements. The statements were designed to outline desirable vocal health practices according to the current literature e.g. 'I monitor my daily singing voice usage.' The second question used another Likert scale to ask how likely they were to alter their behaviour relating to the aforementioned activities when preparing for a performance, but the statements were provided as categories e.g. 'amount and/duration of singing voice use'. The questions can be seen below in Figures 3 and 4.

¹⁹⁷ Braun-Janzen, Zeine 'Singers' interest in', 479-482.

Part III

* 14. Please select the choice that best describes your behaviour towards the following activities during a **typical week**:

	Never	Almost Never	Sometimes	Almost Always	Always
'I get at least 7 hours of sleep per night'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I exercise at least twice a week'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I carefully monitor my caffeine intake'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I carefully monitor my alcohol intake'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I take steps to reduce my stress levels'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I follow a balanced diet'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I make sure to stay well hydrated'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I monitor my daily speaking voice usage'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I monitor my daily singing voice usage'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I make an effort to prevent symptoms of acid reflux'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I avoid talking in noisy environments'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I consider the effect medications may have on my voice'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 3 – Part III typical behaviour

* 15. How likely are you to alter your behaviour relating to the following activities when preparing for a performance?

	Extremely Unlikely	Unlikely	Neutral	Likely	Extremely Likely
Amount and/or quality of sleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount and/or quality of physical exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caffeine intake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol intake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stress reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water intake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount and duration of speaking voice use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount and duration of singing voice use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acid reflux effects and prevention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking in noisy environments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choice of medication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 4 – Part III behaviour preparing for performance

The final part of the questionnaire was an open-ended question inviting any further thoughts on the research topic.

4.8 Piloting the questionnaire

Cohen, Manion and Morrison state the importance of piloting a questionnaire prior to distribution, maintaining that it will increase its ‘reliability, validity, and practicability.’¹⁹⁸ The author decided to send pilot questionnaires to two recent graduates of the RIAM and two non-musicians. This was to ensure that the layout and instructions of the questionnaires were clear, there were no ambiguities or difficulties in the wording, and the software was easy to use and aesthetically appealing on many different devices. Sending the questionnaire to recent graduates of vocal performance

¹⁹⁸ Cohen et al., *Research Methods*, 343.

degrees at the RIAM was intended to uncover any specific issues that would be faced by the target audience. This was also to identify how long the questionnaires took to complete.

Feedback from the pilot questionnaires resulted in a few small changes and clarifications such as providing examples of the medications referred to in Part II of the Student Questionnaire (i.e. ‘Nurofen’ was added as an example of a popular ‘ibuprofen’ medication). All pilots of the Student Questionnaire were completed in less than ten minutes, and the Teacher Questionnaire was completed in less than five minutes. This allowed the author to provide potential participants with an accurate estimate of how long each questionnaire would take.

4.9 Online distribution

The author designed a cover letter to accompany her questionnaire for distribution indicating the primary objective of the research, assuring anonymity of all participants, and providing her contact details in case they had any queries about the research. The monthly subscription to Survey Monkey also provided the author with unique questionnaire hyperlinks ensuring there would be no confusion between teachers and students with regard to which questionnaire they were to take. The author then sent the questionnaire links via email, along with the cover letter, to the heads of vocal faculty at each conservatoire.

4.10 Ethical considerations

The author took great care to maintain every participant’s anonymity in both the design and analysis of the questionnaires. The author originally intended to analyse

the results of the Student Questionnaire using coded names for the three conservatoires. However, given that the response to the questionnaire within the author's own conservatoire was significantly higher than the response from the other two conservatoires, it will not be possible to separate the three results and preserve the anonymity of either the conservatoires or the students. Therefore, the results will be analysed collectively.

The same consideration was given to the analysis of the Teacher Questionnaire, but the responses received were relatively even and it was decided that coded names (Conservatoire A, Conservatoire B, and Conservatoire C) could be used without endangering any conservatoire's anonymity.

One notable ethical issue was considered by the author in response to an open-ended question answered by a student who personally named their institution and their vocal teacher. The quote is included in this dissertation with the name of the conservatoire concealed, and the name and gender of the vocal teacher concealed. This preserved anonymity of the conservatoire, the teacher, and the student, without affecting the data presented in this research.

4.11 Analysing the data

The monthly subscription to Survey Monkey provides basic analytics and percentages, allows the creation of filters to compare different aspects of the data, and provides charts and tables to display the information. The author used these filters to cross-analyse between questions, identifying trends where appropriate and establishing common themes.

Eight participants of the Student Questionnaire did not complete Parts II or III, which would have significantly affected the overall results. Therefore the author decided to remove these incomplete responses from the data analysis.

It was decided that respondent numbers would be used when discussing the teacher sample, since there were only six respondents. The author elected to use percentages when discussing the student sample due to the larger sample size of thirty. In one instance the author combined the two samples when analysing the question that was common to both questionnaires.

Part III of the Student Questionnaire used two Likert scale questions relating to self-reported behaviour of respondents. The Likert scales of both questions were assigned a five-point rating (e.g. 1=never, 2=almost never, 3=sometimes, 4=almost always, 5=always). The author then identified the mean and standard deviation of the data, facilitating further analysis.

Open-ended questions involving occasionally extended responses were analysed by the author separately. The author coded the responses with subject tags identifying common emerging themes.

Chapter 5: Data Statement and Analysis

5.1 Introduction

This chapter will present data statements outlining results obtained by both online questionnaires. The author will then analyse trends and themes emerging from these results. A discussion of these themes relating to the extensive literature review will be discussed in Chapter Six. Full results of both questionnaires can be found in Appendix B.

5.2 Data statements

5.2.1 Data statement of the Teacher Questionnaire

Six responses to this questionnaire were received in total and there was a 100% completion rate. As was previously discussed in Chapter 4, the author will use coded names to preserve the anonymity of the conservatoires. One response was received from Conservatoire A, two from Conservatoire B, and three from Conservatoire C.

Participants were asked whether formal vocal health education was provided in any undergraduate or post-graduate degrees at their conservatoires. Four respondents selected 'no,' one selected 'yes,' and one selected 'don't know.' The result breakdown by conservatoire can be seen below in Figure 5.

Q2 Is formal instruction in vocal health provided as part of any undergraduate or postgraduate vocal performance degree at your conservatoire?

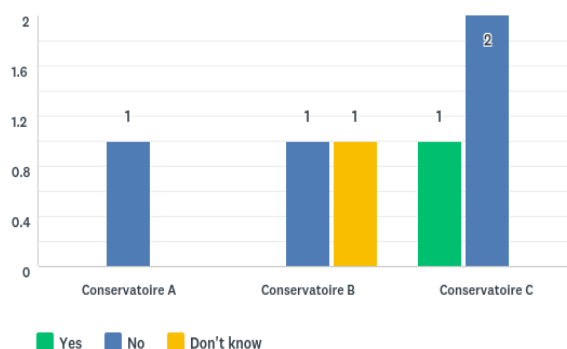


Figure 5 – provision of formal vocal health education

An open-ended question asked respondents to elaborate on their answer regarding formal vocal health education. The author cross-analysed these two questions and found that the four respondents who answered ‘no’ in Question 2 all provided a response to the open-ended Question 3, while the other two respondents did not. All four open-ended responses stated that the individual singing teachers incorporate vocal health into their lessons. One respondent stated that vocal health was also included in ‘lectures and vocal sectional classes.’ The full responses to this question can be seen below in Figure 6.

#	RESPONSES
1	It is incorporated into lessons, lectures & vocal sectional classes
2	Formal instruction in vocal health is not provided. It is left up to the individual singing teacher to give some instruction
3	I am unaware of any formal vocal health at my college. Of course individual teachers would discuss vocal health directly with their students.
4	Not formally but achieving and maintaining good vocal health would be part of my vocal teaching on a day to day basis as an ongoing part of students principal study lessons

Figure 6 – teacher responses, formal vocal health

Participants were asked to what degree they agreed or disagreed with the following statements:

1. Vocal performance students should receive vocal health education
2. Knowledge of vocal physiology and vocal health can prevent singers from injuring their voices
3. If my student experiences symptoms of ill vocal health and needs medical advice, I know what support is available to them in this conservatoire

All six teachers agreed with the first statement, with four of them strongly agreeing.

Five teachers agreed with the second statement, while one responded as neutral. The third statement had a more varied result with three teachers agreeing, one disagreeing, and two responding as neutral.

The final question was open-ended and asked participants if they had any further thoughts relating to the research. Two out of six teachers responded to this question and both gave answers relating to medical support within their conservatoires, seen below in Figure 7.

#	RESPONSES
1	If my student experiences symptoms of ill vocal health, it is up to me as the vocal teacher to give whatever assistance and information I can as there is no formal procedure in place
2	I am not aware of medical help with vocal health issues, however I am aware of contacts via my faculty colleagues.

Figure 7 – teacher responses, medical support

5.2.2 Data statement of the Student Questionnaire

Thirty-eight responses to the questionnaire were received in total. Eight of these responses were incomplete and therefore removed from the results leaving a total respondent number of thirty and a completion rate of 79%. Twenty-two respondents were female and eight were male, with seventeen respondents stating they had

teaching experience. Twenty-four respondents were undergraduate students, five were Master's students, and one was a Doctorate student. A full breakdown of respondents' demographics can be seen in Appendix B.

Two respondents had previously been diagnosed with a vocal disorder. One stated that she 'almost got nodes from over singing' and was treated with three months of steroids, antibiotics, and six months of complete vocal rest. The other respondent stated she was diagnosed with 'thickening on the chords/Prenodular' and quoted the following as her treatment:

Vocal rest (minimal singing) for one to two months and attended 8 sessions of speech therapy during this time. These being focused on breathing, onsets and exercises focused on checking when and if the vocal chords were meeting correctly.

Question 10 asked respondents what they perceived their level of knowledge to be in the following five categories:

1. Anatomy and physiology of voice production
2. Vocal disorders related to vocal abuse
3. Vocal hygiene
4. Vocally abusive behaviour
5. Symptoms of ill vocal health

78.8% of respondents indicated 'some knowledge' of the categories, 12.6% indicated 'no knowledge' and 8.6% indicated a 'thorough understanding'. A notable 37% of respondents indicated that they had no knowledge of vocal hygiene and 0% of

respondents indicated a thorough understanding of vocal disorders related to vocal abuse. Figure 8 displays the full breakdown of each category.

Q10 Please indicate your level of knowledge in the following areas:

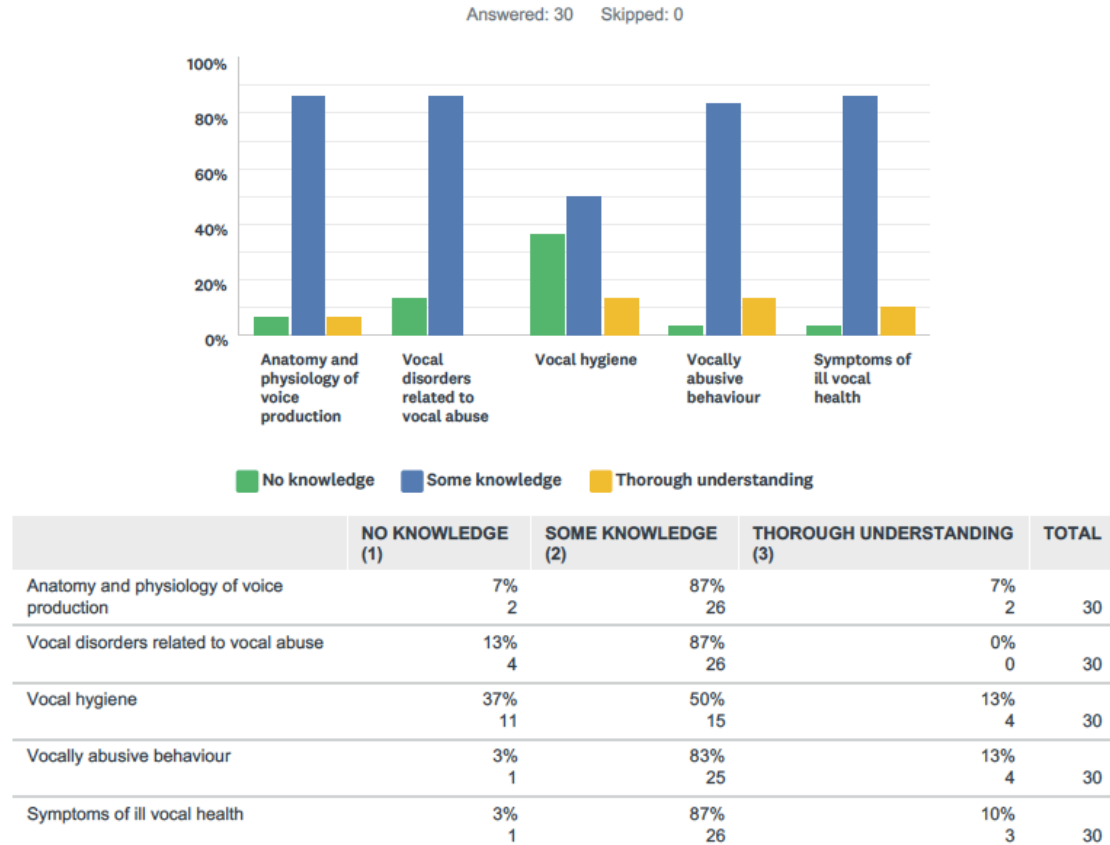
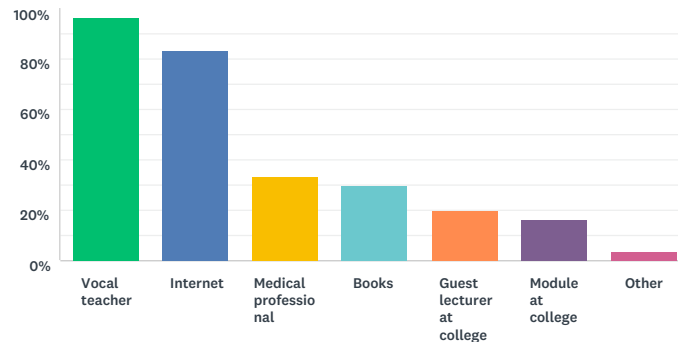


Figure 8 –Students’ perceived knowledge levels, full results

Participants were then asked where they sought their vocal health information, allowing multiple selections of sources. 97% indicated that they sought vocal health information from their vocal teacher, while 83% indicated the Internet as one of their sources. A full breakdown of the chosen sources can be seen below in Figure 9.

Q11 From which of the following sources have you sought information relating to vocal health? (Please tick any that apply)

Answered: 30 Skipped: 0



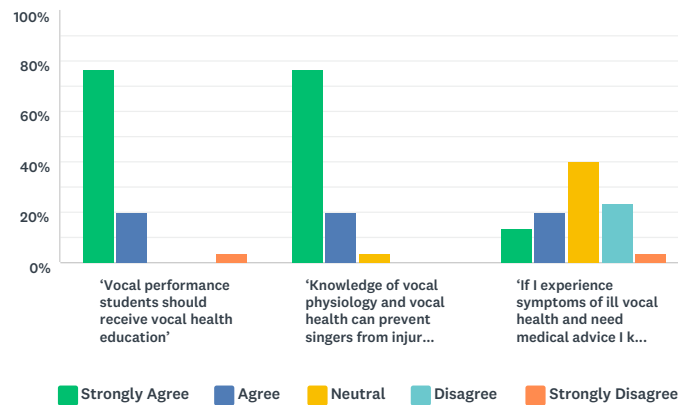
ANSWER CHOICES	RESPONSES	
Vocal teacher	97%	29
Internet	83%	25
Medical professional	33%	10
Books	30%	9
Guest lecturer at college	20%	6
Module at college	17%	5
Other	3%	1
Total Respondents: 30		

Figure 9 – sources of vocal health information

Participants were provided with the same three statements that were used in the Teacher Questionnaire and asked to what degree they agreed or disagreed with the statements. 97% of respondents agreed with the first two statements, that ‘vocal performance students should receive vocal health education’ and ‘knowledge of vocal physiology and vocal health can prevent singers from injuring their voices.’ The third statement had a more varied result with 33% agreeing, 26% disagreeing, and 40% responding as neutral to whether they knew what medical support was available within their conservatoire. A Full breakdown of results can be seen below in Figure 10.

Q12 Please select the choice that best describes your opinion about the following statements:

Answered: 30 Skipped: 0



	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL
'Vocal performance students should receive vocal health education'	77% 23	20% 6	0% 0	0% 0	3% 1	30
'Knowledge of vocal physiology and vocal health can prevent singers from injuring their voices'	77% 23	20% 6	3% 1	0% 0	0% 0	30
'If I experience symptoms of ill vocal health and need medical advice I know what support is available to me in this conservatoire'	13% 4	20% 6	40% 12	23% 7	3% 1	30

Figure 10 – student attitudes toward vocal health

Part II of the Student Questionnaire presented a series of statements to which respondents were asked to indicate ‘true,’ ‘false,’ or ‘don’t know.’ The question included fifteen statements designed to correlate with the categories from an earlier question assessing participants’ perceived vocal health knowledge. Each category had three corresponding statements designed to assess participants’ understanding of vocal health. Respondents had an overall rate of 51.1% correct answers, 19.1% incorrect answers and 29.8% answers they did not know. The most correct answers were given in the category of ‘vocally abusive behaviour’ (78.9%) and the most incorrect answers were given in the category of ‘anatomy and physiology of voice production’ (42.2%). The respondents indicated most often that they did not know the answers to statements from the category of ‘vocal disorders related to vocal abuse’ (58.8%). A full breakdown of the responses can be seen below in Figure 11.

	Correct	Incorrect	'Don't know'
Alcohol consumption causes vocal fold swelling (T)	19 (63.3%)	3 (10%)	8 (26.7%)
Difficulty with soft high pitch singing is a symptom of vocal distress (T)	7 (23.3%)	14 (46.7%)	9 (30%)
Vocal fold nodules typically require surgery (F)	15 (50%)	8 (26.7%)	7 (23.3%)
Maintaining optimal hydration can prevent vocal fold injuries (T)	24 (80%)	0	6 (20%)
Higher pitches require stretching and lengthening of the vocal folds (T)	14 (46%)	5 (16.7%)	11 (36.7%)
Ibuprofen (e.g. Nurofen) increases your risk of vocal haemorrhage (T)	9 (30%)	4 (13.3%)	17 (56.7%)
The sinuses are a resonator (F)	5 (16.7%)	21 (70%)	4 (13.3%)
Vocal fold nodules are more common in males (F)	8 (26.7%)	0	22 (73.3%)
If you experience hoarseness for more than a week you should attend a doctor (T)	29 (96.7%)	0	1 (3.3%)
'Vocal folds' and 'vocal cords' are the same thing (T)	13 (43.3%)	12 (40%)	5 (16.7%)
Vocal fold cysts generally do not require surgery (F)	4 (13.3%)	2 (6.7%)	24 (80%)
Clearing your throat is bad for your voice (T)	25 (83.3%)	4 (13.3%)	1 (3.3%)
Humming is bad for your voice (F)	27 (90%)	1 (3.3%)	2 (6.7%)
Use of decongestants (e.g. Benylin Day&Night tablets, Sinutab, Sudafed) will dehydrate the vocal folds (T)	21 (70%)	0	9 (30%)
Difficulty changing vocal registers is a symptom of vocal distress (T)	10 (33.3%)	12 (40%)	8 (26.7%)
Total percentage of responses	51.1%	19.1%	29.8%

Figure 11 – Part II responses

Part III of the questionnaire asked respondents to indicate their lifestyle behaviours in a typical week and how likely they were to alter those behaviours when preparing for a performance. The first question used a five-point Likert scale in response to twelve statements of lifestyle behaviour and the second question used a similar scale to ask how likely they were to alter their behaviour in each category. Results of both questions can be seen in the charts below (Figures 12 and 13).

	NEVER	ALMOST NEVER	SOMETIMES	ALMOST ALWAYS	ALWAYS	TOTAL
'I get at least 7 hours of sleep per night'	0.0% 0	6.7% 2	33.3% 10	40.0% 12	20.0% 6	30
'I exercise at least twice a week'	13.3% 4	6.7% 2	40.0% 12	33.3% 10	6.7% 2	30
'I carefully monitor my caffeine intake'	13.3% 4	36.7% 11	13.3% 4	30.0% 9	6.7% 2	30
'I carefully monitor my alcohol intake'	10.3% 3	0.0% 0	27.6% 8	27.6% 8	34.5% 10	29
'I take steps to reduce my stress levels'	3.3% 1	10.0% 3	53.3% 16	26.7% 8	6.7% 2	30
'I follow a balanced diet'	3.3% 1	6.7% 2	56.7% 17	26.7% 8	6.7% 2	30
'I make sure to stay well hydrated'	3.3% 1	6.7% 2	26.7% 8	43.3% 13	20.0% 6	30
'I monitor my daily speaking voice usage'	36.7% 11	26.7% 8	23.3% 7	6.7% 2	6.7% 2	30
'I monitor my daily singing voice usage'	3.3% 1	6.7% 2	23.3% 7	43.3% 13	23.3% 7	30
'I make an effort to prevent symptoms of acid reflux'	30.0% 9	10.0% 3	33.3% 10	20.0% 6	6.7% 2	30
'I avoid talking in noisy environments'	16.7% 5	6.7% 2	43.3% 13	26.7% 8	6.7% 2	30
'I consider the effect medications may have on my voice'	16.7% 5	23.3% 7	26.7% 8	20.0% 6	13.3% 4	30

Figure 12 – Students' behaviour during a typical week

	EXTREMELY UNLIKELY	UNLIKELY	NEUTRAL	LIKELY	EXTREMELY LIKELY	TOTAL
Amount and/or quality of sleep	0.0% 0	6.7% 2	6.7% 2	43.3% 13	43.3% 13	30
Amount and/or quality of physical exercise	6.7% 2	13.3% 4	36.7% 11	36.7% 11	6.7% 2	30
Caffeine intake	6.7% 2	13.3% 4	26.7% 8	33.3% 10	20.0% 6	30
Alcohol intake	0.0% 0	3.4% 1	6.9% 2	17.2% 5	72.4% 21	29
Stress reduction	0.0% 0	0.0% 0	23.3% 7	60.0% 18	16.7% 5	30
Diet	0.0% 0	10.0% 3	36.7% 11	30.0% 9	23.3% 7	30
Water intake	0.0% 0	0.0% 0	6.7% 2	40.0% 12	53.3% 16	30
Amount and duration of speaking voice use	6.7% 2	10.0% 3	13.3% 4	50.0% 15	20.0% 6	30
Amount and duration of singing voice use	0.0% 0	0.0% 0	10.0% 3	70.0% 21	20.0% 6	30
Acid reflux effects and prevention	10.0% 3	26.7% 8	36.7% 11	13.3% 4	13.3% 4	30
Talking in noisy environments	6.7% 2	10.0% 3	13.3% 4	33.3% 10	36.7% 11	30
Choice of medication	10.0% 3	13.3% 4	40.0% 12	16.7% 5	20.0% 6	30

Figure 13 – Students’ behaviour when preparing for performance

Part IV of the questionnaire comprised of one open-ended question asking respondents if they had any further thoughts relating to the research. Seven responses were received and the author coded six subject areas raised including positive and negative survey feedback, requests for further information on vocal health, comments on conservatoire environment, lack of medical support for students, and one recommendation for future research. Six out of seven responses are quoted in full in Appendix B, while the seventh response is edited to preserve the anonymity of the relevant conservatoire and singing teacher.

5.3 Data analysis

Data from both questionnaires will be analysed together under the following emerging themes identified by the author: attitudes toward vocal health education, the provision of formal vocal health education, student’s knowledge of vocal health, students’ health-promoting behaviour, the role of the singing teacher in vocal health education, and medical support in conservatoires.

5.3.1 Attitudes toward vocal health education

The first two statements investigating attitudes toward vocal health education used the exact same wording in both questionnaires. When both sets of respondents are combined, there is an overwhelming consensus of 97.2% that ‘vocal performance students should receive vocal health education.’ There is also significant agreement at 94.4% that ‘knowledge of vocal physiology and vocal health can prevent singers from injuring their voices.’ The open-ended responses in Part IV of the Student Questionnaire also indicate this interest in further vocal health education, seen below in Figure 14.

1	further information	I would love to get further information on the right answer to those questions and what is bad/good for your voice leading up to vocal performances
2	further information	positive response Thank you so much for doing this survey. Youve reinforced my need to do study vocology and the anatomy in more detail
3	further information	positive response I really enjoyed taking this survey it opened up my eyes in regards to vocal health and how little I know about it! I would love if my college introduced it in our daily lessons.

Figure 14 – Student responses, further vocal health education

This data identifies a consensus between teachers and students within Irish conservatoires that vocal health education should be provided.

5.3.2 The provision of formal vocal health education

The author’s preliminary research identified a gap in documentary evidence relating to formal vocal health education within Irish conservatoires. The Teacher

Questionnaire sought to investigate further whether this formal vocal health education was being provided. While one respondent from Conservatoire C claimed that their conservatoire did provide formal vocal health education, both other respondents from the same conservatoire disagreed. The respondent who claimed formal vocal health education was provided also did not further elaborate in any of the open-ended questions, whereas both other respondents from Conservatoire C provided elaboration. Conservatoire B respondents indicated that they did not know or that it was not provided, while the one Conservatoire C respondent indicated that it was not provided. The four respondents maintaining that it was not provided gave further details specifying that it was the responsibility of the individual singing teacher to educate their students regarding vocal health. This data combined with the author's preliminary research suggests that formal vocal health education is not currently provided by any of the three Irish conservatoires. Assessing the level of informal vocal health education by individual teachers in their lessons was beyond the scope of this study and remains a goal for future studies.

5.3.3 Students' knowledge of vocal health

The author identified a corresponding trend when comparing answers from respondents' perceived knowledge to answers demonstrating their understanding. 45.6% of respondents who claimed they had 'no knowledge' in each category gave correct answers. 50.3% of respondents who claimed they had 'some knowledge' gave correct answers. 61.5% of respondents claiming a 'thorough understanding' of each category gave correct answers. There was no statistically significant difference in the percentage of correct answers given by those who had teaching experience in comparison to those who did not. There was also no statistically significant difference

in correct answers given by undergraduates in comparison to those in Master's degrees. The one respondent at Doctorate level gave a higher percentage of correct answers but the sample size is too small to glean any statistical significance. The same can be said for the difference in sample size of males and females.

Only 8.6% of students indicated that they had a 'thorough understanding' surrounding the five given categories of vocal health. That small group of students went on to achieve 61.5% correct answers in the follow-up question. While this result is higher than the average percentage of correct answers given, it does not demonstrate a thorough understanding. The average result of 51.1% obtained by respondents indicates a gap in the vocal health knowledge of singing students in Irish conservatoires. The fact that no significant difference was identified between undergraduates, post-graduates, or those with teaching experience, indicates that this gap in knowledge is consistent across all levels of training.

5.3.4 Students' health-promoting behaviour

The author assigned a five-point rating system to the Likert scales of both questions in Part III of the Student Questionnaire. This was to establish the mean and standard deviation of the data to assist in identifying trends in the answers given. The highest standard deviation in a typical week was shown to be in the area of 'acid reflux effects and prevention' and 'choice of medication,' seen below in Figure 15.

	MINIMUM	MAXIMUM	MEDIAN	MEAN	STANDARD DEVIATION
'I make an effort to prevent symptoms of acid reflux'	1.00	5.00	3.00	2.63	1.28
'I consider the effect medications may have on my voice'	1.00	5.00	3.00	2.90	1.27

Figure 15 – High standard deviation during a typical week

Closer examinations of these two responses show an almost even dispersal of scores across all five options. The variance in behaviour of the students may indicate a lack of consensus as to what they would consider to be optimal behaviour. It may also indicate a gap in knowledge of these particular activities, or that some respondents did not feel they were relevant. This is further evidenced by the dispersal of scores in the follow-up question of how likely they were to alter their behaviour when preparing for performance, showing the high numbers that selected 'neutral.' Neutrality would indicate that those activities were possibly not deemed to be important or relevant in relation to performance periods. However, due to the closed nature of this question, it is not possible to extrapolate definitive reasons as to the identified variance. This remains a goal for future studies.

A high standard deviation of behaviour during a typical week was also seen in the category of 'alcohol intake,' which had a mean of 3.76 and a standard deviation of 1.22. However, closer examination of the scores showed that they were clustered at the higher end and the standard deviation was caused by outlier response. Most students indicated they 'sometimes', 'almost always,' or 'always' monitored their alcohol intake and three outliers indicated they 'never' monitored it. In the following question enquiring how likely they were to alter this behaviour when preparing for performance, there was a mean score of 4.59 and a low standard deviation of 0.77.

The author suggests that this trend indicates most students attach an importance to their behaviour toward alcohol intake in a typical week and are likely to improve this behaviour further in non-performance periods.

A similar trend was identified in relation to 'amount and duration of speaking voice usage' where the mean was 2.20 and the standard deviation was 1.19. Answers were clustered at the lower end indicating 63.4% of students 'almost never' or 'never' monitor their daily speaking voice usage during a typical week, with a few outliers indicating the opposite. In the follow-up question there was a mean of 3.67 and 70% of students indicated they were 'likely' or 'extremely likely' to alter this behaviour when preparing for performance. This data may suggest that students attach an importance to monitoring their speaking voice use during performance periods but deliberately choose not to engage in this behaviour during a typical week. This may show a gap in student knowledge relating to the importance of caring for the speaking voice in the context of overall vocal health.

Strong agreement between respondents was shown in the area of 'stress reduction' in a typical week, with 53.3% of students indicating that they 'sometimes' took steps to reduce their stress levels. In the follow-up question 76.7% of students were 'likely' or 'extremely likely' to alter this behaviour when preparing for performance, producing an extremely low standard deviation of 0.63. This indicates a consensus of moderate engagement regarding general student behaviour toward stress reduction in a typical week, while also suggesting that they significantly alter this behaviour when preparing for performance.

Other categories such as amount and duration of singing voice usage, hydration, and sleep habits showed a high mean and low standard deviation with scores clustered in the higher ranges during a typical week and a clear increase in mean scores during performance preparation periods. This indicates that students are aware of the importance of those habits and are engaging with them to a certain extent in typical weeks and choosing to improve their behaviour while preparing for performance.

More general lifestyle behaviour categories such as diet and exercise showed scores clustered in the middle with low standard deviation. 56.6% of students stated they ‘sometimes’ followed a balanced diet and the follow-up question showed that 36.7% of students remained neutral with regard to altering this behaviour. A similar trend was noted with the physical exercise scores clustered in the middle and with a low standard deviation. 40% of students ‘sometimes’ exercised twice a week with 33.3% ‘almost always’ engaging in that activity. In the follow-up question 36.7% also remained neutral with regard to altering this behaviour. These results indicate that students are engaging in a moderate amount of these two lifestyle behaviours during typical weeks but that they may not attach an altered importance to those behaviours when preparing for performance.

5.3.5 The role of the singing teacher in vocal health education

The open-ended responses received from the Teacher Questionnaire indicate that they deem it their responsibility to educate their students on vocal health. The role of the individual singing teacher within the current Irish context of vocal health is therefore significant. This is further evidenced by the data collected in the Student

Questionnaire indicating that 97% of respondents sought vocal health information from their individual singing teacher.

One response received in the final open-ended question indicated that a student felt they were discouraged from learning about vocal health by their teacher, stating:

In my time in [this conservatoire], reading in vocal health with my teacher was discouraged and that I was only to trust my teacher. [They] said if it hurts it's your vocal chords [sic.] getting stronger like muscles in the gym

No qualitative data was obtained from any teacher participant to suggest an attitude similar to that of the vocal teacher mentioned by this student. However, if the statement is true, it is deeply concerning that such advice was given to a student.

5.3.6 Medical support in conservatoires

If 97% of students stated that they seek vocal health information from their singing teacher; it is highly likely that they would also seek medical advice (as has been demonstrated by Petty, Weekly et al., and Norton).¹⁹⁹ Two student respondents discussed medical support in the open-ended responses, stating:

1. when [students] run into difficulties there is no support system or available facilities on treating their illness instead [it's] left to the student to pay privately for ENT's and/or speech therapy
2. there is a huge lack of ENT resources that are tailored towards singers and performers

There was no consensus regarding awareness of current available medical support in the question that was included in both the student and teacher questionnaires. When

¹⁹⁹ Petty, 'Health Information-Seeking Behaviors', 330-335; Weekly et al., 'A Vocal Health Survey', 474-478; Norton 'Health promotion for musicians', 1-13.

student and teacher respondents are combined 36.1% agreed, 25% disagreed, and 38.9% responded as neutral to knowing what medical supports are available to students within each conservatoire. Two teacher participants also used open-ended responses to raise the topic of medical support available to students, indicating that they were not aware of any support available within their conservatoires. This data combined with the author's preliminary research suggests a lack of awareness of medical support for singers in Irish conservatoires by both students and teachers.

5.4 Conclusion

A number of themes emerged during the course of data analysis that shed light on the current attitudes and practices toward vocal health education within an Irish context. This includes an apparent gap demonstrated by Irish singing students in their understanding of vocal health and their self-reported practices of health-promoting behaviour. The data also suggests that vocal health education is currently the responsibility of the individual singing teacher rather than a formal module within conservatoires. Most respondents to the questionnaires demonstrated a lack of awareness of the medical support available to students. Respondents to both questionnaires demonstrated an overwhelming consensus indicating that vocal health is desired and necessary for Irish conservatoires.

Chapter 6: Findings, Recommendations and Conclusions

6.1 Introduction

This chapter will discuss the key themes identified by the author during data analysis in relation to the extensive literature review of the first three chapters. The limitations of the research will be acknowledged and the author will provide recommendations for future research.

6.2 Key themes in relation to the literature

Analysis of the questionnaires revealed the following six key themes, all of which were also raised during the literature review:

1. Attitudes toward vocal health education
2. The provision of formal vocal health education
3. Students' knowledge of vocal health
4. Students' health-promoting behaviour
5. The role of the singing teacher in vocal health education
6. Medical support in conservatoires

6.2.1 Attitudes toward vocal health education

A clear consensus was shown by the data that vocal students have an interest in developing their knowledge of vocal health. These results are consistent with similar findings in the Braun-Janzen and Zeine, and the Kwak et al. studies, showing that singers have a high level of interest in expanding their knowledge of vocal health.²⁰⁰

The data presented by the author also demonstrated a consensus among teachers in

²⁰⁰ Braun-Janzen and Zeine, 'Singers interest in', 479-482; Kwak et al., 'Knowledge, Experience, and Anxieties', 191-195.

their attitude toward vocal health education and was consistent with the recent findings of Latham et al., where teachers agreed that vocal health instruction should be provided to students and that it could be beneficial in injury prevention.²⁰¹

6.2.2 The provision of formal vocal health education

Sapir et al., Phyland and Greenwood, Miller and Verdolini, and Kwok and Eslick all recommended the introduction of vocal health education as a method of injury prevention.²⁰² It was outlined in Chapter One that music schools in the U.S.A and Germany have begun to incorporate vocal health education over the last decade. The recent studies emerging from the ‘Musical Impact’ research conducted in the U.K, suggested musician health promotion programmes be further developed and effectively integrated into curricula.²⁰³ Broaddus-Lawrence et al., Barton and Feinberg, Zander et al., and Ziegler and Johns were presented by the author in Chapter Two as examples of varying types of prevention education programmes in the U.S.A and Germany targeted toward both general student musicians and vocal students specifically.²⁰⁴ This international context of the development of health education programmes provided the author with the rationale to investigate the Irish context. The data analysed in Chapter Five suggests that there is no formal vocal health education being provided in Ireland currently, but that the small sample size of

²⁰¹ Latham et al. ‘Vocal Health Education’, 1-7.

²⁰² Sapir et al. ‘Singers’ and non-singers’, 193-209; Phyland and Greenwood, ‘Self-reported voice problems’ 602-611; Miller and Verdolini, ‘Frequency and Risk Factors’, 348-362; Kwok and Eslick, ‘Vocal and Laryngeal Pathologies’, 1-8.

²⁰³ Perkins et al., ‘Perceived Enablers and Barriers,’ 13.

²⁰⁴ Broaddus-Lawrence et al., ‘Effects of Preventive Vocal Hygiene Education’, 58-71; Barton and Feinberg, ‘Effectiveness of an Educational Program’, 47-53; Zander et al., ‘Health Promotion and Prevention in Higher Music Education’, 54-65; Ziegler and Johns, ‘Health Promotion and Injury Prevention’, 531-541.

the teacher population aim to include informal vocal health education during their individual lessons.

6.2.3 Students' knowledge of vocal health

The data presented in Chapter Five also suggests a gap in the knowledge of vocal health displayed by singing students in an Irish context. This was consistent with the Braun-Janzen and Zeine study demonstrating that students' perceived knowledge did not match their level of understanding.²⁰⁵ The findings of Kwak et al. demonstrated that there was no difference between vocal health knowledge levels of students across all levels of training.²⁰⁶ This was also demonstrated by the data analysed from the Student Questionnaire, given that the author identified no statistically significant difference between vocal health knowledge of undergraduate or post-graduate students.

6.2.4 Students' health-promoting behaviour

A growing number of studies are investigating the preventive health behaviour of music students. Four recent studies discussed in the literature review (Achey et al., Spahn et al., Araújo et al., and Perkins et al.) found varying trends in students' health-promoting behaviour including poor overall health status, poor engagement in preventive behaviour or health responsibility, a heightened tendency toward stress and anxiety, and a fluctuation in behaviour between performance and non-performance periods.²⁰⁷ Araújo et al. noted the importance of exploring 'patterns of perceptions,

²⁰⁵ Braun-Janzen and Zeine, 'Singers interest in', 479-482.

²⁰⁶ Kwak et al., 'Knowledge, Experience, and Anxieties', 191-195.

²⁰⁷ Achey et al. 'Vocal Hygiene Habits,' 192-197; Spahn et al., 'Health status and preventive health behaviour', 213-229; Araújo et al., 'Fit to Perform', 1-19; Perkins et al., 'Perceived Enablers and Barriers,' 1-15.

attitudes, and behaviours toward health at an international level with cross-cultural representation.²⁰⁸ The data presented by the author gives a preliminary view of the self-reported behaviours of vocal students in an Irish context. It showed a low to moderate engagement in health-promoting behaviour such as physical exercise and balanced nutrition, while demonstrating a greater engagement in good sleep habits, and hydration. It also showed fluctuating behaviour relating to alcohol intake and monitoring the use of the speaking voice during performance and non-performance periods. There was moderate self-reported engagement with stress reduction and a definitive consensus in improving this behaviour when preparing for performance. These preliminary findings are largely consistent with those identified by the aforementioned studies investigating the preventive health behaviour of music students internationally.

6.2.5 The role of the singing teacher in vocal health education

Broaddus-Lawrence et al., Barton and Feinberg, and Zander et al. all raised the vital role that could be played by the singing teacher in the context of reinforcing good vocal health education.²⁰⁹ Petty, Guptil and Zaza, Palac, and Norton also recommended the important role the teacher could perform in preventing playing-related problems.²¹⁰ This significant role was also highlighted in the data presented in Chapter Five, where teachers maintained they felt it was their responsibility to provide their students with vocal health education. The students also overwhelmingly

²⁰⁸ Araújo et al., 'Fit to Perform', 15.

²⁰⁹ Broaddus-Lawrence et al., 'Effects of Preventive Vocal Hygiene Education', 58-71; Barton and Feinberg, 'Effectiveness of an Educational Program', 47-53; Zander et al., 'Health Promotion and Prevention in Higher Music Education', 54-65.

²¹⁰ Petty, 'Health Information-Seeking Behaviors', 330-335; Guptill and Zaza, 'Injury Prevention', 28-34; Palac, 'Promoting Musical Health', 18-22; Norton 'Health promotion for musicians', 1-13.

listed their vocal teachers as a source of vocal health information, which is consistent with data from many previous studies including Petty, Weekly et al., and Braun-Janzen and Zeine.²¹¹

6.2.6 Medical support in conservatoires

Latham et al. investigated the medical support available in graduate vocal performance programmes in the U.S.A and found that 78% of graduate programmes had some type of affiliation with a physician or medical practice.²¹² Spahn et al. confirmed ‘musicians’ medicine programmes’ that are affiliated with certain universities of music in Germany.²¹³ Perkins et al. and Atkins provided conflicting reports of what medical support services are available to students in the U.K.²¹⁴ This author’s data analysis of the online questionnaires presented an unclear picture of what medical supports are available to students in an Irish context. Neither teachers nor students presented a consensus in the quantitative data on what medical supports they perceived to be available to them, but both groups of participants raised the subject in the qualitative data. Teachers suggested that there was no current formal method of medical support, with one teacher stating they had an informal network between colleagues who may suggest suitable contacts. Some students highlighted the lack of medical support as a pressing issue, maintaining that it was up to the students to pay for a private referral to an Ear Nose and Throat Consultant or a Speech Language Therapist.

²¹¹ Petty, ‘Health Information-Seeking Behaviors’, 330-335; Weekly et al., ‘A Vocal Health Survey’, 474-478; Braun-Janzen and Zeine, ‘Singers interest in’, 479-482.

²¹² Latham et al. ‘Vocal Health Education’, 4.

²¹³ Spahn et al., ‘Health status and preventive health behaviour’, 226.

²¹⁴ Perkins et al., ‘Perceived Enablers and Barriers’, 1-15; Atkins, ‘Occupational health and wellbeing in the UK conservatoire sector’, 243–248.

6.3 Limitations of the research

The author acknowledges several limitations to this research. The nature of the questionnaire as a research method meant that respondents (particularly in the Student Questionnaire) were not afforded the opportunity to elaborate on their answers. The author knew of this limitation in advance and included an open-ended question at the end of the questionnaire, but acknowledges that respondents may have forgotten some of the thoughts they developed earlier on in the questionnaire due to its length. The length of the questionnaire may have also contributed to the fact that eight responses remained incomplete.

One participant reported a survey limitation in an open-ended response to the Student Questionnaire highlighting a limitation in Part III. In the first question of Part III relating to ‘alcohol intake,’ participants were not afforded the option of stating that they do not drink alcohol. The author acknowledges that this may have contributed to at least one of the outlier responses received in that question.

The author also acknowledges the small sample size of the respondents (particularly to the Teacher Questionnaire), resolving that any conclusions drawn from the data should be preliminary and would be best qualified with further research.

6.4 Recommendations and conclusions

The available literature seems to suggest an international consensus that formal vocal health education is beneficial and that it may help in preventing vocal injury. The author’s research data preliminarily suggests that formal vocal health is not currently provided in Ireland. Therefore, the author recommends development of a vocal health

education programme in Irish conservatoires, employing a multi-disciplinary approach in both design and teaching.

There are very few studies investigating the actual vocal health education curricula currently being taught to singing students internationally. Future research into the area of both formal and informal vocal health education would provide a more comprehensive picture of the international context. It would also inform the future development of vocal health education in countries that might not currently have any.

Research investigating the efficacy of different types of prevention programmes currently being taught would be infinitely beneficial within both the current international context and the future Irish context. Establishing what methods of programme design and teaching produce comprehensive results would reliably inform the creation of future prevention programmes.

The author's self-reporting quantitative data presenting the health promoting behaviours of a small number of Irish students provided a preliminary representation of the Irish context. Future qualitative research assessing the actual practices of students' health-promoting behaviour and the motivations behind those practices would be significantly beneficial in the development of health-promotion and injury prevention programmes in Ireland. As Araújo et al. recommended: cross-cultural representation is important when investigating the attitudes and behaviour of music students.²¹⁵ This applies to Ireland and to others within the music community internationally who have yet to conduct this type of research.

²¹⁵ Araújo et al., 'Fit to Perform', 15.

Studies investigating the cost-efficacy of different types of prevention programmes are highly recommended, given the conclusion presented in Chapter Two that a multi-disciplinary approach in both design and teaching seems to be producing the most comprehensive changes in students' knowledge and behaviour. The Ziegler and Johns study utilised many professionals from different fields of expertise, which may render a prevention programme monetarily unsustainable in certain countries. Studies investigating the associated costs of existing programmes may inform the structure of future programmes.

Norton's investigation into the potential role played by teachers in prevention education is significant and warrants further research. Her preliminary data suggests that there may be a gap in teachers' knowledge of musicians' health, and that teachers are requesting training prior to taking an active role in health-promotion education.²¹⁶ This author recommends similar research be conducted into the vocal health knowledge levels of vocal teachers and whether they are willing to play a role in formal vocal health education for their students.

This author is unaware of any current study investigating the medical support available within Irish conservatoires, or the method of medical referral available to singers in Ireland. Research is recommended to establish what medical resources specifically tailored to professional voice users are available to Irish singers when they experience vocal problems, and whether there is a current system of informal or formal medical referral within conservatoires.

²¹⁶ Norton 'Health promotion for musicians', 8.

The author recommends that research be conducted into the feasibility and cost-efficacy of baseline vocal screening at the beginning of third-level study in an Irish context, based on the significance of such screening discussed in Chapter Three. More research in this area specifically at third-level is also recommended internationally.

The gap in clinicians' knowledge of vocal health identified by McKinnon-Howe and Dowdall suggests that further research should be conducted within this area internationally.²¹⁷ This author recommends that research be conducted into clinicians' and pharmacists' vocal health knowledge specifically within an Irish context; given the potential benefit this may provide Irish professional voice users.

In conclusion, the primary objective of this research was to investigate attitudes and practices toward vocal health within an Irish context. Through engaging with an extensive literature review and obtaining data using online questionnaires, the author has provided a preliminary indication of the attitudes and practices toward vocal health in Ireland. The author identified key themes emerging from both the data and the literature, and identified many areas for further research within both an international context and an Irish context. The author acknowledges that this thesis is limited and considers it a humble contribution to the ongoing research of vocal health education. Through this dissertation, the author hopes to provide a rationale for continued research in this area, particularly within an Irish context.

²¹⁷ McKinnon-Howe and Dowdall, 'Identifying Knowledge Gaps in Clinicians', 1-9.

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Appendix A

Teacher Questionnaire

Thank you for agreeing to take part in this Vocal Health Education Survey, which explores vocal health education in Irish third-level conservatoires (namely DIT, CIT, and RIAM).

This survey should take less than 5 minutes to complete. All respondents to this survey will remain anonymous.

If you currently teach at more than one conservatoire, please follow one of these options:

1. Fill out the survey for the conservatoire you have the best working knowledge of

OR

2. Complete a separate survey for each conservatoire

If you have any queries or concerns about this research, please feel free to contact me at eimearmccarthyLUDDY@riam.ie

* 1. Which conservatoire are you currently a vocal faculty member of?

- DIT
- CIT
- RIAM

* 2. Is formal instruction in vocal health provided as part of any undergraduate or postgraduate vocal performance degree at your conservatoire?

- Yes
- No
- Don't know

3. If you answered 'yes' or 'no' in Question 2 please provide any relevant details below:

* 4. Please select the choice that best describes your opinion about the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
'Vocal performance students should receive vocal health education'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Knowledge of vocal physiology and vocal health can prevent singers from injuring their voices'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'If my student experiences symptoms of ill vocal health and needs medical advice, I know what support is available to them in this conservatoire'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. If you have any further comments you feel are relevant to this research, please provide details below:

Student Questionnaire

Thank you for agreeing to take part in this Student Vocal Health Survey. Your feedback is extremely valuable to this research project.

On the following pages you will be asked a number of questions about your knowledge, opinions and behaviour relating to vocal health. The survey should take 5 to 10 minutes to complete.

Please answer each question as honestly as you can. All respondents to this survey will remain anonymous.

If you have any queries or concerns relating to this research please feel free to contact me at eimearmccarthy@riam.ie

Part I

* 1. Which conservatoire are you currently attending?

- DIT
- CIT
- RIAM

* 2. What type of degree are you currently enrolled in?

* 3. What year of this degree are you currently in?

- Year 1
- Year 2
- Year 3
- Year 4 and above

* 4. Please indicate your age range:

- 18-21
- 22-25
- 26-29
- 30+

* 5. To which gender do you most identify?

- Female
- Male
- Gender Non-Conforming
- Prefer Not to Answer
- Not Listed Here (please specify)

* 6. Do you have any vocal teaching experience?

- Yes
- No

7. If you answered 'yes' to Question 6, please indicate how many years teaching experience you have:

- 1-5
- 5-10
- 10-20
- 20+

* 8. Have you ever been diagnosed with a vocal disorder?

- Yes
- No

9. If you answered 'yes' to Question 8, please provide details of the diagnosis and any treatment received as a result:

Part I

* 10. Please indicate your level of knowledge in the following areas:

	No knowledge	Some knowledge	Thorough understanding
Anatomy and physiology of voice production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocal disorders related to vocal abuse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocal hygiene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocally abusive behaviour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Symptoms of ill vocal health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 11. From which of the following sources have you sought information relating to vocal health? (Please tick any that apply)

- Vocal teacher
- Internet
- Books
- Medical professional
- Module at college
- Guest lecturer at college
- None of the above
- Other (please specify)

* 12. Please select the choice that best describes your opinion about the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
'Vocal performance students should receive vocal health education'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Knowledge of vocal physiology and vocal health can prevent singers from injuring their voices'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'If I experience symptoms of ill vocal health and need medical advice I know what support is available to me in this conservatoire'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 13. Please select an answer for each of the following statements

	Don't Know	True	False
Alcohol consumption causes vocal fold swelling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty with soft high pitch singing is a symptom of vocal distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocal fold nodules typically require surgery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintaining optimal hydration can prevent vocal fold injuries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Higher pitches require stretching and lengthening of the vocal folds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ibuprofen (e.g. Nurofen) increases your risk of vocal haemorrhage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The sinuses are a resonator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocal fold nodules are more common in males	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you experience hoarseness for more than a week you should attend a doctor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'Vocal folds' and 'vocal cords' are the same thing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vocal fold cysts generally do not require surgery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clearing your throat is bad for your voice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Humming is bad for your voice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of decongestants (e.g. Benylin Day&Night tablets, Sinutab, Sudafed) will dehydrate the vocal folds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty changing vocal registers is a symptom of vocal distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part III

* 14. Please select the choice that best describes your behaviour towards the following activities during a **typical week**:

	Never	Almost Never	Sometimes	Almost Always	Always
'I get at least 7 hours of sleep per night'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I exercise at least twice a week'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I carefully monitor my caffeine intake'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I carefully monitor my alcohol intake'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I take steps to reduce my stress levels'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I follow a balanced diet'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I make sure to stay well hydrated'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I monitor my daily speaking voice usage'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I monitor my daily singing voice usage'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I make an effort to prevent symptoms of acid reflux'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I avoid talking in noisy environments'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
'I consider the effect medications may have on my voice'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 15. How likely are you to alter your behaviour relating to the following activities when preparing for a performance?

	Extremely Unlikely	Unlikely	Neutral	Likely	Extremely Likely
Amount and/or quality of sleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount and/or quality of physical exercise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Caffeine intake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alcohol intake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stress reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Water intake	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount and duration of speaking voice use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Amount and duration of singing voice use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Acid reflux effects and prevention	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talking in noisy environments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choice of medication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part IV

16. If you have any further comments relating to this research, please provide details below:

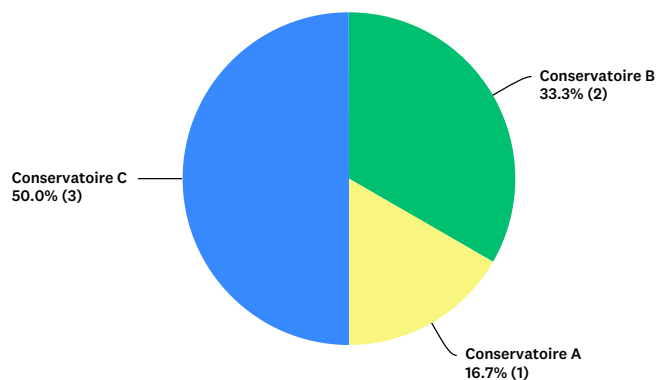
Thank you for taking the time to fill out this survey. Your responses are extremely helpful for this research project.

Appendix B

Results of the Teacher Questionnaire

Q1 Which conservatoire are you currently a vocal faculty member of?

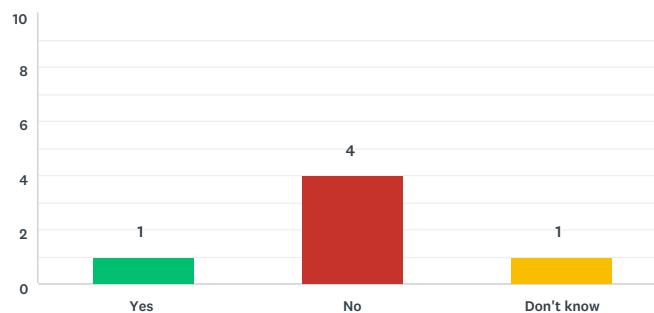
Answered: 6 Skipped: 0



ANSWER CHOICES	RESPONSES	
Conservatoire B	33.3%	2
Conservatoire A	16.7%	1
Conservatoire C	50.0%	3
TOTAL		6

Q2 Is formal instruction in vocal health provided as part of any undergraduate or postgraduate vocal performance degree at your conservatoire?

Answered: 6 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	17%	1
No	67%	4
Don't know	17%	1
TOTAL		6

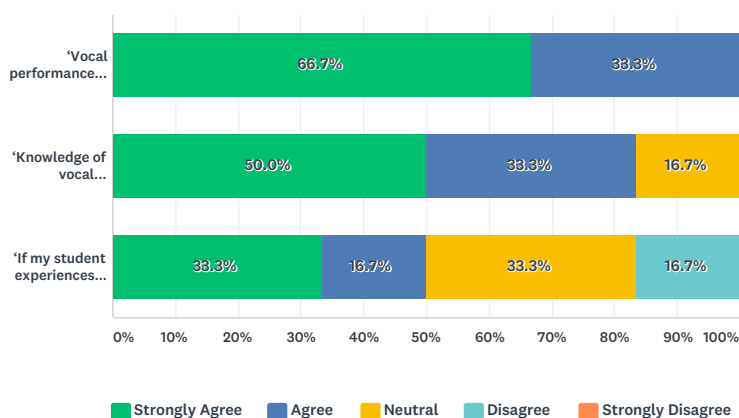
Q3 If you answered 'yes' or 'no' in Question 2 please provide any relevant details below:

Answered: 4 Skipped: 2

#	RESPONSES	DATE
1	It is incorporated into lessons, lectures & vocal sectional classes	5/25/2018 1:18 PM
2	Formal instruction in vocal health is not provided. It is left up to the individual singing teacher to give some instruction	4/23/2018 8:52 PM
3	I am unaware of any formal vocal health at my college. Of course individual teachers would discuss vocal health directly with their students.	4/23/2018 1:47 PM
4	Not formally but achieving and maintaining good vocal health would be part of my vocal teaching on a day to day basis as an ongoing part of students principal study lessons	2/23/2018 6:25 PM

Q4 Please select the choice that best describes your opinion about the following statements:

Answered: 6 Skipped: 0



	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL
'Vocal performance students should receive vocal health education'	66.7% 4	33.3% 2	0.0% 0	0.0% 0	0.0% 0	6
'Knowledge of vocal physiology and vocal health can prevent singers from injuring their voices'	50.0% 3	33.3% 2	16.7% 1	0.0% 0	0.0% 0	6
'If my student experiences symptoms of ill vocal health and needs medical advice, I know what support is available to them in this conservatoire'	33.3% 2	16.7% 1	33.3% 2	16.7% 1	0.0% 0	6

Q5 If you have any further comments you feel are relevant to this research, please provide details below:

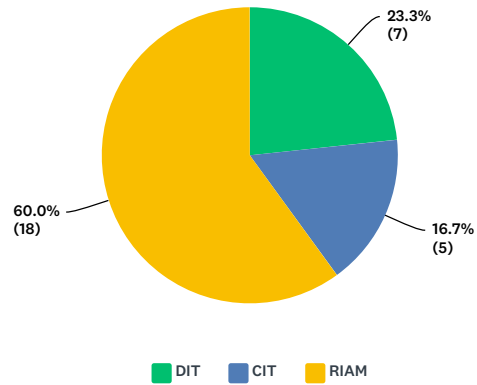
Answered: 2 Skipped: 4

#	RESPONSES	DATE
1	If my student experiences symptoms of ill vocal health, it is up to me as the vocal teacher to give whatever assistance and information I can as there is no formal procedure in place	4/23/2018 8:52 PM
2	I am not aware of medical help with vocal health issues, however I am aware of contacts via my faculty colleagues.	4/23/2018 1:47 PM

Results of the Student Questionnaire

Q1 Which conservatoire are you currently attending?

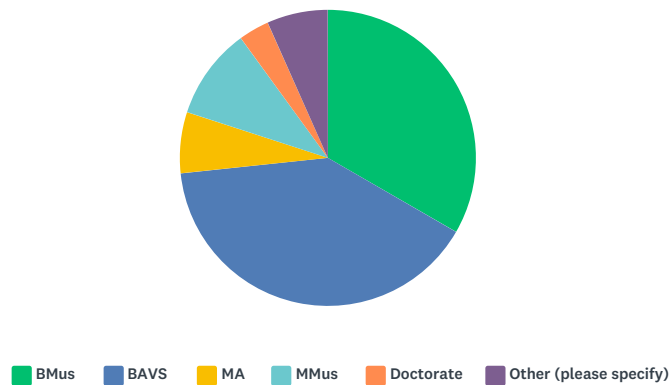
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
DIT	23.3%	7
CIT	16.7%	5
RIAM	60.0%	18
TOTAL		30

Q2 What type of degree are you currently enrolled in?

Answered: 30 Skipped: 0

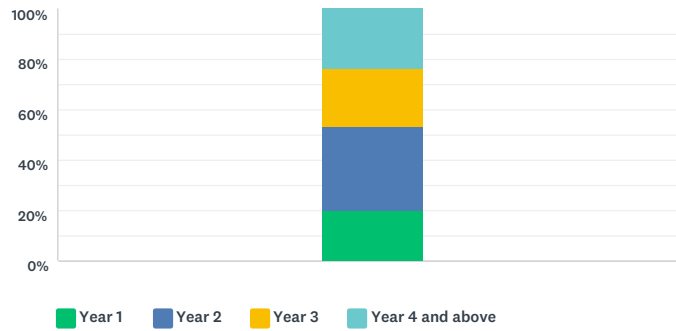


ANSWER CHOICES	RESPONSES	
BMus	33.3%	10
BAVS	40.0%	12
MA	6.7%	2
MMus	10.0%	3
Doctorate	3.3%	1
Other (please specify)	6.7%	2
TOTAL		30

#	OTHER (PLEASE SPECIFY)	DATE
1	BAPM	5/28/2018 2:56 PM
2	BAPM	5/25/2018 1:55 PM

Q3 What year of this degree are you currently in?

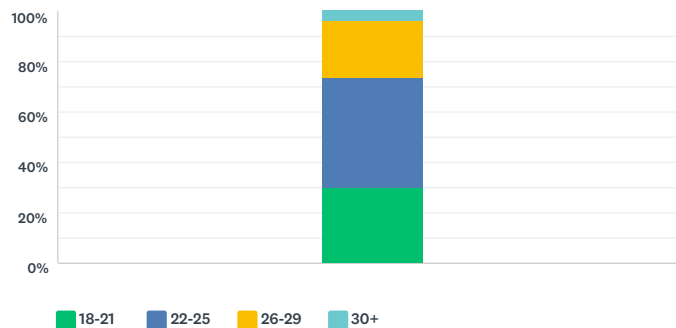
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Year 1	20.0%	6
Year 2	33.3%	10
Year 3	23.3%	7
Year 4 and above	23.3%	7
TOTAL		30

Q4 Please indicate your age range:

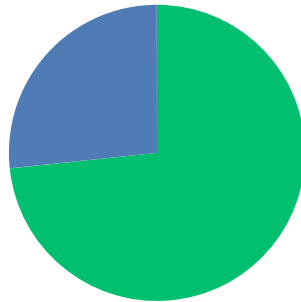
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
18-21	30.0%	9
22-25	43.3%	13
26-29	23.3%	7
30+	3.3%	1
TOTAL		30

Q5 To which gender do you most identify?

Answered: 30 Skipped: 0



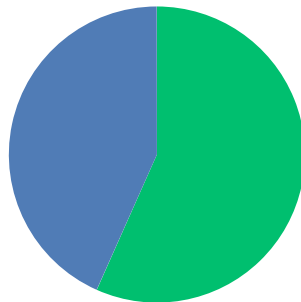
Female Male

ANSWER CHOICES		RESPONSES	
Female		73.3%	22
Male		26.7%	8
TOTAL			30

#	NOT LISTED HERE (PLEASE SPECIFY)	DATE
	There are no responses.	

Q6 Do you have any vocal teaching experience?

Answered: 30 Skipped: 0

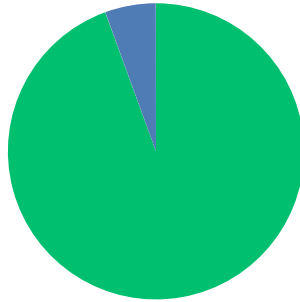


Yes No

ANSWER CHOICES		RESPONSES	
Yes		56.7%	17
No		43.3%	13
TOTAL			30

Q7 If you answered 'yes' to Question 6, please indicate how many years teaching experience you have:

Answered: 18 Skipped: 12

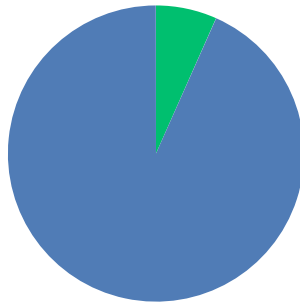


1-5 5-10

ANSWER CHOICES	RESPONSES	
1-5	94.4%	17
5-10	5.6%	1
TOTAL		18

Q8 Have you ever been diagnosed with a vocal disorder?

Answered: 30 Skipped: 0



Yes No

ANSWER CHOICES	RESPONSES	
Yes	6.7%	2
No	93.3%	28
TOTAL		30

Q9 If you answered 'yes' to Question 8, please provide details of the diagnosis and any treatment received as a result:

Answered: 6 Skipped: 24

Showing 2 responses with diagnosed vocal disorder [Clear](#)

diagnosed vocal disorder When I was 16. I was doing too many hours of singing a week that I almost got nodes from over singing. 3 months of steroids and antibiotics and 6 months of complet vocal rest.

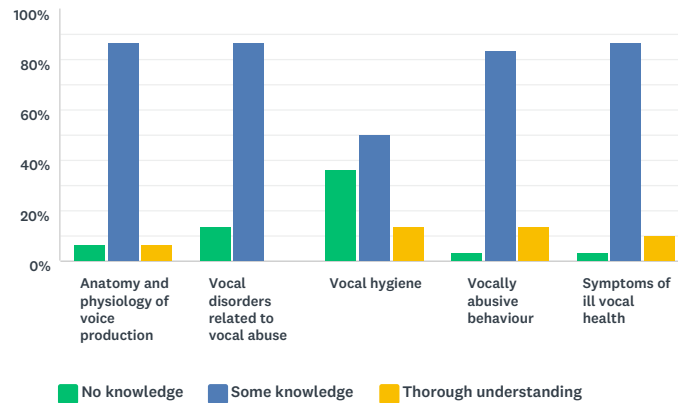
4/23/2018 1:46 PM [View respondent's answers](#) [Add Tags](#) ▼

diagnosed vocal disorder Thickening on the chords/Prenodular. Vocal rest (minimal singing) for one to two months and attended 8 sessions of speech therapy during this time. These being focused on breathing, onset's and exercises focused on checking when and if the vocal chords were meeting correctly.

2/9/2018 9:13 PM [View respondent's answers](#) [Add Tags](#) ▼

Q10 Please indicate your level of knowledge in the following areas:

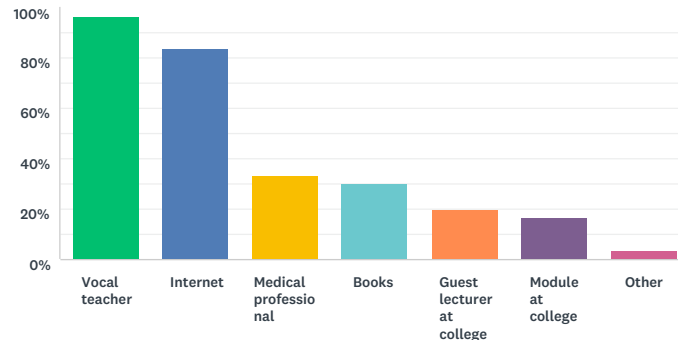
Answered: 30 Skipped: 0



	NO KNOWLEDGE	SOME KNOWLEDGE	THOROUGH UNDERSTANDING	TOTAL
Anatomy and physiology of voice production	7% 2	87% 26	7% 2	30
Vocal disorders related to vocal abuse	13% 4	87% 26	0% 0	30
Vocal hygiene	37% 11	50% 15	13% 4	30
Vocally abusive behaviour	3% 1	83% 25	13% 4	30
Symptoms of ill vocal health	3% 1	87% 26	10% 3	30

Q11 From which of the following sources have you sought information relating to vocal health? (Please tick any that apply)

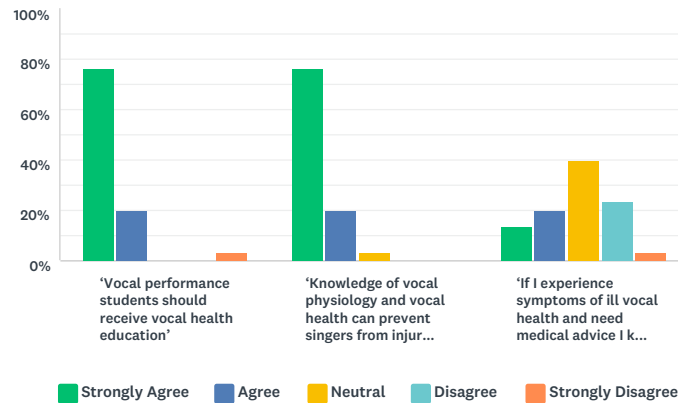
Answered: 30 Skipped: 0



ANSWER CHOICES	RESPONSES	
Vocal teacher	97%	29
Internet	83%	25
Medical professional	33%	10
Books	30%	9
Guest lecturer at college	20%	6
Module at college	17%	5
Other	3%	1
Total Respondents: 30		

Q12 Please select the choice that best describes your opinion about the following statements:

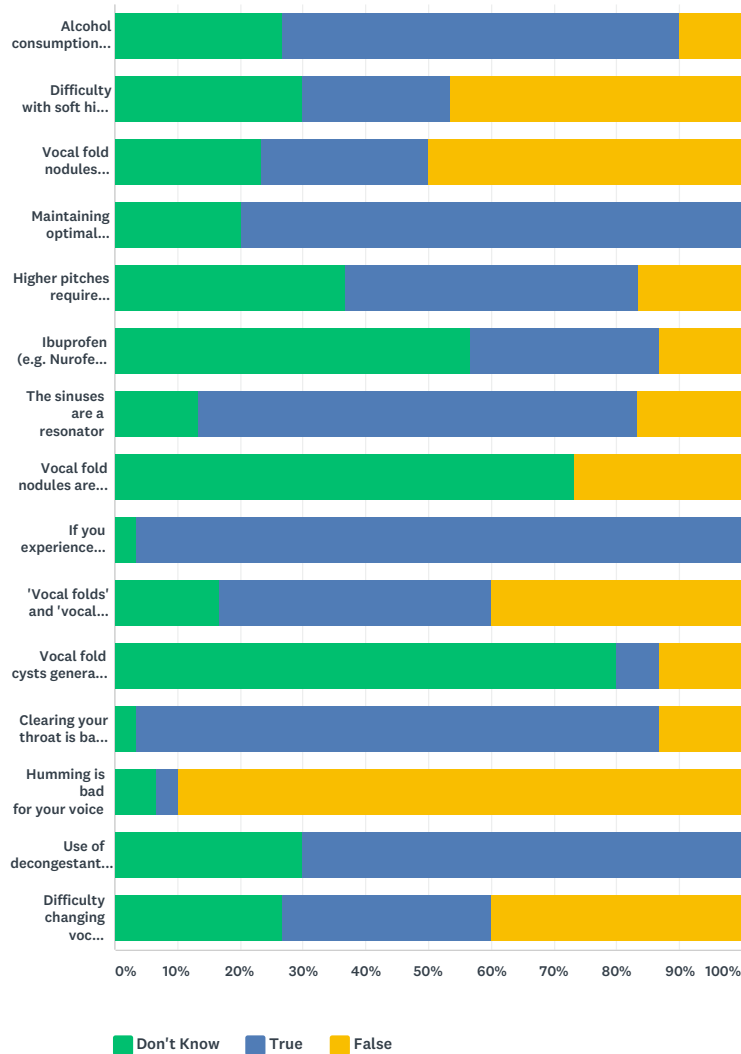
Answered: 30 Skipped: 0



	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	TOTAL
'Vocal performance students should receive vocal health education'	77% 23	20% 6	0% 0	0% 0	3% 1	30
'Knowledge of vocal physiology and vocal health can prevent singers from injuring their voices'	77% 23	20% 6	3% 1	0% 0	0% 0	30
'If I experience symptoms of ill vocal health and need medical advice I know what support is available to me in this conservatoire'	13% 4	20% 6	40% 12	23% 7	3% 1	30

Q13 Please select an answer for each of the following statements:

Answered: 30 Skipped: 0

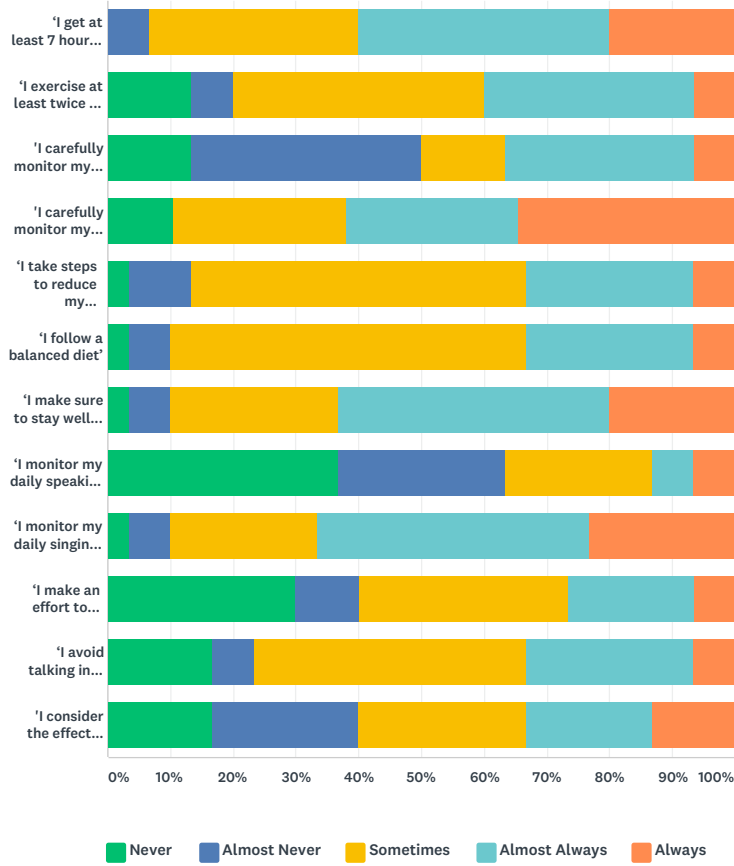


	DON'T KNOW	TRUE	FALSE	TOTAL
Alcohol consumption causes vocal fold swelling	26.7% 8	63.3% 19	10.0% 3	30
Difficulty with soft high pitch singing is a symptom of vocal distress	30.0% 9	23.3% 7	46.7% 14	30
Vocal fold nodules typically require surgery	23.3% 7	26.7% 8	50.0% 15	30

Maintaining optimal hydration can prevent vocal fold injuries	20.0% 6	80.0% 24	0.0% 0	30
Higher pitches require stretching and lengthening of the vocal folds	36.7% 11	46.7% 14	16.7% 5	30
Ibuprofen (e.g. Nurofen) increases your risk of vocal haemorrhage	56.7% 17	30.0% 9	13.3% 4	30
The sinuses are a resonator	13.3% 4	70.0% 21	16.7% 5	30
Vocal fold nodules are more common in males	73.3% 22	0.0% 0	26.7% 8	30
If you experience hoarseness for more than a week you should attend a doctor	3.3% 1	96.7% 29	0.0% 0	30
'Vocal folds' and 'vocal cords' are the same thing	16.7% 5	43.3% 13	40.0% 12	30
Vocal fold cysts generally do not require surgery	80.0% 24	6.7% 2	13.3% 4	30
Clearing your throat is bad for your voice	3.3% 1	83.3% 25	13.3% 4	30
Humming is bad for your voice	6.7% 2	3.3% 1	90.0% 27	30
Use of decongestants (e.g. Benylin Day&Night tablets, Sinutab, Sudafed) will dehydrate the vocal folds	30.0% 9	70.0% 21	0.0% 0	30
Difficulty changing vocal registers is a symptom of vocal distress	26.7% 8	33.3% 10	40.0% 12	30

Q14 Please select the choice that best describes your behaviour towards the following activities during a typical week:

Answered: 30 Skipped: 0



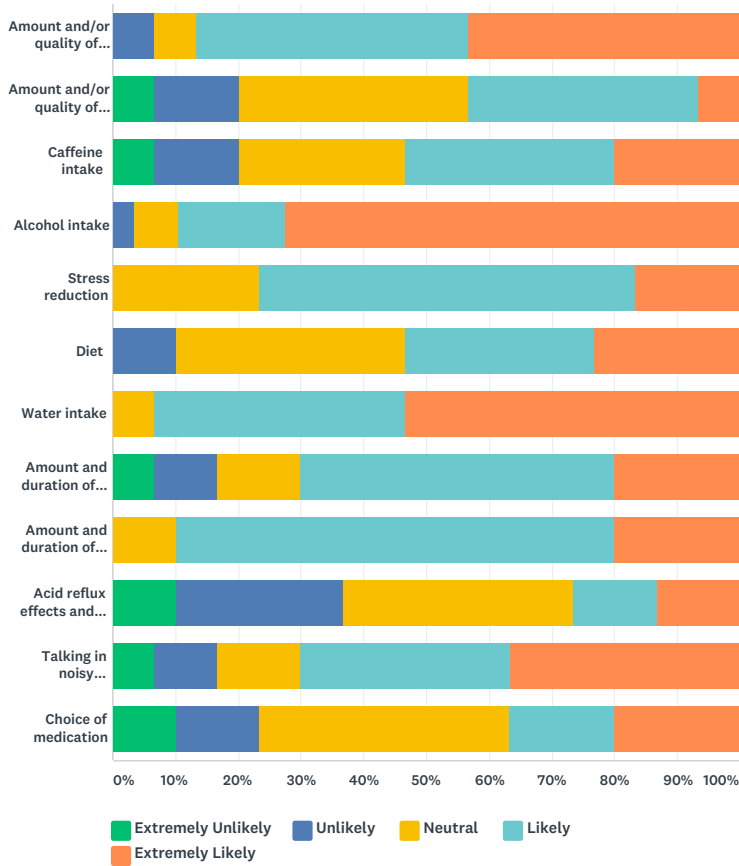
	NEVER (1)	ALMOST NEVER (2)	SOMETIMES (3)	ALMOST ALWAYS (4)	ALWAYS (5)	TOTAL
'I get at least 7 hours of sleep per night'	0.0% 0	6.7% 2	33.3% 10	40.0% 12	20.0% 6	30
'I exercise at least twice a week'	13.3% 4	6.7% 2	40.0% 12	33.3% 10	6.7% 2	30
'I carefully monitor my caffeine intake'	13.3% 4	36.7% 11	13.3% 4	30.0% 9	6.7% 2	30
'I carefully monitor my alcohol intake'	10.3% 3	0.0% 0	27.6% 8	27.6% 8	34.5% 10	29
'I take steps to reduce my stress levels'	3.3% 1	10.0% 3	53.3% 16	26.7% 8	6.7% 2	30

'I follow a balanced diet'	3.3%	6.7%	56.7%	26.7%	6.7%	
	1	2	17	8	2	30
'I make sure to stay well hydrated'	3.3%	6.7%	26.7%	43.3%	20.0%	
	1	2	8	13	6	30
'I monitor my daily speaking voice usage'	36.7%	26.7%	23.3%	6.7%	6.7%	
	11	8	7	2	2	30
'I monitor my daily singing voice usage'	3.3%	6.7%	23.3%	43.3%	23.3%	
	1	2	7	13	7	30
'I make an effort to prevent symptoms of acid reflux'	30.0%	10.0%	33.3%	20.0%	6.7%	
	9	3	10	6	2	30
'I avoid talking in noisy environments'	16.7%	6.7%	43.3%	26.7%	6.7%	
	5	2	13	8	2	30
'I consider the effect medications may have on my voice'	16.7%	23.3%	26.7%	20.0%	13.3%	
	5	7	8	6	4	30

BASIC STATISTICS						
	MINIMUM	MAXIMUM	MEDIAN	MEAN	STANDARD DEVIATION	
'I follow a balanced diet'	1.00	5.00	3.00	3.27	0.81	
'I take steps to reduce my stress levels'	1.00	5.00	3.00	3.23	0.84	
'I get at least 7 hours of sleep per night'	2.00	5.00	4.00	3.73	0.85	
'I make sure to stay well hydrated'	1.00	5.00	4.00	3.70	0.97	
'I monitor my daily singing voice usage'	1.00	5.00	4.00	3.77	0.99	
'I exercise at least twice a week'	1.00	5.00	3.00	3.13	1.09	
'I avoid talking in noisy environments'	1.00	5.00	3.00	3.00	1.13	
'I monitor my daily speaking voice usage'	1.00	5.00	2.00	2.20	1.19	
'I carefully monitor my caffeine intake'	1.00	5.00	2.50	2.80	1.19	
'I carefully monitor my alcohol intake'	1.00	5.00	4.00	3.76	1.22	
'I consider the effect medications may have on my voice'	1.00	5.00	3.00	2.90	1.27	
'I make an effort to prevent symptoms of acid reflux'	1.00	5.00	3.00	2.63	1.28	

Q15 How likely are you to alter your behaviour relating to the following activities when preparing for a performance?

Answered: 30 Skipped: 0



	EXTREMELY UNLIKELY (1)	UNLIKELY (2)	NEUTRAL (3)	LIKELY (4)	EXTREMELY LIKELY (5)	TOTAL
Amount and/or quality of sleep	0.0% 0	6.7% 2	6.7% 2	43.3% 13	43.3% 13	30
Amount and/or quality of physical exercise	6.7% 2	13.3% 4	36.7% 11	36.7% 11	6.7% 2	30
Caffeine intake	6.7% 2	13.3% 4	26.7% 8	33.3% 10	20.0% 6	30
Alcohol intake	0.0% 0	3.4% 1	6.9% 2	17.2% 5	72.4% 21	29
Stress reduction	0.0% 0	0.0% 0	23.3% 7	60.0% 18	16.7% 5	30

Diet	0.0% 0	10.0% 3	36.7% 11	30.0% 9	23.3% 7	30
Water intake	0.0% 0	0.0% 0	6.7% 2	40.0% 12	53.3% 16	30
Amount and duration of speaking voice use	6.7% 2	10.0% 3	13.3% 4	50.0% 15	20.0% 6	30
Amount and duration of singing voice use	0.0% 0	0.0% 0	10.0% 3	70.0% 21	20.0% 6	30
Acid reflux effects and prevention	10.0% 3	26.7% 8	36.7% 11	13.3% 4	13.3% 4	30
Talking in noisy environments	6.7% 2	10.0% 3	13.3% 4	33.3% 10	36.7% 11	30
Choice of medication	10.0% 3	13.3% 4	40.0% 12	16.7% 5	20.0% 6	30

BASIC STATISTICS						
	MINIMUM	MAXIMUM	MEDIAN	MEAN	STANDARD DEVIATION	
Amount and duration of singing voice use	3.00	5.00	4.00	4.10		0.54
Water intake	3.00	5.00	5.00	4.47		0.62
Stress reduction	3.00	5.00	4.00	3.93		0.63
Alcohol intake	2.00	5.00	5.00	4.59		0.77
Amount and/or quality of sleep	2.00	5.00	4.00	4.23		0.84
Diet	2.00	5.00	4.00	3.67		0.94
Amount and/or quality of physical exercise	1.00	5.00	3.00	3.23		0.99
Amount and duration of speaking voice use	1.00	5.00	4.00	3.67		1.11
Caffeine intake	1.00	5.00	4.00	3.47		1.15
Acid reflux effects and prevention	1.00	5.00	3.00	2.93		1.15
Choice of medication	1.00	5.00	3.00	3.23		1.20
Talking in noisy environments	1.00	5.00	4.00	3.83		1.21

Q16. If you have any further comments relating to this research, please provide details below:²¹⁸

1. [further information] I would love to get further information on the right answer to those questions and what is bad/good for your voice leading up to vocal performances
2. [further information] [positive response] Thank you so much for doing this survey. Youve reinforced my need to do study vocology and the anatomy in more detail
3. [further information] [positive response] I really enjoyed taking this survey it opened up my eyes in regards to vocal health and how little I know about it! I would love if my college introduced it in our daily lessons.
4. [survey limitation] I don't drink One could ask about voice use without mentioning academic courses; this survey is definitely not anonymous for me²¹⁹

²¹⁸ This question could not be added to the Appendix directly from Survey Monkey due to a conservatoire and vocal teacher being directly named in one of the responses. Responses 1-6 are quoted in full as they appeared, while Response 7 is edited to preserve anonymity. The author's subject tags are added at the beginning of each quote.

5. [future research] [medical support] there is a huge lack of ENT resources that are tailored towards singers and performers, it would be interesting to see a comparison between the irish services for singers and the services in london and wider europe.
6. [conservatoire environment] [medical support] Vocal difficulties seem to be viewed as a taboo in conservatories rather than a subject which should be spoken about and taught to students in order to prevent vocal illnesses. When there are clear signs of a student having vocal troubles they are rarely approached by lecturers despite them often being aware of the signs that this student is in the early stages of vocal trouble at the risk of interfering. It is upsetting to see the number of students who enter the degree and have suffered from nodules at some point and that they are not educated on preventing vocal illnesses, also when they run into difficulties that there is no support system or available facilities on treating their illness instead left to the student to pay privately for ENT's and/or speech therapy.
7. [conservatoire environment] [medical support] In my time in [this conservatoire], reading in vocal health with my teacher was discouraged and that I was only to trust my teacher. [They] said if it hurts it's your vocal chords getting stronger like muscles in the gym. That was [vocal teacher]. Don't know if that's relevant but throwing it in!

²¹⁹ This respondent did not state what specific concern they had about their anonymity. The author took great care in preserving the anonymity of all participants and this respondent still remains anonymous to the author. The author also provided assurances of anonymity both in the cover letter and the first page of the questionnaire, in addition to ensuring that participants had the option to withdraw from the questionnaire at any point. Since the respondent chose to complete and submit the questionnaire and they remain anonymous to the author, the author chose to keep the respondent as part of the data.