

## Learning to Belt: Late-Adolescent Female Singers and Fostering Sustainability

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**ABSTRACT:** This study investigates the current notions and experiences of belting from the perspectives of late-adolescent female vocalists aiming to enhance the understanding of sustainable belting practices. A practice-led, semi-structured study was conducted involving five participants simulating real-world exploration and application of sustainable belt techniques. The study encompassed a total of five 'vocal sessions', three 'vocal profiles', and four questionnaires per participant. Throughout the eight-week practice-led study, a notable shift in the participants' understanding of belting was observed. Four out of five participants revised their initial descriptions, emphasising the significance of sustainability in executing the belt vocal quality. All three participants who initially perceived force as a necessary element in belting revised their stance. The findings revealed that vocal strategies focusing on registration transitioning and speech quality garnered a more positive response from participants compared to physical preparation and breathing tasks. Unexpectedly, potential psychological issues surfaced as a significant factor, as all five participants reported anxiety and lack of confidence when performing belting tasks. This research acts as a catalyst that advances the understanding of belting experiences within the late-adolescent demographic. Furthermore, the study highlights the need to re-evaluate the concept of sustainable practice by balancing physio-vocal mechanisms and cognitive-perceptual systems.

**KEYWORDS:** Music theatre, belt vocal quality, CCM, female voice, late-adolescent voice

### INTRODUCTION

The belt vocal quality presents a complex learning challenge for late-adolescent singers. As a younger voice teacher and vocalist, I frequently witness music theatre students believe that success hinges on their belting ability. With this belief in belting's influence on vocal range and its prominence in contemporary music theatre (Green et al., 2014) comes an emerging contradictory narrative that belting is unsustainable, a notion misaligned with current literature. Existing research on the belt vocal quality in music theatre primarily centres around adult and professional vocalists, but neglects to explore the implications for pre-professional singers during the critical developmental stage in a young vocalist's career—coinciding with auditions for vocational music theatre programs and professional productions, where demonstrating industry-ready belting skills becomes crucial. Surprisingly, research on the impact and the experience of belting on late-adolescent female voices is lacking.

To address this gap, my master's thesis explored the notion of sustainable belt practices in late-adolescent female vocalists and their experience of learning the belt vocal quality (Meredith-Hanson, 2023). In my research and this article, the term *female* is used to refer to individuals who identify as female. While acknowledging the physiological distinctions between the oestrogen-influenced and testosterone-influenced larynx, it is important to recognise that personal identity transcends

academic technicalities. I acknowledge the diversity among individuals and emphasise that this research does not exclude any female participants based on their assigned sex at birth or genetic composition.

Also, a range of terms and phrases used throughout this study are commonly utilised in the industry and singing pedagogy discourse. Appropriately, many terms are grounded in the existing literature. However, some terms are derived from the language used by the study participants, which may not necessarily align with the literature. For example, despite their anatomical inaccuracies, the term *chest voice* persists in the language used in voice studios (Bourne & Kenny, 2016) and belt research (Kempfer, 2014) to describe the lower voice register, characterised by a thicker and heavier timbre—despite its representation primarily as vocal quality and sympathetic vibrations in the chest cavity (McKinney, 1994)—and the term *head voice* refers to the lighter, thinner timbre in the upper voice register, despite not precisely representing the anatomical action of the vocal folds. Additionally, the term *forward resonance placement* was used by research participants to describe the oral/nasal sympathetic resonance experienced during vocalisation resulting from optimum tuning of the vocal resonators (LeBorgne & Rosenberg, 2021). A term that is used in conjunction with forward resonance placement is *speech quality*. In this context, speech quality is not viewed from a laryngeal point of view and is not synonymous with chest register or chest-dominance. Instead, speech quality was used as a device to encourage conversational line while singing, affecting vocal timbre, articulation, and stylistic performance similar to “energised stage delivery, vehement speech ... and Call” (Spivey, 2008, p. 486). Alongside forward resonance placement, speech quality was used as a resonance tool to bring tonal balance between registers while performing belt, and should not be mistaken as a registration tool within the context of this study. Most importantly, belting is described in this article as “a vocal quality used in contemporary vocal technique that brings a loud, energised and speech-like vocal timbre up the range without undue force” (Meredith-Hanson, 2023, p. 35).

In this study, the term *sustainable* refers to practices that support long-term maintenance of optimised vocalisation, encompassing easeful performance techniques and enhanced vocal health. While acknowledging the distinct definition of sustainability in music performance research, the term has been used in previous

studies to describe practices fostering vocal efficiency and voice health preservation over an extended period (Aaen et al., 2022; Bartlett & Naismith, 2023; Hughes, 2017; LeBorgne & Rosenberg, 2021).

The production of a belt voice quality has previously sparked extensive debates within the singing voice community. Despite the agreed existence of various approaches to achieve a belt sound (Roll, 2016), there is a paradoxical tendency among voice teachers and researchers to view belting as a singular vocal quality (Spivey, 2008). This multiplicity of interpretations and definitions of belting creates ambiguity with a lack of cohesive strategic principles, which hinders the development of practice and teaching focused on attaining sustainability. While vocal research often focuses on poor vocal health and phonotraumatic behaviours, particularly in music theatre singing (Bagnall & McCulloch, 2005; Evans et al., 1996; Phyland et al., 2018), there is limited research on vocal health specifically in relation to music theatre belting among late-adolescent voices. I propose that sustainable vocal practice promotes efficient vocal health during and after vocalisation.

The ability to sustainably belt across an extended vocal range has become increasingly important for contemporary music theatre performers (Green et al., 2014). This vocal range shift has been explored by Roll (2016), who observed that the modern belt voice in contemporary music theatre often incorporates a mixed voice quality with narrow vowels, deviating from the traditional approach of relying on thyroarytenoid dominance. In Roll's examination of strategies to reduce vocal load and energy, the concept of vocal ease emerged as a key component of vocal maintenance.

Existing belting literature sheds light on sustainable practices and the adaptable nature of this vocal quality in matured voices, but there is a notable gap in understanding how this high-energy technique impacts on the developing laryngeal mechanisms of late-adolescent females. Physiological transformations occurring in young adult female singers, coupled with demands faced when entering the industry during this critical period, underscore the importance of investigating sustainable belting practices in this particular population. While voice teachers may employ similar belt practice for late-adolescent singers (aged 16-21) as they do for adults, it is crucial to recognise that these singers may still be undergoing vocal developmental changes and facing associated challenges. The final phase of Gackle's research, young adult female, typically

encompasses the age range of 14-17 years (Gackle, 2019). This pubertal stage, preceding Gackle's final phase, represents a critical period characterised by significant transformations in the vocal mechanism. And yet, a noticeable research gap has been identified concerning the developmental phase between late adolescence and young adulthood (approximately ages 16-21) (Thurman & Klitzke, 2000).

T. H. Allen et al. (1960) propose a hypothesis that thyroarytenoid muscle fibres may continue to thicken beyond puberty, paralleling muscular changes in body development. This suggests that laryngeal development may extend into young adulthood. The vulnerable state of the vocal folds during this period emphasises the importance of tailored considerations for young singers learning high-energy vocal qualities like belting to avoid potential vocal complications. Van Gend highlights the significant mechanical coordination required, particularly associated within head register frequencies, which challenges the growing and changing vocal apparatus (van Gend et al., 2017). Phyland et al. (2015) suggest that the demanding nature of belting—high vocal intensities, subglottic pressures, and extended glottic closure times—may have adverse effects on the developing larynx. Furthermore, Waller (2007) revealed that music theatre singing induced significant muscular tension in the vocal profiles of adolescent speakers and singers, while Donahue et al. (2014) found vocational music theatre students may experience at least one negative vocal symptom, such as vocal fatigue, throat pain, and hoarseness. Another pilot study by Tepe et al. (2002) found that a third of the participants reported straining, with late adolescents being at higher risk for reported vocal difficulties compared to other age groups. The authors suggested that “an increase in vocal demands associated with a more mature repertoire” (Tepe et al., 2002, p. 249) could be a contributing factor.

Given the ongoing vulnerability of laryngeal tissue during this period, the question of sustainable practice development for the highly energised belt remains largely unanswered. The exact disparities between a 16-year-old female and a fully vocally matured female, as well as the magnitude of growth within this phase, remain inconclusive, and the limited attention given to this subject hinders a precise understanding of the extent of physiological vocal development in late-adolescent female singers.

## METHODS

This article reports on the practice-led study and observations originating from the final stages of my action research investigation into current notions and practices of belting in late-adolescent female voices in Australia, with specific emphasis on sustainable belt practice. The preparatory investigation included a literature review and two questionnaires for late-adolescent female singers and voice teachers. Analysis and evaluation revealed perceptions of sustainable belt practices, which were used to develop the intervention strategies used in the practice-led study as reported below.

### Ethics

This project received ethics approval from the University of Melbourne Ethics Committee (20386). All participants remain anonymous, including the five participants of the practice-led study, whose names were omitted and replaced with numbers. To maintain anonymity, no audio and visual recordings are presented as evidence, and written identifiers have been removed from transcription quotations.

### Participants

Convenience sampling (Cohen, Manion, & Morrison, 2018) was used as part of the practice-led project. The study aimed to explore the potential for expansion into a larger research project that evaluates the effectiveness of different methods of belt acquisition. Since this framework was being piloted for the first time, the primary focus was on assessing its efficiency with participants, identifying necessary improvements, and collecting valuable data from this approach. Five participants were pre-selected for the practice-led study based on the following criteria:

- identifying as female
- aged between 16-21 years
- auditioning, or planning on auditioning, for vocational music theatre courses in Australia
- a current voice student of author
- have the desire to learn or improve their skill in the belt voice quality.

## Data Collection and Analysis

A total of twenty vocal sessions and fifteen vocal profile interviews were conducted over eight weeks with the participation of the author and the five participants to provide a real-world exploration of the understanding and application of sustainable belting. The sessions were conducted and recorded using Zoom Video Communications, Inc., capturing both audio and video. Every participant had professional grade recording equipment, including condenser microphones and external interface devices, and used appropriate audio functions on Zoom to disable any frequency cancellation and audio filters. The participants also audibly recorded the session on separate devices, which was collected for quality assurance and transcription purposes. After the eight-week research period concluded, summaries were generated based on the recorded sessions and profiles.

For the vocal sessions, specific vocal strategies, derived from previously collected questionnaire data, informed the semi-structured singing lesson sessions. Incorporated vocal strategies encompassed:

- Body preparation: including physical release and warm-up (cardiovascular warm-ups and dynamic stretching targeting intercostal, shoulders, back, neck and chest muscles), postural alignment (neck lengthening, weight distribution, sensory awareness), and breath work (innate and clavicular breathing for belting).
- Register work: including working with head register (unstructured and structured exploration, including primal sounds and using scales), chest register (unstructured and structured exploration, including primal sounds and using scales), and register transitioning (adaption of *messa di voce* exercises, using ascending and descending pitch across multiple registers instead of changing dynamics on a single pitch).
- Resonance work: including speech quality and forward placement (exaggerated speaking script, using speaking script on different pitches and scales, sliding through range on phrases beginning with [m] and [j]).
- Belt-specific exercises: integrating elements of the vocal strategies at the same time.

The four vocal sessions per participant aimed to simulate authentic voice lessons, wherein

participants received individual guidance through exercises and activities focused on belting elements. Each of the five participants followed the same procedure, but with tailored adaptations (such as range and time spent on tasks). The adaptations were made according to their abilities and vocal health. Each session commenced with a 10-minute preparation phase. During this phase, a vocal assessment was conducted to ensure the participants' vocal well-being and readiness for the session. Preparation exercises encompassed various aspects, including breath and airflow balance, semi-occluded vocal tract exercises, agility, engaged onsets, balanced whole voice timbre, and the preparation of the body, breath, and vocal tract for both the lower and upper vocal range. During the vocal sessions, participants performed a one-minute excerpt from a predetermined song (see Table 1) tailored to their vocal ranges and abilities.

Participant	Song Title	Source
One	Superboy and the Invisible Girl	<i>Next to Normal</i> (Music by Tom Kitt, Lyrics by Brian Yorkey)
Two	Once More I Can See	<i>Wonderland</i> (Music and lyrics by Frank Wildhorn)
Three	Kindergarten Boyfriend	<i>Heathers: The Musical</i> (Music and lyrics by Kevin Murphy and Laurence O'Keefe)
Four	Woman	<i>The Pirate Queen</i> (Music by Claude-Michel Schönberg and lyrics by Alain Boublil)
Five	Beautiful	<i>Heathers: The Musical</i> (Music and lyrics by Kevin Murphy and Laurence O'Keefe)

**Table 1.** Songs used for one-minute excerpts

In addition to these sessions, three separate 15-minute vocal profile sessions were conducted to gather data on the participants' vocal performance and track their progress throughout the practice-led study. These sessions consisted of predetermined procedures and feedback questions aimed at assessing the participants' vocal abilities.

During the sessions, participants were instructed to perform vocal exercises such as vocal slides, scales, and repertoire. The data recorded from these vocalisations encompassed parameters such as vocal range, vocal quality characteristics, and vocal health indicators, as well as the utilisation of belt strategies. Vocal profiles also included answers to interview questions tracking perceptions of participants' voices, belt vocal quality and vocal progression.

Fortnightly questionnaires were also employed to monitor vocal performance and usage beyond the study sessions, encompassing variables such as vocal health, hygiene, and routine. They provided insights into attitudes, emotions, and thoughts pertaining to vocal indicators extrinsic to those observed during the sessions. The questionnaires consisted of three sections: vocal routine, including practice frequency, vocal exercises, repertoire, and practice methods; resources and activities related to belting explored by the participants in the preceding two weeks; and vocal health, prompting participants to provide details regarding their current vocal well-being. The participants completed the fortnightly self-reporting questionnaires on Qualtrics.com, resulting in a total of twenty surveys collected.

During the study, participants' perceptions of vocal strategies were collected through their responses during vocal sessions. Reactions were classified as negative, neutral, or positive based on participants' opinions and experiences regarding the ease of performance and understanding of belting. Negative reactions expressed dislike or dissatisfaction, positive reactions indicated satisfaction or improvement, and neutral reactions were routine responses.

NVivo 12 was used in data analysis, with written transcriptions of the twenty vocal sessions and fifteen vocal profiles uploaded and coded to develop inductive themes. Participants' individual experiences and descriptions of the vocal sessions and profiles were examined in conjunction with the transcriptions, field notes, and thematic coding from the sessions. Perceptual vocal health and activities during the research period were tracked using four self-reporting surveys and integrated into the description of each participant.

## RESULTS AND DISCUSSION

### Reactions to Strategies

Negative, neutral and positive reactions to the execution of body preparation, register work,

resonance work and belt-specific exercises varied across the strategies.

All five participants showed neutral responses to the body preparation tasks, suggesting that these tasks did not obviously contribute to enhancing their performances. Their feedback during the final vocal profile interview, conducted eight weeks after the practice-led study began, indicated that these physical preparation strategies did not have a positive impact on their belting practice and competency. Thus, body preparation tasks did not enhance participant perceptions of sustainable belting practices.

Participants had varied responses across register work tasks. All responded positively towards chest voice isolation tasks, while only one participant responded positively to head voice isolation. However, all five participants responded positively to blending registers during transitioning exploration. Four of five participants believed that register work contributed to their sustainable belting practices, with specific benefits of identifying head and chest voice and effective register transitioning.

For resonance work, the participants initially responded neutrally towards the vocal tasks. However, based on participant responses in vocal session four and the third vocal profile interview, it was revealed to be the most effective. This shift would suggest participants continued practice outside of the sessions resulting in appreciated benefits over time. Additionally, while initially only two participants responded positively to speech quality, four participants indicated its contribution to sustainable belting in their third vocal profile interviews, emphasising the benefit afforded to this task.

After the application of these three vocal strategies, a fourth set of tasks, referred to as belt-specific exercises, was applied. Since each strategy was practised individually rather than in conjunction with others, it was crucial to combine these skills to achieve the desired belt vocal quality with sustainability in mind. Therefore, the vocal strategies were merged. When it came to exercises involving body preparation and breathing, all participants responded less favourably compared to the other two vocal strategies. Notably, all participants expressed the most positive reactions to tasks that combined only resonance and register work rather than all three vocal strategies. The participants also responded most positively to vocal tasks focused specifically on speech quality (resonance work) and register transitioning (register work).

When combining vocal strategies, an increase in participant self-correction was observed: defined as identifying and adjusting inefficient production without prompting and reflecting reinforced learning from previous sessions and at-home practice. This increased aptitude suggests a relationship with the habitual use of previously explored vocal strategies. However, when participants were observed to also experience anxiety, possibly due to lack of self-confidence and self-trust, their performance was negatively affected and required intervention to refocus. Nevertheless, there was a positive shift in self-correction observed over the sessions, suggesting a development of self-trust and performance-anxiety regulation, enabling independent application of vocal tasks. Participants exhibited enhanced ability to adjust their belting technique, accredited to the learned vocal strategies but also to observed changes to reduce self-judgement. In the final session, participants demonstrated these newfound skills, fostered by self-awareness and continued exploration of effective strategies, potentially forming habits for facilitated development of sustainable belting practices.

The eight-week research project resulted in notable improvements in participants' sustainable belt vocal qualities, as evidenced by perceptual and observational indicators. These improvements included enhanced ease of executing belting, expanded head voice range and improved timbre, reduced excess breath and airflow, and the inclusion of speech quality above A4.

### **Changes in Perspectives of Belting and Sustainable Practice**

Throughout the eight-week practice-led study, the participants' understanding and perspectives on belt practice underwent a transformation. Initially centred on the auditory aspects of belting, their definitions and perceptions expanded to incorporate notions of physical comfort and ease in the execution of belt vocals. This shift reflected an enhanced awareness of the physiological aspects involved in producing a sustainable and effortless belt sound.

The vocal profile interviews conducted at the conclusion of the study revealed positive shifts in perception towards sustainable belting, possibly influenced by revised understandings of the essence of belting and recognition of its sustainable qualities. The third vocal profile interviews further indicated that all participants experienced a notable improvement in their belting

abilities. One participant expressed this improvement by stating, "I can actually do it properly now", while another participant remarked, "this has helped me show what I can actually do around belting". These comments underscore the positive outcomes resulting from the vocal strategies explored in the practice-led study. Moreover, four out of five participants demonstrated an enhanced understanding and awareness of the belt vocal quality itself. As a result, their definition of belting expanded to encompass elements of sustainable practice—such as the perception of ease and comfort when producing the vocal quality—while avoiding descriptions associated with forced vocal production.

An illustrative example of this shift can be observed in the evolution of Participant 1's definition of belting. Initially, in the interview of vocal profile 1, Participant 1 said "...in my opinion, belting is a much stronger sound. So, it uses more force...". However, in their final interview vocal profile 3, conducted seven weeks later, Participant 1's perception of belting had transformed. They stated, "I think I said at the beginning that it requires a lot of effort to do it, I don't believe that anymore...". This shift in perception, marked by the absence of excessive effort and force, suggests that Participant 1's concept of belting was gradually aligning with the principles of sustainable practice.

Participant 2 initially expressed uncertainty, stating, "I want to say it's loud, but that's not right. Um, I don't know. It's strong and it's kind of in your nose. Don't know what I'm saying. It's strong and it resonates here in your mask". However, in their final interview, Participant 2 provided a clearer definition, saying:

I just think it's comfortable. That's a lame definition. Speech quality. Comfortable. Doesn't hurt. Easy. And is a mix rather than full chest. Because I used to think that you had to try really hard to belt and put a lot of force into it, but you don't.

This shift in definition eliminates their initial perception of forced vocal production while belting.

Participant 3's initial definitions showed more awareness, contemplating the concept of sustainable belt practice while also mentioning their self-guided journey towards sustainability, stating:

Belting is the extension of the tonality of the chest voice to get to high notes. For me, it's one that doesn't strain your voice, which I've had to learn. When I wasn't properly taught how to belt, I

would just do it, but not in a sustainable way. If I just sing high in my chest voice, it was fine for a few times, but after 3 times I felt it damaging my voice. I'm not perfect when it comes to sustainable belting, especially with higher notes, but I am improving.

The feedback about speech quality also highlighted its importance to the participant's initial perception of belting, with the definition evolving to include bringing speech quality above the normal chest range, as Participant 3 stated, "I would now define belting as a form of singing where you bring speech quality up above your normal chest range".

Participant 4's definition and perception did not evolve as dramatically as the other participants. In vocal profile 1, they emphasised the importance of clear tonal quality for sustainable belting, stating, "For belting to be sustainable, it needed to be clear in tonal quality". When asked to differentiate belting from other vocal qualities, Participant 4 expressed:

You can just tell. You can tell because their tone is different. It sounds different. It changes per person, and there's no set thing that I hear. Like opera and belt are both loud, and they are different vocal qualities. One's more speech, and one's more singy.

In the final interview during vocal profile three, Participant 4 conveyed that while their definition of belting had not changed, their personal execution and understanding of belt had improved due to the practice-led study: "I don't know how I sounded in week 1, but it feels like I have improved."

Participant 5 also underwent a shift in their perception of belting practice. Initially, they described belting as:

...a lot stronger, it feels a bit more forceful. It's not like normal singing, it's like a "boom" than just like a "I'm singing". It feels more like whiny, like with classical you have to focus more on your vowels, but with belting, it's more like "yeah".

Participant 5 initially believed belting required excessive force and volume. However, in their final interview, they indicated a different view, stating:

I feel like at the start, I thought it had to be super loud and I thought that was a really big part of it, which it is a part of it, but I think in the first week, I thought it was more of a forced sound and now it's kind of like, it shouldn't be forced. That would be the only thing I would change.

During the eight-week study, the definition of belting evolved for four out of five participants.

Notably, all three participants who initially associated force with belting revised their opinion and emphasised the importance of ease in sustainable execution, indicating significant shifts in perceptions and definitions of belt vocal quality and highlighting the role of vocal strategies employed for fostering sustainability. All five participants concluded that incorporating suitable vocal strategies rendered the belt vocal quality inherently sustainable.

### Emergence of Anxiety and Wellbeing Issues

The practice-led component of the overarching study revealed unexpected findings. Through inductive analysis (Proudfoot, 2023), the theme of issues with anxiety and wellbeing potentially affecting sustainable practice emerged. This emergence of potential anxiety and well-being issues highlights the importance of considering psycho-physical factors when examining sustainable belting in adolescent females. During vocal session 2, which saw the highest occurrence of anxiety among participants while working on registration, statements from participants revealed various reasons related to confidence and self-trust. Participant 1 expressed a lack of self-trust when attempting a vocal task, stating "I feel like I suck at this ... I don't trust myself to get this right". Participant 2 acknowledged their fear, saying, "Is the fear obvious? ... Now I'm going to stuff this one up". When it came to transitioning through the range, Participant 3 displayed apprehension, later confirming:

Vocally, I feel really good about this [transitioning]. Like, none of them felt difficult except for my brain being dumb, I suppose. I didn't want to do the wrong thing. I got a little anxious.

Participant 4 experienced anxiety when singing in a higher range, even though they stated they knew they were capable, revealing:

Like it still felt comfortable but ... I think I was like (thinking) "oh, this is higher. I can't do this" ... my brain goes "I'm singing too high, stop".

Lastly, Participant 5 experienced anxiety regarding their voice while speaking, expressing:

How I would describe it, like I have a really pushy, loud voice that I don't think is chest voice, and then a little mousy voice that is my chest voice, but then there's this voice in the middle that I can't find. I feel like my speaking voice isn't good enough for this.

Anxieties related to lack of confidence, self-trust, and mental focus appeared to impede

skill acquisition and sustainable belting practice for all participants. These instances were observed by both the participants and myself, underscoring their significance in the context of skill development. Furthermore, three out of the five participants experienced an episode of anxiety that resulted in a noticeable lack of mental focus. During moments when the participants became distracted from their vocal tasks, I observed an unintentional physical reset occurring.

This physical reset involved revisiting the importance of body preparation and basic physiological groundwork, aspects which the participants did not initially prioritise as they acquired sustainable belting qualities. I used the term physical reset to describe how participants would deviate from their optimal singing alignment when experiencing negative vocal indications. This reset often manifested through laughter and movement. For example, when a participant laughed, they would step back and slump their shoulders, leading to an unbalanced weight distribution, collapse of the chest cavity, and potentially increased tension around the larynx. I observed the impact of these involuntary movements on their voices. When a loss of focus occurred and participants experienced a physical reset during a vocal task, I would remind them to check their alignment. However, as I did not explore additional strategies for making adjustments towards sustainable belting, I can only speculate that either the participants were unable to mentally refocus and thus not receptive to further instructions and adjustments, or the exercises became more challenging for them as additional adjustments were required, potentially affecting their trust or increasing anxiety.

Throughout the vocal sessions, instances of anxiety were alleviated through mediation and intervention, often involving the utilisation or deconstruction of vocal strategies. When these anxiety-inducing situations arose, I employed various strategies to mitigate the anxieties experienced by the participants. These approaches included breaking down the vocal tasks into smaller, more manageable steps with meticulous attention to detail, guiding the participants in deep breathing and meditative exercises, providing positive affirmations and feedback to boost their confidence, allowing participants to attempt the vocal tasks with their microphones on mute as a preliminary step, and personally demonstrating the vocal tasks. These strategies were implemented on an as-needed basis, when the execution of a vocal task was impeded, or when participants specifically requested assistance. None of these

strategies was pre-planned but instead, improvised based on previous experience as a voice teacher specialising in late-adolescent females.

Over time, the participants progressed in execution of the vocal tasks. Throughout the practice-led study, issues related to anxiety and self-trust persisted, both within and outside of the vocal sessions as evidenced from their regular questionnaires. However, I observed that as the participants moved past physiological and psychological obstacles, their self-confidence grew, which potentially influenced their evolving perceptions of sustainable belting.

While the research data do not provide objective evidence to fully understand the participants' experience in relation to anxiety, it is plausible to speculate that general anxieties and lack of confidence may manifest in the voice studio, particularly during the learning process of complex performance tasks like belting. Specifically, a form of detrimental anxiety, an impediment potentially preventing optimal performance of vocal tasks, was a recurring factor among these participants. By preventing participants from executing the necessary vocal tasks to develop their belting skills, their acquisition of sustainable belting practices was perhaps hampered. Furthermore, accompanying physical effects such as anxiety, including difficulty breathing, muscle tension, stiffness, pain and body tremors, could lead to physical maladaptation restricting physical and laryngeal freedom and potentially resulting in vocal injury (McGrath, 2012).

Mental health issues are prominent among Australian teenagers, with approximately one in five individuals aged 11–17 experiencing significant psychological distress (Pettit, 2015). Within the context of musical performance, Music Performance Anxiety (MPA) has been defined by Kenny as “the experience of marked and persistent anxious apprehension related to musical performance that has arisen through underlying biological and/or psychological vulnerabilities and/or specific anxiety-conditioning experiences” (Kenny, 2010, p. 433). MPA can manifest in individuals who exhibit traits such as fear of negative evaluation, low self-esteem, low self-efficacy, perfectionism, and shame. It can occur in various settings but tends to be most severe when there is a high ego investment, evaluative threat, and fear of failure. While the exact prevalence of MPA among children and late adolescents is unknown, studies suggest that approximately 15% to 25% of musicians experience MPA during their careers. Existing research on MPA in



contemporary commercial music and classical singing has shown that it can impede a vocalist's ability to effectively coordinate their body and mind, leading to performance disturbances such as unstable vocal timbre and breathing difficulties (McGrath, 2012). In a study conducted by Papageorgi, the Young Musicians' Performance Questionnaire was administered to 410 participants aged 12–19 across Cyprus and the UK, providing insights into MPA among adolescent learners (Papageorgi, 2022). Although the study's geographical limitations prevent us from determining Australian overall prevalence of MPA, Papageorgi found that female participants exhibited higher levels of anxiety compared to males, with older girls (aged 16–19) showing greater anxiety levels than younger girls (aged 12–15).

## LIMITATIONS

There were several limitations to this study. Firstly, the sample size in this study was small, preventing claims of representing the broader population of late-adolescent female Australian belters. The research did not involve a control group or adhere to conventional scientific methodology. Participants were also aware of being recorded during the research process, which may have influenced their behaviour to not be completely replicable to a real-world voice lesson. Additionally, the study took place during the COVID-19 pandemic. As well as presenting additional challenges for aspiring professionals at the time, the pandemic prevented the research sessions from being conducted face-to-face. As a result, online video communication was used. While extensive measures were in place, including the use of sophisticated equipment and multi-device recording, it can't be guaranteed that the aural feedback heard through these recordings wasn't audibly compromised. The interpretation of data was necessarily subjective, based on personal knowledge, experiences, and judgment informed by existing literature. The implications of these results are perceptual from all parties involved in this study and will require validation in future research. With a limited study and a small pool of Australian-based participants, the findings in this thesis do not provide prescriptive information but serve as a starting point for further exploration into the teaching and researching of belting in Australian music theatre singing.

Inconsistencies remained in what the late-adolescent female participants of this practice-led

study thought belting was. But the elimination of the notion of force for three participants, with the other two maintaining an element of sustainability in belting, showed shifts in understanding. However, several core questions remain unanswered without clinically scoping the larynx in action. Are the participants even performing a high energy belt, as defined in literature? Are their attempts causing a detrimental effect on their vulnerable laryngeal mechanism? Are they instead performing what they define as belting but instead is a detrimental vocal quality that isn't sustainable, such as the misconception of carrying the chest voice register too high in the vocal range? These questions present cause for further investigation.

Further research is also needed to explore the impact of Music Performance Anxiety (MPA) on late-adolescent singers, particularly how the vocal demands of music theatre repertoire influence the experience of MPA in vocalists. Additional research is necessary and highly recommended to enhance our understanding of the physical effects of belting on this specific demographic. This research should involve clinical intervention to explore the direct laryngeal impacts of belting. Furthermore, conducting studies on a larger scale with a more extensive sample size and longer duration would be beneficial in gaining comprehensive insights. When it comes to the five practice-led participants, it is hypothesised that detrimental anxiety played a role, at least in the short-term, in hindering the development of sustainable belt practices. When considering the broader population, further research needs to be done in this area, as demonstrated by the two potential scenarios presented in this study:

1. Vocalists unable to progress in their belt acquisition due to anxiety, preventing successful performance of the necessary vocal tasks to develop their belt skills.
2. The physical manifestations of anxiety causing physical maladaptations during the process of learning to belt. These maladaptations may possibly hinder vocalists from achieving the required physical and laryngeal freedom necessary for sustainable belting, potentially resulting in vocal injury.

## CONCLUSION

In summary, implications extend beyond the specific group of young performers studied here. Issues related to anxiety, whether performance-related or skills-related, may be prevalent among

vocalists in general. Thus, the impact of anxiety on sustainable belting practice must be seen as an industry-wide concern rather than limited to a specific performer demographic. So, it is proposed that sustainable belt practice should be approached as a multifaceted experience encompassing both physio-vocal mechanisms and cognitive-perceptual systems. A conceptual framework to address these aspects needs to be developed that can be applied across the industry, involving a vocal team collaboration consisting of clinical voice professionals, singing voice teachers, and vocalists themselves. Their collective perspectives would encompass physical, auditory, perceptual, and psychological factors in evaluating the longevity of a vocalist's belt practice. A first step would be to establish criteria for assessing the aforementioned factors within this proposed framework.

In conclusion, it is essential for the music theatre and singing voice industries to re-evaluate the concept of sustainable practice and shift from a rigid notion of belting sustainability to a more nuanced understanding that fosters a comprehensive understanding and multi-faceted experience for vocal longevity.

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