

Ashleigh Dowler

2327645

15th November 2024

Word Count: 4114

**Developing A Strategy for Teaching Contemporary Belt and High Belt to
Higher Voice Types as a Lower Voiced Teacher?**

Table of Contents

Introduction Pg 3

Exploration of Belt, High Belt and Mx Pg 4

Strategy Development Pg6

Critical Reflection Pg 8

Conclusion Pg 11

References/Bibliography Pg 12

Appendices 15

Introduction

The voice quality known as *belt* has become a staple in musical theatre, contemporary commercial music (CCM) and has a history in musical traditions from around the world (LoVetri et al., 2021). The professional singer working in genres and styles that require sustainable production of Belt qualities, must have skills developed to allow them to produce this sound consistently and reliably (White, 2011). As musical conventions have evolved, higher-voiced (HV) singers working in musical theatre are expected to be able to produce *belt* and *belt-like* sounds well into the 5th octave (Roll, 2016; Flynn, Trudeau and Johnson, 2018). It is not unusual for obstacles to arise when singers begin exploring *belting* and when more experienced *belters* work towards taking the quality higher in the range. I have made the decision to focus on HV types for the purposes of the strategy development as I think this may be an interesting area to explore due to the differences - potentially physiological and acoustic - between my HV clients and my own voice. Additionally; it is an opportunity for me to further research and understand possible cultural and societal influences that may affect HVs and those socialised as female in their journeys to developing a reliable and consistent *belt* sound.

Rationale

Developing knowledge and usable tools for teaching different voice types is important particularly if you are working as voice teacher specialising in CCM styles as the likelihood is you will be working with a variety of different voices from varying backgrounds and experience of training. The majority of professional singers taking voice lessons in private studios are working as gigging singers primarily singing music other than classical, and the majority of those singers will need to have access to a *belt* quality to work professionally (LoVetri et al., 2021). Due to the increasing demands of this voice quality, effective training strategies are needed by voice teachers in order to empower singers to use this sound without fear, in a reliable and healthy way. While it is generally understood that Belt can be produced healthily as with all high-intensity singing it is not without risk; Lovetri et al (2021) reported approximately 1 in 4 professional *belters* claimed to have encountered voice issues. The majority experiencing issues placed the blame on overuse of the voice, however the rate of reported issues was almost twice as high for untrained *belters* compared to *belters* who had received *belt* specific voice training.

The fact that I am focusing on HVs when I myself am a lower-voiced (LV) teacher is also of importance. Due to physiological difference in the size of the larynx, vocal folds, vocal tract and other anatomical structures, there may be some difference between how I produce my *belt* and how my HV students are producing theirs (Bourne and Kenny, 2016). This point relates to the question of how effective modelling - the voice trainer providing demonstrative sounds for the student to copy - is in the studio and if it should be used with all voice students.

Developing a strategy that looks at effective practices that assist singers finding *belt* quality without a prominent reliance on modelling not only helps teachers to guide students with different voice types to their own, but may also help teachers who may have pathologies that limit how

much demonstrative coaching they can do. There is also the question of how effective modelling is and how not all learners may benefit from a listen and copy approach (Follin, 2016).

I am also an Estill Master Trainer, and the term *belt* means something specific in the Estill Model (Steinhauer, Mary McDonald Klimek and Estill, 2017), which may not be true for uses of the word among other practitioners. If I am to understand what other practitioners and what potential clients mean when they use the word *belt*, I need to explore and research other uses of the term to broaden my knowledge. My approach in the past has often been to teach the singer the difference between *Estill belt* and other *belt-like* sounds in order for them to decide which they would rather make, it will be useful to explore how necessary this is. This also reveals a bias I may have due to my understanding of *belt* production being based on the Estill Model.

Ethics

There are also ethical questions that need to be considered when teaching this specific group of singers. There will be sociocultural factors that HV types - especially those socialised as female - will have experienced which I as a cis-man have not, Pennington (2019) shares information on speaking voice patterns that we typically decode to gender a voice; notably, they write that *male voices* are tend to use increases in volume for emphasis whereas *female voices* tend to use increases in pitch for emphasis. This point may be particularly important for me as a cis-man who grew up in a loud household and is very comfortable making a loud sound. My HV students may not have this level of comfortability making loud noises. I also need to consider if my studio is a safe environment for this type of voice work and potentially make adjustments to the environment and teaching style if I am not providing a safe space.

The review and development of my own knowledge and practice teaching this voice quality is also import to ensure I am teaching the sound in a way that is efficient and sustainable and not informing habits which may lead to phonotrauma.

In order to continually reflect and review my practice, I will be engaging in self-reflection based on the DEBRIEF Model - Describe events, Evaluate, Bring out emotions, Review and analyse, Identify lessons learned, Establish follow-up actions, Feedback on actions - which is a development of Kolb's Reflective Cycle (Allan, 2011; Morris, 2020). Due to its development in the medical field and focus on starting your reflection as objectively as possible, I believe it will be highly useful for developing this strategy and assessing its effectiveness. Additionally; I believe it will be a useful framework to make me more aware of any preconceived ideas and biases (Allan, 2011; Health Education England, 2023).

Exploration of Belt, High Belt and Mix

Belting is often described as a powerful, brassy sound produced higher in the vocal range, commonly starting around F4 for HVs (Bourne and Kenny, 2016). Descriptions range from bright

and nasal to solid and speech-like, but there is disagreement about its production: some viewing it as "pure chest voice" (LoVetri et al. 2021, pg 4), others see it as mixed voice, and some consider it distinct from mix (LoVetri et al., 2021; Roll, 2016; Flynn, Trudeau, and Johnson, 2018). It's possible these differences may stem from varied definitions of language. For my strategy, I will focus on terms like thick-fold and thin-fold (Steinhauer, Mary McDonald Klimek and Estill, 2017), reflecting my background as an Estill Master Trainer, as these may provide a useful continuum for teaching belting, rather than using the absolute terms of chest or mix voice.

The question of whether there is a clear difference between belt, high belt, and mix is complex. Chest voice (M1) involves more thyroarytenoid activity and a thicker fold mass, while head voice (M2) features less thyroarytenoid activity and a thinner fold mass (Kochis-Jennings et al., 2012). While there's ongoing debate about the definition of mix (Roll, 2019), recent studies suggest a growing consensus (Maxfield and Manternach, 2018; LoVetri et al., 2021). Furthermore, voice registration may involve not just laryngeal activity but also acoustic elements (Kochis-Jennings et al. 2012), such as vocal tract shaping, which could explain perceived consistency across different registers (Erickson, 2016).

Recent research indicates that laryngeal registration may not be strictly pitch-dependent, with evidence of singers maintaining chest and head registers across a three-octave range (Lehoux, Popeil, and Švec, 2022). This highlights variability in voice production, suggesting that terms like thick-fold and thin-fold could better reflect the actual continuum of vocal fold engagement in *belting*, rather than rigid categorisations.

Understanding the acoustic characteristics of *belting* is also crucial. *Belt* is generally associated with Formant 1 *F1* tracking Harmonic 2 *H2* (Herbst, Story and Meyer, 2023), but other research suggest variability, with some singers aligning *F1* to *H3* without perceptible differences in sound (Flynn, Trudeau, and Johnson, 2018). This variability implies that a student-led approach, allowing for individual experimentation, may be beneficial. Vowel modification plays a role in belting, though definitions differ - some define it as a literal vowel swap, while others view it as adjusting formants to meet the acoustic needs of the task while preserving the lyrics's vowel perception.

Glottal adduction is a key factor in creating a *belt* sound, achievable with both thick and thin vocal fold masses (Lehoux, Popeil, and Švec, 2022). This firm adduction might be more critical than maintaining a thick-fold mass, especially at higher pitches, aligning with reports from professional singers who describe sensations like adding more head-voice or lifting out of chest voice when *belting* high (Roll, 2016; LoVetri et al., 2021).

Research suggests that acoustic strategies like tuning *F1* to either *H2* or *H3*, increasing intensity in the upper partials, and firmer glottal adduction are key characteristics of *belting* (Sundberg and Thalén, 2015; Herbst, Story and Meyer, 2023). This challenges my previous understanding that

belting always involves a thick-fold production, suggesting there may be greater individual variation in how *belt* is executed, especially at higher pitches.

Higher subglottic pressure also appears to be a consistent finding in *belting* (Sundberg and Thalén, 2015), aligning with both singer experiences and successful teaching strategies (LoVetri et al., 2021; Roll, 2016). This understanding may inform adjustments to my teaching approach, exploring the physiological variability and accommodating diverse student experiences when developing a *belting* technique.

Strategy Development

Pros & Cons of Modelling

Modelling is a process in which the teacher demonstrates a sound for the student to copy. This approach is sometimes seen as controversial with some practitioners leading their teaching in this way, others deeming it unnecessary and some even claiming modelling should not be used as a teaching method (Follin, 2016). This style of teaching may be related to the theory of a Human Mirror Neurons System (Westerman and Miranda, 2002; Ticini et al., 2012; Schmidt et al., 2021) however full understanding of the functions and existence of such a system may need further research (Turella et al. 2009).

Pros

When working with a student who responds well to modelling, the technique often quickly gets results from the student. If the teacher can demonstrate accurately, they are able to emphasise the change necessary to allow the student to move closer to the necessary co-ordination. For example, if coaching a student to add more pharyngeal narrowing, a teacher could model the sound with more pharyngeal narrowing resulting in a very bright sound to allow the student to hear the necessary change. This could be done in the speaking voice, or at a different comfortable pitch. The student could then explore the different sensations of these mimicked sounds to find a sound that feels efficient and has the desired quality they want. Students who respond well to auditory learning may benefit from a modelling approach (Follin, 2016). This approach may also help students who are hyper-critical to think less and allow the body to respond more freely and spontaneously (Chapman, 2017).

Cons

For modelling to be effective students already need to have good awareness and ability to hear the differences in another's voice and be able to replicate them in their own voice - this skill can of course be learned but for some people it isn't something that comes naturally. Anecdotally, I have had experiences of students who need to hear the sound at the same pitch they are attempting in order for this to be successful.

Physiological differences may require different techniques to produce the same voice quality. I will likely have thicker folds and a larger larynx than my HV clients and my modelling may lead to

them using too much fold thickness for a given pitch, by trying to mimic the comparatively thicker sound of my voice. It is possible that HVs and LVs produce *belt* differently, however it has been reported that there is no significant difference in glottal function when singing in the same register between males and females (Murry, Xu and Woodson, 1998).

There is also high variability in the experiences and tactics employed in breath management, which Harmonic F1 is tuned to, register perception and perception of acoustic strategy (Sundberg and Thalén, 2015; Flynn, Trudeau and Johnson, 2018; LoVetri et al., 2021). Therefore, even a voice student who has great mimicking ability may have very different perceptions of the sound production. This may be subjective due to internal proprioception but the singer may also be producing the sound in a different way physiologically in order to produce a similar sound to the one demonstrated.

Exercises to gain co-ordination

The most commonly shown observations of successful productions of *belt* have been firmer glottal contact, F1 tuned to a harmonic above the fundamental, higher intensity in the upper partials and higher subglottic pressure (Sundberg and Thalén, 2015; Flynn, Trudeau and Johnson, 2018; LoVetri et al., 2021). Based on this research, my strategy will be based on training singers control these conditions with exercises that have minimal modelling for producing *belt*.

Exercise 1

1. Start the tone on a breathy vowel - due to the pitch range starting a G4 the vowel /æ/ - as in cat - was chosen as it would have been easier to tune Formant 1 to H2 (Herbst, Story and Meyer, 2023).
2. Bring the vocal folds into full contact - with the instruction to remove the breathiness out of the sound, or the instruction to adduct the folds more - without thickening the folds or adding more *weight* to the sound.
3. Add the projection strategy, such as adding twang, pharyngeal narrowing and tuning the vowel (Herbst, Story and Meyer, 2023; Obert et al., 2023). Instructing to create a small space behind the tongue, or to place the sound forward in the head, or to cackle like a witch may help with this step.
4. Increase subglottic pressure by increasing effort in abdominals while keeping rectus abdominus released to ensure the ribcage can still respond to help control subglottic pressure. Ensure the singer is still on a thinner fold mass when giving this instruction.

Roll (2016) references a similar exercise finding a “light chest voice by incorporating the head voice into the belt sound” perhaps related to the idea of finding full vocal fold contact without too much fold mass; followed by focusing on a projection co-ordination that is “high, forward” (pg. 3). This co-ordination may be related to the sensations of the spaces created in vocal tract to raise F1 so that it aligns to a frequency above H1 (Herbst, Story and Meyer, 2023) or narrowing of the

pharynx to produce a brighter sound, students of this teacher observed by Roll (2016) also mentioned the necessity of not taking up too much weight. This particular teacher didn't specifically coach singers to find firm adduction, but this may be because the students in the studio were already capable of producing *belt*.

Exercise 2

1. Establish thick folds at a comfortable pitch. Spoken voice commands such as *oh no* or *ah ah*, as though disagreeing, with a glottal onset may facilitate this.
2. On a comfortable vowel glide up in range - ensure this doesn't go too high - this may require more *teacher-led* coaching in the early stages of the exercise, but once the student understands the exercise allow them to lead and explore in their own voice.
3. Introduce expressive sounds such as calling out, and include speech sounds to help ground the student in their own experience (Roll, 2016; Chapman, 2017). Using light glottal onsets will help establish firm adduction at the start of the sound.
4. Choose a comfortable pitch and vowel, around G above middle C may be a good place to start - as that is where the traditional *belt* range tends to begin in musical performance (Roll, 2016) - and *belt* individual notes, using the calling out strategy but maintaining pitch. Gradually increase pitch semitone by semitone. This task could also be performed as singing spoken phrases such as *oh no* or *'ey you* similar to the exercises documented by Roll, (2016).
5. Acknowledge when the vocal folds start to thin or when the sound starts to become strained and assess whether that is when to shift into thinner folds and change strategy or whether at that pitch thick fold *belt* can still be used sustainably. Allowing the exploration to remain student-led is particularly important at this point, as they may be more able to assess their effort and strain than I as a listener will (LoVetri et al., 2021).

In Roll's (2016) research a teacher had great success inviting their students to speak pitches before attempting to sing them, and it was noted that the overall strategy of teaching *belt* didn't change as the voice went higher. While there likely were adjustments made in the thickness of the vocal fold, in the observed teaching it didn't seem necessary to address; this potentially brings light to whether or not every singer needs to be coached on thinning the folds as pitch increases.

Critical Reflection

I have created a table to lay out my critical reflection. I have used the DEBRIEF Model as a framework to critically reflect.

Describe events as factually as possible	Evaluate what went well/to change next time	Bring out emotions/values/beliefs/assumptions	Review and analyse in light of previous experience	Identify lessons learned	Establish follow up actions	Feedback on actions
Exercise 1 was more successful than exercise two.	Both exercises had little direct modelling involved, exercise 2 perhaps needs a modelling approach with some singers new to <i>belt</i> to help them find the sound initially. Because exercise 1 was more instructional and created the sound in a step-by-step protocol, perhaps this is why this exercise worked better as it didn't rely on modelling the sound.	I may have been overzealous in trying to create a strategy avoiding modelling due to wanting to prove that I could develop a strategy void of modelling. I also may have been biased towards using a thick-fold strategy with some singers who I felt needed to thicken up their vocal folds rather than exploring all options.	Switching strategy to explore some modelling such as finding coordinations in the spoken voice could be useful (Roll, 2019). When students didn't respond to Exercise 2 perhaps shift strategy to Exercise 1 or another strategy, rather than persevering for them to reach a goal that I had set for them in my mind as it may be possible some singers may find the sound easier approaching from a thin-fold perspective.	Allow coaching to be more flexible, always remain present and aware of my own biases and assumptions of how a singer <i>should</i> be making a sound to allow them to explore.	When working on <i>belt</i> with higher voice specifically, don't be afraid to model the sound; and be flexible to change strategy. Keep checking in and asking them their experience as valuable insights can be found which may lead to another route for them to find the sound while keeping their agency. Perhaps create a more objective step-by-step exercise version of exercise 2 which will be more clear to follow.	Allowing more exploration modelling in the spoken voice has shown some promise. I continued to make a point to check in with each singer after each successful and unsuccessful attempt of <i>belt</i> in the exercises to gain insights into their own experience rather than allowing my emotions to assume what they were doing. This improved the quality and success of my coaching. One student commented she liked to have sounds demonstrated, try to copy them and then have the co-ordinations explained so she could deconstruct what she was doing and further explore without a modelling prompt.

Describe events as factually as possible	Evaluate what went well/to change next time	Bring out emotions/values/beliefs/assumptions	Review and analyse in light of previous experience	Identify lessons learned	Establish follow up actions	Feedback on actions
Roll (2016) mentioned voice type as important and that only sopranos could produce high belt.	This theory is different to my current understanding of <i>belt</i> as I have observed many types of voices making <i>belt</i> sounds in the 5th octave.	There may be truth in that voice type may be important in the reliability of <i>belt</i> and my belief may cloud my judgement in believing all voices can achieve such a sound at higher pitches. As I teach mainly CCM adult singers, I may have a bias as we use voice in a variety of different ways in this type of singing and voice type is often not as important (**)	There may be physiological differences person to person and perhaps different strategies both physiologically and acoustically are required for producing <i>belt</i> in different voices at the same pitch. There is also the question of how we identify voice type; and if these categories are purely anatomically decided or whether they are more related to voice use and behaviour.	It is important as a teacher to remain open to different ideas and not allow my biases and existing ideas to become absolutes. Always remain present with the student and check-in with their level of how comfortable or reliable the sound feels.	Further research is required. Potentially this may be an area where research is lacking as most papers looking at <i>belt</i> have looked at female voices. Complete additional training specific to vocal health to quickly notice the signs of voice fatigue and strain.	I have since completed an accredited course as a Vocal Health First Aider which focuses on assessing vocal health. I have also made plans to further explore voice type and its relationship to producing <i>high belt</i> although this could not be explored in-depth in this paper. Clarós et al. (2019) mentioned differences in vocal ranges of different voice types of both male and female singers based on the length of vocal folds, however this study only looked at professional opera singers and didn't collect data for an <i>absolute</i> vocal range. (Pennington, 2019) leans more towards the idea that vocal behaviour is more important, mentioning a large overlap of around three octaves between the singing ranges of male and female singers despite the differences in vocal fold length.

Describe events as factually as possible	Evaluate what went well/to change next time	Bring out emotions/values/beliefs/assumptions	Review and analyse in light of previous experience	Identify lessons learned	Establish follow up actions	Feedback on actions
Some students wanted concrete answers on how they were making a sound.	I was unsure how to answer students in a way that would be both useful to them but also be scientifically accurate.	My pride as a teacher may have led me to give inaccurate answers to keep the students' confidence in me as a teacher.	Further research is required to completely understand <i>belt</i> quality, exploring what is agreed upon and what is unknown may be as a way for students to be curious about their own voices may be a better route.	Engage in students' curiosity, rather than trying to have absolute answers to all of their questions. Don't allow personal pride to get affect teaching, but continue to research and learn so you can share information with the students who ask for it.	If students ask for scientific information, share what I know but acknowledge what I don't know and invite them to be curious and explore the ideas. This also helps the student feel they have agency in voice sessions.	Using this approach is exciting, as it opens up conversations and ideas that the voice student would otherwise not have explored. The students interested in the mechanics of voice use, seemed to enjoy this type of communication.

In Exercise 1, some students combined steps 2 and 3 when instructed to firm their vocal fold contact; rather than correcting them, I allowed this experimentation and proceeded to the final step. With advanced singers, I focused on separating glottal adduction from narrowing for better control, though research suggests non-linear source-filter interactions (Li et al., 2023; Obert et al., 2023) may limit this approach, indicating an area for me to further research.

Conclusion

Effective strategies on teaching *belt* seem to be more related to acoustic tactics of boosting upper partials, formant tuning, engaging higher subglottic pressure than in other voice qualities and producing firm adduction of the glottis than by focusing on keeping the voice in thick-folds/chest voice - especially when the pitch ascends. For the teacher to be successful in teaching this quality, there needs to be a balance of effective, understandable coaching and individual experimentation (Roll, 2019; LoVetri et al., 2021). Further research is required to gain insight on how LVs Belt and whether there are acoustic or physiological difference, or differences in how the sound is perceived. More research is also needed in the possibility of effects that tuning formants to different Harmonics may have on the vocal fold vibratory pattern.

References/Bibliography

- Allan, H. (2011). Educating Trainers - Hayley Allan. [online] Educating Trainers. Available at: <http://educatingtrainers.blogspot.com/2011/01/debrief-reflective-tool-for-workplace.html>.
- Bourne, T. and Kenny, D. (2016). Vocal Qualities in Music Theater Voice: Perceptions of Expert Pedagogues. *Journal of Voice*, 30(1), pp.128.e1–128.e12. doi:<https://doi.org/10.1016/j.jvoice.2015.03.008>.
- Chapman, J.L. (2017). *Singing and teaching singing : a holistic approach to classical voice*. San Diego, Ca: Plural Publishing.
- Clarós, P., Sobolewska, A.Z., Doménech-Clarós, A., Clarós-Pujol, A., Pujol, C. and Clarós, A. (2019). CT-based Morphometric Analysis of Professional Opera Singers' Vocal Folds. *Journal of Voice*, 33(4), pp.583.e1–583.e8. doi:<https://doi.org/10.1016/j.jvoice.2018.02.010>.
- Erickson, M.L. (2016). Acoustic Properties of the Voice Source and the Vocal Tract: Are They Perceptually Independent? *Journal of Voice*, 30(6), pp.772.e9–772.e22. doi:<https://doi.org/10.1016/j.jvoice.2015.11.010>.
- Flynn, A., Trudeau, J. and Johnson, A.M. (2018). Acoustic Comparison of Lower and Higher Belt Ranges in Professional Broadway Actresses. *Journal of Voice*, 34(3). doi:<https://doi.org/10.1016/j.jvoice.2018.10.006>.
- Follin, A. (2016). Stop singing, start explaining - Vocal Skills blog. [online] Vocal Skills blog. Available at: <https://www.vocalskills.co.uk/blog/vocal-technique/stop-singing-start-explaining/> [Accessed 14 Nov. 2024].
- Health Education England (2023). *Reflective Writing - Models of Reflection and Reflective Practice* | London. [online] london.hee.nhs.uk. Available at: <https://london.hee.nhs.uk/reflective-writing-models-reflection-and-reflective-practice>.
- Herbst, C.T., Story, B.H. and Meyer, D. (2023). Acoustical Theory of Vowel Modification Strategies in Belting. *Journal of Voice*. [online] doi:<https://doi.org/10.1016/j.jvoice.2023.01.004>.
- Iwarsson, J., Thomasson, M. and Sundberg, J. (1998). Effects of lung volume on the glottal voice source. *Journal of Voice*, 12(4), pp.424–433. doi:[https://doi.org/10.1016/s0892-1997\(98\)80051-9](https://doi.org/10.1016/s0892-1997(98)80051-9).
- Kochis-Jennings, K.A., Finnegan, E.M., Hoffman, H.T. and Jaiswal, S. (2012). Laryngeal Muscle Activity and Vocal Fold Adduction During Chest, Chestmix, Headmix, and Head Registers in Females. *Journal of Voice*, 26(2), pp.182–193. doi:<https://doi.org/10.1016/j.jvoice.2010.11.002>.

Lee, Y., Oya, M., Kaburagi, T., Hidaka, S. and Nakagawa, T. (2021). Differences among mixed, chest, and falsetto registers: A multiparametric study. *Journal of Voice*, [online] 37(2). doi:<https://doi.org/10.1016/j.jvoice.2020.12.028>.

Lehoux, H., Popeil, L. and Švec, J.G. (2022). Laryngeal and Acoustic Analysis of Chest and Head Registers Extended Across a Three-Octave Range: A Case Study. *Journal of Voice*, 38(5). doi:<https://doi.org/10.1016/j.jvoice.2022.02.014>.

Li, Y., Erickson, D., Obert, K., Philips, D. and Li, F. (2023). Vocal tract length effects on glottal source: An essay into voice quality. *Sciendo eBooks*, pp.212–221. doi:<https://doi.org/10.2478/9788366675728-018>.

LoVetri, J.L., Chmela, A., Cocozziello, J. and Vaughan, M. (2021). A Demographic Study of Professional Belters: Who They Are and What They Do. *Journal of Voice*, 38(2). doi:<https://doi.org/10.1016/j.jvoice.2021.09.019>.

Marks, K.L., Lin, J.Z., Fox, A.B., Toles, L.E. and Mehta, D.D. (2019). Impact of Nonmodal Phonation on Estimates of Subglottal Pressure From Neck-Surface Acceleration in Healthy Speakers. *Journal of Speech Language and Hearing Research*, 62(9), pp.3339–3358. doi:https://doi.org/10.1044/2019_jslhr-s-19-0067.

Maxfield, L. and Manternach, B. (2018). Perceptual Differences between Novice and Professional Music Theater Singers. *Journal of Voice*, 32(5), pp.572–577. doi:<https://doi.org/10.1016/j.jvoice.2017.08.007>.

Molnar-Szakacs, I. and Overy, K. (2006). Music and mirror neurons: from motion to 'e'motion. *Social Cognitive and Affective Neuroscience*, [online] 1(3), pp.235–241. doi:<https://doi.org/10.1093/scan/nsi029>.

Morris, T.H. (2020). Experiential Learning – a Systematic Review and Revision of Kolb's Model. *Interactive Learning Environments*, [online] 28(8), pp.1064–1077. doi:<https://doi.org/10.1080/10494820.2019.1570279>.

Murry, T., Xu, J.J. and Woodson, G.E. (1998). Glottal configuration associated with fundamental frequency and vocal register. *Journal of Voice*, 12(1), pp.44–49. doi:[https://doi.org/10.1016/s0892-1997\(98\)80074-x](https://doi.org/10.1016/s0892-1997(98)80074-x).

Obert, K., Yun, J., Erickson, D., Reeve, M., Rowson, H. and Møller, K. (2023). Voice quality: Interactions among F0, vowel quality, phonation mode and pharyngeal narrowing. *Proceedings of the 13th International Conference of Nordic Prosody*, pp.190–199. doi:<https://doi.org/10.2478/9788366675728-016>.

- Pennington, S. (2019). Transgender Passing Guides and the Vocal Performance of Gender and Sexuality. *The Oxford Handbook of Music and Queerness*. doi:<https://doi.org/10.1093/oxfordhb/9780199793525.013.65>.
- Roll, C. (2016). The Evolution of the Female Broadway Belt Voice: Implications for Teachers and Singers. *Journal of Voice*, 30(5), pp.639.e1–639.e9. doi:<https://doi.org/10.1016/j.jvoice.2015.07.008>.
- Schmidt, S.N.L., Hass, J., Kirsch, P. and Mier, D. (2021). The human mirror neuron system—A common neural basis for social cognition? *Psychophysiology*, 58(5). doi:<https://doi.org/10.1111/psyp.13781>.
- Steinhauer, K., Mary McDonald Klimek and Estill, J. (2017). *The Estill voice model : theory and translation*. Pittsburgh Estill Voice International.
- Sundberg, J. and Thalén, M. (2015). Respiratory and Acoustical Differences Between Belt and Neutral Style of Singing. *Journal of Voice*, 29(4), pp.418–425. doi:<https://doi.org/10.1016/j.jvoice.2014.09.018>.
- Ticini, L.F., Schütz-Bosbach, S., Weiss, C., Casile, A. and Waszak, F. (2012). When Sounds Become Actions: Higher-order Representation of Newly Learned Action Sounds in the Human Motor System. *Journal of Cognitive Neuroscience*, 24(2), pp.464–474. doi:https://doi.org/10.1162/jocn_a_00134.
- TURELLA, L., PIERNO, A., TUBALDI, F. and CASTIELLO, U. (2009). Mirror neurons in humans: Consistent or confounding evidence? *Brain and Language*, 108(1), pp.10–21. doi:<https://doi.org/10.1016/j.bandl.2007.11.002>.
- Westerman, G. and Miranda, E.R. (2002). Modelling the Development of Mirror Neurons for Auditory-Motor Integration. *Journal of New Music Research*, 31(4), pp.367–375. doi:<https://doi.org/10.1076/jnmr.31.4.367.14166>.
- White, A. R. (2011). BELTING As An Academic Discipline. *The American Music Teacher*, 60(6), 22–24.

Appendices

Appendix 1

PDP

Goal 1

Develop knowledge on scientific consensus and research on voice types.

Rationale For Goal

Being from a CCM background I don't often reference voice type because I don't think it is always necessary. As in CCM we are usually singing with amplification and there is more freedom with how the voice can sound when compared to classical singing, singers more often sing across a wider pitch range in my experience, so my beliefs are that it seems reductive to then discuss what their voice type is with my students. This module has made me face these ideas and question whether or not referring to voice type may be useful in some situations in CCM coaching. I am going to research this further in future so to have a viewpoint on this that is fully informed after listening to all sides of the debate, and digesting the related scientific studies. Although, at present, I am still of the belief that voice type may be more to do with how we train the voice rather than being purely an anatomical concept.

Actions To Be Taken To Complete Goal

I will surround myself with a variety of different voice professionals to discuss these ideas with; while also continuing to search for new and updating research to further my understanding and knowledge which may change my beliefs on this.

I will also create a small diverse group of peers working in the voice industry where we will search for and share articles and research studies together to meet on a regular basis and discuss.

Timeline

Ongoing, as data on this will be continually evolving.

Goal 2

Complete a qualification in Vocal Rehabilitation

Rationale For Goal

Staying up-to-date with relevant skills to assess vocal health. I have since starting this Module completed a qualification to be a Vocal Health First Aider, which I greatly enjoyed. It opened my mind to information on ageing voice, and how the hormonal/menstrual cycle and menopause can effect voice in people; along with other information about vocal fold injuries, psychology, performance anxiety and other factors that can have an effect on voice use. This has opened me

up to the idea of completing their Vocal Rehabilitation qualifications due to how much I enjoyed the course, and how I could potentially develop my skills and train more specifically to be a voice rehabilitation specialist.

Actions To Be Taken To Complete Goal

Enrol and register for the Vocal Rehabilitation Course.

Make connections with professionals working in voice and speech therapy for advice and insight into the industry/discipline.

Timeline

2026

Goal 3

Improve academic writing skills

Rationale For Goal

Completing this module within word count has been extremely difficult. As a student with ADHD, I think this unit and the masters so far, has shown me how much the condition does effect my executive functions to a level that I did not realise previously. This also effects my ability to write my thoughts clearly and concisely as I have a tendency to use many words when fewer words would suffice.

Actions To Be Taken To Complete Goal

Complete a short course on academic writing.

Schedule specific time in my diary for reading, writing and other work relevant to writing assignments to ensure I have enough time to re-work and edit my work as I go, as stress causes my symptoms to get worse.

Timeline

Before starting writing my next assignment.