

INTEGRATING THE ALEXANDER TECHNIQUE INTO VOICE TRAINING

A PILOT STUDY ASSESSING THE IMPACT ON INDEPENDENT ONLINE LEARNING

(UWTSD – WAPPAR, BMPF 7008)

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PROJECT PROPOSAL

INTEGRATING THE ALEXANDER TECHNIQUE INTO VOICE TRAINING: A PILOT STUDY ASSESSING THE IMPACT ON INDEPENDENT ONLINE LEARNING

CONTEXT AND JUSTIFICATION

The researcher's background includes over twenty years of international operatic performances. After attaining certification in the Alexander Technique (AT) her teaching practice has focused on in-person classical voice training integrated with AT principles. The current Covid-19 pandemic has altered the nature of this business. This project will be conducted to bridge practice and research by expanding this teacher's offerings to include a targeted online training programme for AT/voice integration.

Trained in the Carrington (1994) tradition, this researcher has never been encouraged to AT teach remotely, relying instead on the teacher's hands to give students a new experience (pp. 103-104). While developing this programme, it was necessary to consider alternate approaches including Barstow's teaching innovations (Conable, 2016), and Alexander's (2001) account of how he developed the technique independently. "Anyone can do what I do - but they would have had to do what I did" (Davies and Barlow, 2002, p. 318). Since Alexander's learning process reportedly took 10 years (Alexander, 1986, p. xiii) the fundamental question guiding this research is whether an online independent programme can be efficacious.

RESEARCH DESIGN

This eight-week mixed methods study seeks to assess the impact of AT/voice online teaching. A pragmatic approach employing an equal and parallel QUAN+QUAL mixed method research design (Fig. 1) will be used to evaluate diverse data and represent outcomes more comprehensively (Johnson, Onwuegbuzie and Turner, 2007). Adopting the axiological viewpoint that participant experience is paramount to any philosophical stance, specific ontological or epistemological positions will not be taken (Morgan, 2007, p. 67). This inquiry is influenced by participation action research, a meta-methodological approach integrating diverse methods and tools (Rowley, 2003), and grounded theory to organise, label and categorise the qualitative data (Crowther et al. 2017). Multiple cases may contribute credibility to the findings (Tashakkori and Teddlie, 1998, p. 70)

Qualitative and Quantitative Methods: Equal and Parallel, Fig. 1



Seven participants were chosen using purposive sampling (Tashakkori and Teddlie, 1998, p. 76). Each had contacted the researcher through AT/voice workshops or local teachers, and due to the level of independent study required completed a short questionnaire to assess motivation levels (Appendix A).

Quantitative data of specific singing tasks (Appendix B) will be collected weekly through recordings submitted by participants, and acoustically analysed by the researcher using VoceVista Video Pro (VVV), (Maas et al. 2020). This classical singing study will be guided by vocal parameters identified in the scholarship of Titze (2000), Miller (2008) and McCoy (2012). Qualitative data will include weekly learning journals coded using a grounded theory coding process (Willig, 2013, p. 70) as well as questionnaires and

interviews to give results additional context (Gill et al. 2008). Data will be analysed and triangulated to find a convergence of results or to reveal different aspects of the question (Creswell, 2014, p. 178). Mixed method approaches encourage source triangulation to provide richer descriptions (Merriam and Tisdell, 2016, p. 42). A timeline has been developed to facilitate a cohesive and organized learning experience for these independent learners (Appendix C).

INTENDED IMPACT

Due to the dearth of investigations into AT/voice integration, the proposed inquiry seeks to fill a research gap. Pioneering AT/voice studies have a noteworthy pedigree with first-generation teachers Jones and Barlow both having conducted research on singers. Barlow (2005) conducted singer experiments using a daily lesson framework (pp. 207-208). Results were interpreted in conjunction with participants' regular music teacher (Warrack, 2005), and were verified by external data such as improved competition results. Jones (1972) also utilised a traditional AT approach by manually adjusting a singer's head balance. These research frameworks are not currently possible due to pandemic contact restrictions, and the varied geographical locations of the participants. This proposed research expands on existing studies by discovering if an independent online learning environment might have an impact on learning. The researcher is unaware of any extant AT online research.

In preparation for this inquiry, the researcher expanded her knowledge of acoustics as well as her proficiency with current VoceVista Video Pro (VVV) testing software (Maas et al. 2020) in order to conduct this research responsibly and produce valid and reliable results (Tashakkori and Teddlie, 1998, pp. 79-80).

Ultimately the researcher's goal is to expand her practice beyond individual lessons by creating an adaptable programme for both groups and individual applications. She also plans to write more comprehensively on AT/voice integration.

INSIDER/OUTSIDER RESEARCH AND ETHICS

The central focus of this research question seeks to assess whether online training can impact independent learning. Using recorded video content to guide participant learning infers that the researcher is assuming a principally etic perspective. However, direct interactions including the proposed master classes would require the researcher to adopt an emic role. This participatory emic perspective allows the researcher to engage with subjects as a qualified guide while maintaining “the ethical high ground” (Ruane, 2005, p. 166). Mercer (2007) encourages researchers to consider etic/emic perspectives as points on a continuum (p. 13). This viewpoint is consistent with the varied approaches in this learning project, which is expected to shift between insider and outsider viewpoints. Ethics approval has been obtained for this research (Appendices D and E). Any emerging issues will be guided by the attached codes of ethics and conduct of the professional organisations to which the researcher belongs (Appendices F and G).

EXPECTED LEARNING OUTCOMES

A paradigm shift has been underway over the past ten months challenging traditional voice and AT person-to-person lesson interactions. Moving lessons online immediately mitigates in-person contact during a pandemic, as well reduces geographic and time constraints for students. Once this programme has been developed and tested it could be scaled to size to create partnerships with professional training programmes and university voice departments. Ultimately, an ongoing course could provide the foundation for an online AT/voice integration community. It is currently unknown the lasting effects that the pandemic restrictions will have on the teaching community.

PROJECT REPORT

INTEGRATING THE ALEXANDER TECHNIQUE INTO VOICE TRAINING: A PILOT STUDY ASSESSING THE IMPACT ON INDEPENDENT ONLINE LEARNING

Glossary of Abbreviations (Appendix H)

INTRODUCTION

The fundamental aim of this pilot study was to assess the impact of an online learning programme designed to integrate the Alexander Technique (AT) into classical voice training using multiple case studies. No existing studies measuring the effects of online AT/voice training were found, filling a research gap. The researcher is a private voice teacher certified in the Alexander Technique with over 20 years of international professional opera performance experience in principle roles.

Since both voice and AT lessons are traditionally conducted in person, the immediate concern of this study was to address training restrictions due to the Covid-19 pandemic. Participant progress was evaluated perceptually and acoustically by the researcher through VVV. These findings were triangulated with participants' reflection journals, which also served as a learning aid (Helding, 2014).

The goal of this online eight-week AT/voice integration programme is to mitigate chronic tension, improve coordination and reintegrate appropriate tonus for more optimal vocal performance. The researcher acknowledges that an eight-week pilot study is a brief period to incorporate both re-educative and skill building goals. However, time constraints limited this study, which is of sufficient length to show some shifts (Ruane, 2005, p. 94). The secondary goals of this inquiry are to verify Jones (1972) results

claiming respiratory and resonatory improvements, and to propose future parameters for AT/voice inquiries.

The acoustic measurements used reflect current software capabilities (Maas et al. 2020), and the researcher's interest in monitoring and addressing stylistic concerns like vibrato and legato. The following hypotheses were identified for this inquiry.

Hypothesis #1: Respiratory noise will be reduced.

Hypothesis #2: Greater singing ease will be reflected as less spectral energy in the singer's formant range (SFR) between 2.3-4 kilohertz (kHz), especially in female voices.

Hypothesis #3: Improved resonance will be reflected in the vowel formant range (VFR).

Hypothesis #4: Reduction of chronic tension and improved coordination will be reflected acoustically with improved vibrato periodicity and a smoother legato.

LITERATURE REVIEW

The researcher's emerging pedagogical framework encompasses both physiology and acoustics which lie at the core of evidence-based voice pedagogy (EBVP), (Ragan et al, 2020, 22:00). The blending of these two areas guide this inquiry's literature review. A quick overview of an AT approach contextualises the research, and a review of existing AT/voice research informs the researcher's motivation and methodology. Current classical voice parameters are summarised, and a brief primer in acoustics updates the existing inquiries and serves as a guide for potential future research.

ALEXANDER TECHNIQUE

AT takes a pragmatic approach to re-education by using everyday activities (Kleinman and Buckoke, 2013, pp. 127-178). AT/voice integration focuses on redirecting mental

and physical energy (Alexander, 1918, p. 200), and relies on a singer's readiness to challenge chronic habits (Heirich, 2005, pp. 1-4). This willingness typifies the "proper mental attitude" needed to learn (Alexander, 1918, p. 324). The goal is more efficient and less effortful singing (Heirich, 2005, p. 75; De Brunhoff, 2013, p. 26). Pettersen's (2005) classical singing respiratory studies show that a reduction of certain muscular tension does not affect vocal function (p. 274) challenging any singer's predilection to preserve tension as essential.

Most first generation AT teachers believed that a hands-on component was necessary to facilitate new kinesthetic experiences and advance student awareness (Davies and Barlow, 2002, p. 222; Carrington, 1994, p. 99). Since this is presently impossible an alternate AT teaching method derived from Barstow's lineage was investigated (Conable, 2016). Considered an integrative AT practice, Barstow's tradition neither eschews nor stipulates putting hands on students (Madden, 2018, p. 80). Core AT principles remain constant including an indirect approach to specific vocal concerns (Alexander, 2001, pp. 27-28). This contrasts with the traditional explicit feedback given by voice teachers (Helding, 2020, pp. 128-136). Unequivocal instruction conflicts with Alexander's suggestion to avoid *end-gaining*, by which he means rushing to complete a task unsatisfactorily due to compromised coordination (Alexander, 1918, p. 224).

INTEGRATING AT AND VOICE

There is a paucity of studies related specifically to the effects of AT on the voice, especially those incorporating quantitative data. Conventional AT studies have centered around common health issues, notably the alleviation of back pain (Woodman and Moore, 2011; Little et al. 2008). This research seeks to ascertain if AT lessons can enhance vocal function, not merely mitigate pain. Klein, Bayard and Wolf (2014) reviewed 12 controlled AT/musician trials and determined that results claiming enhanced function were largely inconclusive, although improvements to performance anxiety were indicated (p. 10). While some of the inquiries reviewed included singers,

subjects were often either novices (Engelhart, 1989), or did not address vocal concerns (Valentine et al. 1995).

Singer-centric studies assessing AT benefits are scarce. The two most notable include those conducted by prominent first-generation AT teachers Barlow and Jones. The first was a study conducted at the Royal College of Music in 1956 structured around a traditional lesson framework (Barlow, 2005, pp. 207-208). Physical measurements, photographs, and qualitative teacher feedback were collected. Body measurements are too variable over time, and even Barlow (2005) thought that photographic evidence can be misleading (p. 207). A predominately emic inquiry with imperfect data, it is unsurprising that Barlow's research is considered substantially biased (Klein, Bayard and Wolf, 2014, p. 7). Although impartial experts indirectly contributed to these findings through adjudication, reflecting a disproportionate improvement of competition results (Barlow, 2005, p. 210).

Subsequently, Jones' (1972) research assessing the immediate effects of modified singer head balance, reported two notable findings. Spectrogram results supported claims of reduced audible inhalation (p. 212) and improved resonance was confirmed by both the subject and unspecified musicians as "increased richness of the overtones" (pp. 213-214). Alleviating intrusive respiratory noise is an area of routine AT interest (Alexander, 1918, p. 325), as well as pedagogic concern (Bunch Dayme, 2005, p. 49). Conclusions related to enhanced resonance can now be verified, updated and expanded by independent researchers armed with advancements in voice science (Miller, 2008; Titze, 2000; Sundberg, 1987) using current VVV acoustic analysis software.

Lloyd's (1986) mixed method approach mirrored Barlow's 1956 study, with all of the same biases. A teacher in training, Lloyd was not AT certified at this time calling into question her expertise to conduct this research (Yin, 1989, p. 65). What is germane to the current research is Lloyd's use of multiple case studies to understand multifaceted phenomena (Yin, 1989, p. 140). Since learning and re-education is an unpredictable

and individual process that can only be inferred (Helding, 2020, pp. 100-101) triangulating various data sources from multiple cases studies add credibility to the results (Tashakkori and Teddlie, 1998, p. 70).

DEVELOPING A PRACTICAL VOCAL RESEARCH PROFILE

There is a prevailing thought in vocal pedagogy espoused by Miller (1986) that physical freedom leads to proper muscular tonus (p. 206), which produces an even and efficient vibrato (p. 187). Nix et al. (2016) postulate that vibrato is directly regulated by singers through “muscle conditioning and respiratory coordination” (p. 756.e41). Given the physiological nature of this inquiry, it is logical to include vibrato measurements as a novel area of AT/voice research. Although it must be acknowledged that long-term longitudinal studies conclude vibrato training takes years (Mürbe et al, 2007, p. 683; Mitchell and Kenny, 2010, p. 427).

Vibrato rate, measured in cycles per second or Hertz (Hz) (McCoy, 2012, p. 18) has a contemporary target range of 4.5-6.5Hz (Titze, 2000, p. 325). Evidence suggests that rates may be affected by gender, with women having higher rates than men (Guzman et al. 2012, 675.e8).

Defined as the frequency excursion from a central pitch (Doscher, 1988, p. 158) vibrato extent is affected by complex issues and therefore difficult to categorise. Extent has been identified as highly variable even among early music specialists who strive for a straight-tone (Hawkes et al, 1987, p. 156). Extent can change with note duration (Bretos and Sundberg, 2003, p. 42), increased amplitude (Guzman et al. 2012, p. 675.e9), and varies with stylistic and vocal demands (Johnson-Read et al. 2015, p. 634.e15). Gender may play a role as female opera singers have been found to have a wider extent (Manfredi et al. 2015, p. 517.e1), which Anand et al. (2012) deemed as perceptually more acceptable than when present in male voices (p. 820.e24). Notwithstanding these mitigating factors 100-200 cents is the contemporary accepted classical vibrato extent range (Titze, 2000, p. 325).

Vibrato has been implicated as an active contributor to a legato line (Doscher, 1988, p. 157). Continuity in the sound, perpetuated by an even periodic vibrato rate matched with a suitable vibrato extent, defines a classically sung legato (McCoy, 2012, p. 61). Functionally complicit in the attainment of an even vibrato is steady subglottal pressure (Stark, 1999, p. 115). This even pressure leads to an efficient vocal balance described as “flow phonation” (Sundberg, 1987, p. 172). These classical vocal characteristics serve as the benchmark for this research.

ACOUSTICS REVIEW

Vocal resonance is characterised by predictable and simultaneous overtones called harmonics formed by the vocal tract (McCoy, 2012, p. 21). Harmonics, viewed as spectral energy in a long-term average spectrum (LTAS), can be divided into two distinct frequency ranges to assess spectral balance. The first is the VFR between 0-2kHz, and the second is the SFR between 2-4kHz (Omori et al. 1996; Manfredi et al. 2015). Omori et al. (1996) state that greater energy in the 2-4kHz region denotes a classical ring (p. 232). Mitchell and Kenny (2004) object saying SFR energy does not accurately depict timbre (p. 99), and should be triangulated with perception to assess the suitability of the vocal quality (p. 117). The current inquiry adjusts these discrete ranges preferring 0-2.3kHz and 2.3-4kHz to reflect a higher effective SFR (Miller. 2008, p. 120), although female SFR values are even higher starting around 2.6kHz (Weiss, Brown and Morris, 2001, p. 459).

The spectral balance between the VFR and SFR correlates to the Italian classical ideal of *chiaroscuro*, equilibrium between bright and dark timbres (Miller, 2008, p. 111). Lowering the vocal formants (VFs) may also contribute to this timbre by creating a spectral distance between the formant region peaks (Titze, Maxfield and Walker, 2017, p. 382.e10). Miller (2008) suggests that *chiaroscuro* equilibrium might be achieved either through second formant (F_2) tuning in the VFR (pp. 113-114), or through the presence of a singer’s formant cluster in the SFR (p. 120). The phenomenon of clustering formants, seen as enhanced energy in higher frequencies, is an acoustic

strategy predominantly used by male classical singers when singing over an orchestra (Sundberg, 1987, p. 118). Classical singing in general shows heightened energy in the SFR when compared to other styles like jazz (Manfredi et al. 2015). Increased energy in the SFR may also be the product of pressed phonation (Titze, 2000, p. 275). Miller (2008) notes that pressed phonation may be mitigated by more efficient VF tuning to boost the voice with less effort (p. 65). Efficient formant tuning affects vowel clarity, assists resonance, aids practical functions like passaggio navigation, and perceptually defines musical timbre and style (Miller, 2008, pp. 21-22, 72). Vowels are defined by the first formant (F_1) and F_2 , (McCoy, 2012, p. 40). Sopranos overwhelmingly rely on the fundamental (f_o) to boost their sound, often coupling the first harmonic and first formant (f_o/F_1) (Sundberg, 1987, p.127). Narrower formant bandwidths are more efficient because there is less deterioration in the sound (Miller, 2008, p. 110). Although bandwidth is not currently measured by VVV, its narrowing can be discerned in the LTAS. When assessing bandwidth, a predetermined distance from the peak, such as 10 decibels, is used (McCoy, 2012, p. 40).

Blending perceptual terms with quantitative measures such as loudness and amplitude requires some context. Decibels (dB) are measured on a logarithmic scale where small numbers can produce outsized effects. Miller (2008) notes that a harmonic becomes dominant when it exceeds another by 5dB (p. 113). McCoy (2012) states that an increase in 6-10dB is required to perceptually double the sound (p. 21). This is supported by Stevens' (1955) equation of perceptual loudness which he identifies as doubling every 10dB (p. 821).

METHODOLOGY

This research adopts a mixed method pragmatic design with a focus on the human experience (Morgan, 2007, p. 67), influenced by participant action research (Rowley, 2003, p. 132), and employing a multiple case study (CS) approach (Yin, 1989, p. 46). Tashakkori and Teddlie (1998) argue that case studies provide an accurate before and after account (p. 88), which is essential in a longitudinal study. The pragmatic

interchange of social and numerical data led to a richer explanation of phenomena (Mitchell, 2018, p. 103).

ETHICS

Ethics approval was granted through the University of Wales Trinity Saint David, Wales Academy for Professional Practice and Applied Research. In addition, the researcher was bound by codes of conduct as a member of two professional teaching organisations (Appendices D-G). All participants signed a consent form (Appendix I), and were informed that they could withdraw at any time. Throughout every stage of this process, the researcher was careful to honour the ethical principles of respect for persons, beneficence and justice outlined by the Department of Health, Education and Welfare (1979). The programme was modified for participants with discomfort, injuries or movement constraints. Everyone consented to the use of their recorded images during the presentation portion of this research.

PARTICIPANTS

Potential participants contacted the researcher after AT/voice webinars in the six months preceding the research period. A purposive sample (Tashakkori and Teddlie, 1998, p. 76) of potential classical singing participants were pre-screened for intrinsic motivation and asked to commit to daily independent learning. Five participants of the original seven invited to participate are included in this study. One participant withdrew in the third week citing health reasons. Another became a hospice caregiver for a family member interrupting her participation. Participants came from diverse geographical locations spanning from southern Louisiana to Tel Aviv. The average participant age in this study was 32, and the average training was 12 years, with seven spent studying classical music (Fig. 1).

Fig. 1: Participant Data

Case Study	Age	Voice Type	Years of Training (classical)	Singing Specialty	AT experience
CS1	25	Soprano	10 (10)	Opera: Bel canto, Mozart	A masterclass or two
CS2	25	Soprano	15 (9)	Opera	None
CS3	35	Mezzo	12 (2)	Jazz, and baroque solo	A little work with an AT teacher, several AT workshops
CS4	33	Tenor	15 (7)	Musical theatre	Minimal
CS5	43	Baritone	8 (8)	Baroque solo, renaissance choral, 20th century art song	A small amount of AT reading, and YouTube videos
Mean	32		12 (7)		

PROGRAMME

A series of 17 instructional videos were designed for this course (Capalbo, 2020a). These videos provided a background in AT theory and introduced traditional AT procedures (Appendix J). Each procedure in the AT framework was then applied to vocal exercises summarised in Appendix K. Video content was released semi-weekly and enhanced with live online weekly master classes where the participants were invited to sing and interact with the researcher. Materials influencing the development of this programme are found in the bibliography (Appendix L).

VALIDITY AND DATA COLLECTION

This longitudinal mixed method study utilises both qualitative and quantitative data submitted weekly by the participants. Tashakkori and Teddlie (1998) state that validity and reliability are the two most important issues pertaining to mixed method data (pp. 79-80). Validity, assuring appropriate data is measured, guided the researcher to define a practical vocal profile assessable using VVV, while remaining relevant to AT/voice integration. Reliable, error-free data were ensured through sample retesting (Tashakkori and Teddlie, 1998, p. 85). The researcher made every effort to mitigate research biases through the use of multiple data sources (Merriam and Tisdell, p. 12). In addition, the verification and expansion of existing findings (Jones, 1972) enhanced this study's validity (Tashakkori and Teddlie, 1998, p. 83). The qualitative research ideal of trustworthiness was pursued in terms of an eight-week prolonged engagement, triangulation of data sources, negative case analysis, and thick description of participants' reflection journals, with all original materials stored for future verification (Tashakkori and Teddlie, pp. 90-92).

METHODS

The specific tools utilized to capture data in the VVV programme include.

- **Spectrum (LTAS) Analysis** - Amplitude (dB)
- **Vibrato Analysis** - Vibrato rate (Hz) and vibrato extent (cents)
- **Spectrographic Analysis** - Stylistic assessments (legato, vibrato periodicity, and phonation type)

Results from these acoustic data were then applied to the vocal profile (Fig. 2).

Fig. 2: Acoustic Measurements Applied to the Vocal Profile

Method	Acoustic Measurements and Assessments Week 1 versus Week 8 Changes
Respiratory Noise	
Spectrum (LTAS) Amplitude measurements triangulated with aural assessment.	▪ Measurement of audible aperiodic inhalatory noise ○ Peak to peak comparison (dB)
Balance of Spectral Energy	
Spectrum (LTAS) Amplitude measurements triangulated with visual and aural assessments	▪ <i>Caro mio ben</i>, 9 bar sample ○ Peak to peak comparison between regions (dB), (0-2.3kHz, 2.3-4kHz)
Formant Tuning	
Spectrum (LTAS) Visually and aurally assessed.	▪ Excerpted initial [a] from <i>Caro</i> ○ Efficient VF strategy (0-2.3kHz)
Vibrato Rate and Extent	
Vibrato Analyser (LTAS) Measurements provided from highlighted sections	▪ <i>Caro mio ben</i>, 9 bar sample ○ Vibrato rate 4.5-6.5Hz; extent (100-200 cents)
Legato	
Spectrogram Visually and aurally assessed. Triangulated with aural assessment.	▪ Excerpted selection including the text, <i>Caro mio ben</i> ○ Vibrato periodicity and continuity in the signal.

INSIDER RESEARCH

The researcher led a cohort of five independent learners through a programme related to her areas of expertise (Costley, 2010, p. 6). This online course challenged the established face-to-face teaching role, allowing the researcher to function primarily as a guide, while serving both as an observer and participant on the etic/emic continuum (Cohen, Manion and Morrison, 2007, p. 179).

The programme was structured around the researcher's training and previous research on this topic (Capalbo, 2020b). Emerging themes were extracted from participant reflection journals (Willig, 2013, p. 72), which helped the researcher to clarify video content. In addition, guidance was explicitly modified as required due to disease, discomfort, and independently sustained injuries.

The online weekly master class was the most emic element of this research. Although the researcher did not function explicitly as a voice teacher in this inquiry, some participants expressed an interest in supplementary vocal input. The decision to make instructional shifts were based on her interactions with specific participants. The ultimate goal of tension release and restoration of coordinative function to facilitate vocal ease remained constant.

FINDINGS

Jones' (1972) two main acoustic findings related to respiration and resonance are verified, clarified and expanded in this inquiry. Additional assessments related to style are investigated.

RESPIRATION

Jones' previous study found some evidence of reduced audible respiratory noise. His evidence consisted of a faint spectrographic image (p. 212) with no measurements attached.

Audible levels of respiration were measured at the same point in the song *Caro mio ben* (Fig. 3). The highest weekly respiratory peak was identified and measured in the spectrum using LTAS. Results showed a reduction of respiratory noise in all participants' LTAS peaks from the first to the eighth week (Fig. 4). The mean decline was 6.8dB of aperiodic inhalatory sound. These numbers could be considered significant when you consider that 6dB doubles amplitude (McCoy, 2012).

Fig. 3: Respiration Selection

**Measured inhalation,
all participants**

The image displays a musical score for the song "Caro mio ben". The top staff is labeled "CANTO" and begins with a piano (*p*) dynamic marking. The lyrics "Ca - ro mio ben, cre - di - mi al - men, sen - za di te lan - guisce il" are written below the staff. An orange arrow points to a specific note in the melody, indicating the "Measured inhalation, all participants". The bottom staff is for the piano accompaniment, marked with a piano (*p*) and "dolce" dynamic. The score is in G major (one sharp) and 4/4 time.

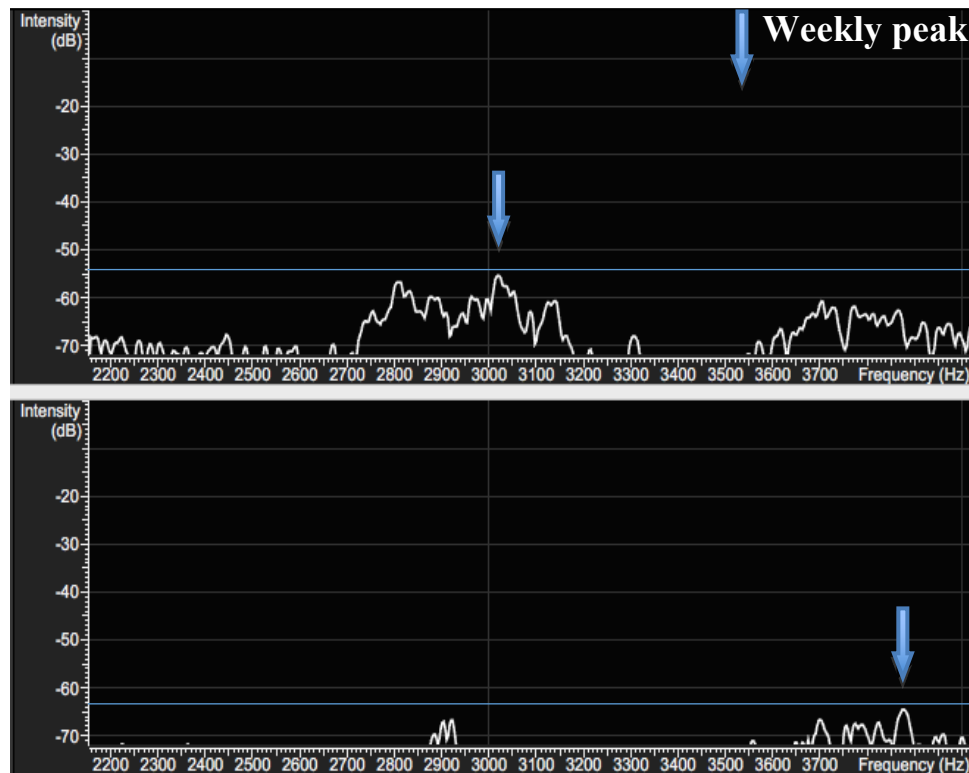
Fig. 4: Decreased Respiratory Noise

Case Study	Change in peak dB inhalatory noise from week 1 to week 8
CS1	-10dB
CS2	-5dB
CS3	-6dB
CS4	-6dB
CS5	-7dB
Mean Reduction	-6.8dB

Change in peak to peak LTAS respiratory noise

Participant respiratory data revealed pronounced decreases in CS1's respiratory noise (Fig. 5). Identifying as a noisy breather she found herself reevaluating, "how often I over breath, which actually can cause tension for me". This level of self-reflection indicates that CS1's dramatic reduction may have been assisted through this programme by providing new tools and focusing her awareness on a problem she recognised on some level she wanted to fix. Her results illustrate typical participant findings, showing not only a peak reduction over eight weeks, but an overall decline in aperiodic respiratory noise throughout the entire spectrum. Full LTAS respiratory results are found in Appendix M.

Fig. 5: LTAS, Greatest Respiratory Noise Reduction

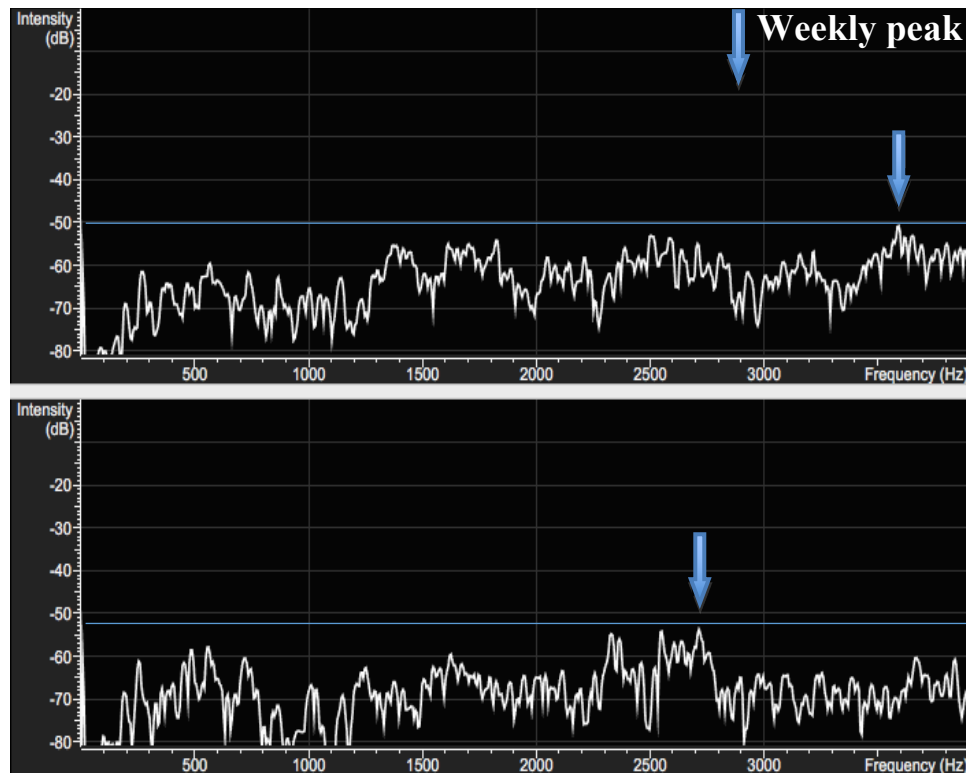


CS1: LTAS of aperiodic respiratory noise

Week 1, top – Week 8, bottom

Before leaving the topic of respiration, it is interesting to consider the results from a singer who tended to sing with pressed phonation, discussed in depth later. CS5 had notably higher levels of respiratory noise throughout his LTAS range both weeks (Fig. 6). This likely indicates underlying tensions throughout the vocal tract even though an overall net decrease in peak inhalatory noise was observed. Based on the information provided during master classes, the researcher believes that there is a strong possibility that CS5 uses an audible inhalation to cue ensemble members. This pattern has manifested as a tensional habit that remains present even when it is not necessary to signal others.

Fig. 6: LTAS, Respiratory Noise Reduction with Tensional Patterns



CS5: LTAS of aperiodic respiratory noise

Week 1, top – Week 8, bottom

RESONANCE

Jones identified enhanced resonance as his other significant research outcome. Due to advances in technology and voice science, this claim can now be parsed more critically. Specifically, this research looks at the balance of energy in the SFR in relation to the VFR and the use of vowel clarity in the VFR to boost resonance.

SPECTRAL ENERGY

Nine bars of *Caro mio ben*, were measured using LTAS. Singing effort was inferred from the spectral energy peaks between the VFR (0-2.3kHz) and SFR (2.3-4kHz). For the purposes of this programme, lower effort in the SFR during phonation was viewed

as easier and more efficient as long as an appropriate timbre was maintained. Since singers are not projecting over an orchestra during this task, enhanced amplitude in the SFR region is not required. However, boosts in the SFR may be present as a feature of vocal timbre. Spectral energy measurements are found in Fig. 7. The final column indicates changes in decibel levels over the research period.

Fig. 7: Spectral Energy Measurements, *Caro mio ben* (nine bars)

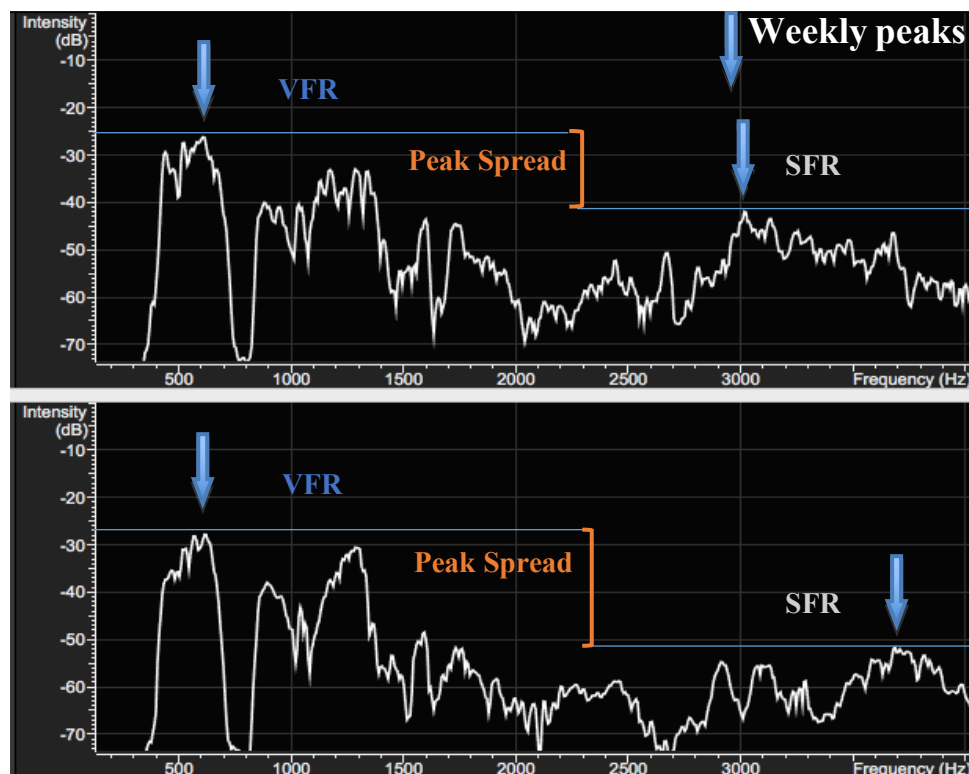
Case Study	Peak Spread 0-2.3kHz and 2.3-4kHz	Peak Spread 0-2.3kHz and 2.3-4kHz	Week 1 – Week 8 change in peak spread
	Week 1	Week 8	
CS1	-16.0dB	-23.5dB	-7.5dB
CS2	-29.0dB	-32.5dB	-4.0dB
CS3	-10.5dB	-18.0dB	0.0dB
CS4	-11.5dB	-14.0dB	-2.5dB
CS5	-14.0dB	-13.5dB	+0.5dB
Mean			-2.7dB

Amplitude Peak to Peak Spread

Week 1 and Week 8

There was a modest mean reduction of 2.7dB in spectral energy in the SFR over eight weeks. Three participants (CS1, CS2, CS4) showed a reduction in SFR amplitude indicating that their phonation was easier and more efficient. The mean reduction for the 60% of the cohort with typical results was -4.7dB. Unsurprisingly the sopranos (CS1, CS2) had the two highest reductions. This is likely due in part to the acoustic nature of higher frequencies. Sopranos often rely on f_o in the VFR to boost their sound rather than enhanced energy in the SFR. The most dramatic reduction is found in Fig. 8 below.

Fig. 8

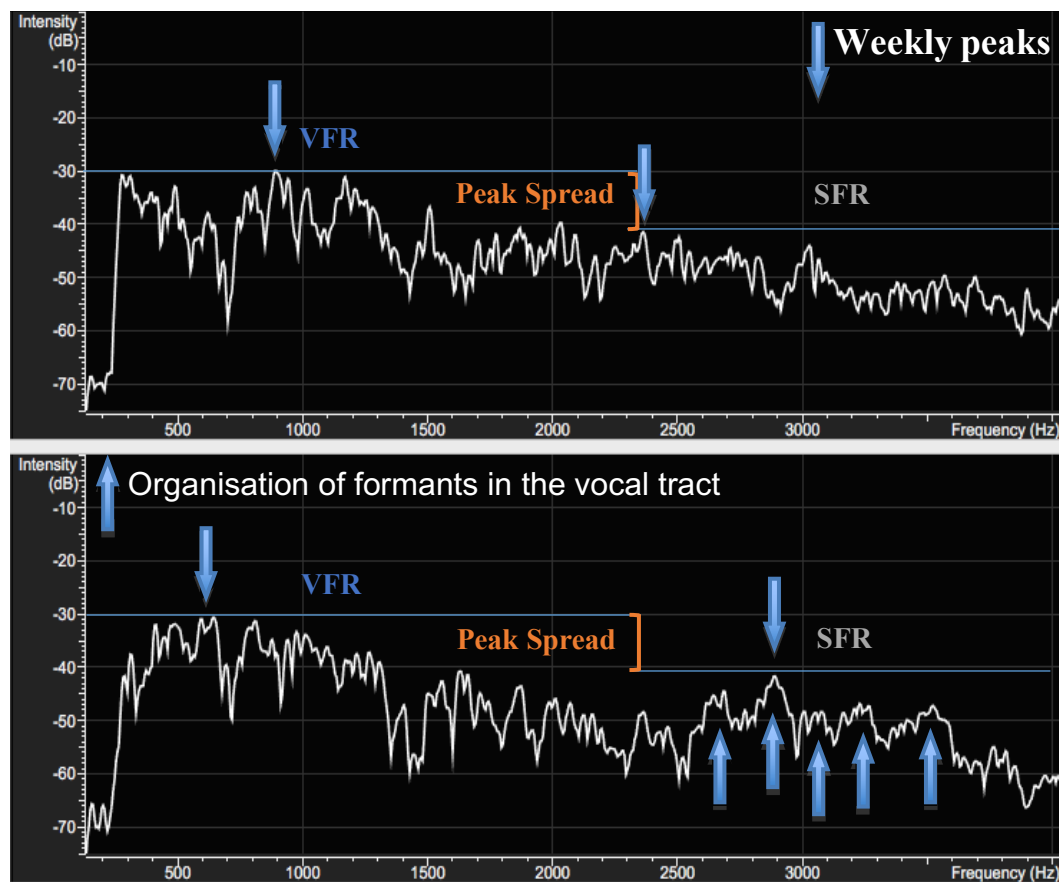


CS1: LTAS of *Caro mio ben* (9 bars)

Week 1, top – Week 8, bottom

CS3's results were thought-provoking because although she shows no reduction in amplitude, her energy patterns in the LTAS show quite a shift over the weeks (Fig. 9). Stronger and clearer emerging formants seem to be developing in the SFR of this singer who trained originally in jazz. The researcher posits that this developing pattern may indicate more stability in her classical vocal tract position, although this research area is still emerging (Manfredi et al. 2015). To maintain this new vocal tract coordination CS3 may have used greater effort. Effort may diminish as she becomes more skilled in this style. Perceptually, the researcher confirmed an emerging classical ring by the eighth week in the song task. This pattern reveals an interesting trend. However, the enhanced SFR peak is 11dB below the VFR peak to remain at appropriate, although energetic, levels for this task.

Fig. 9

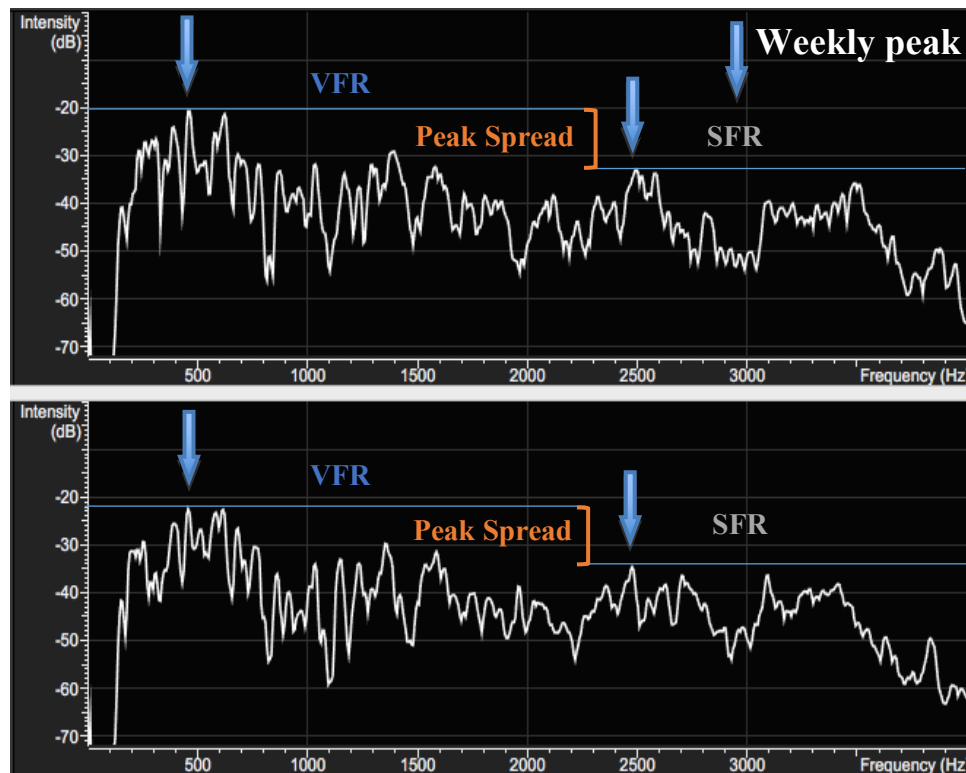


CS3: LTAS of *Caro mio ben* (9 bars)

Week 1, top – Week 8, bottom

CS5's spectral energy results represent a clear outlier demonstrating a slight increase in SFR amplitude by the final week (Fig. 10). A mitigating factor may be an illness during week one, causing him to sing more cautiously. While heightened energy might indicate enhanced ring, as seen with CS3, an increased amplitude may also represent pressed phonation. Perceptually CS5's sound is dull and pressed with a clearly constrained vibrato. The researcher compared his eighth week result with all previous weeks to confirm that these results are consistent, and not merely a negative performance shift on the final week. All participant LTAS spectral energy images are found in Appendix N.

Fig. 10

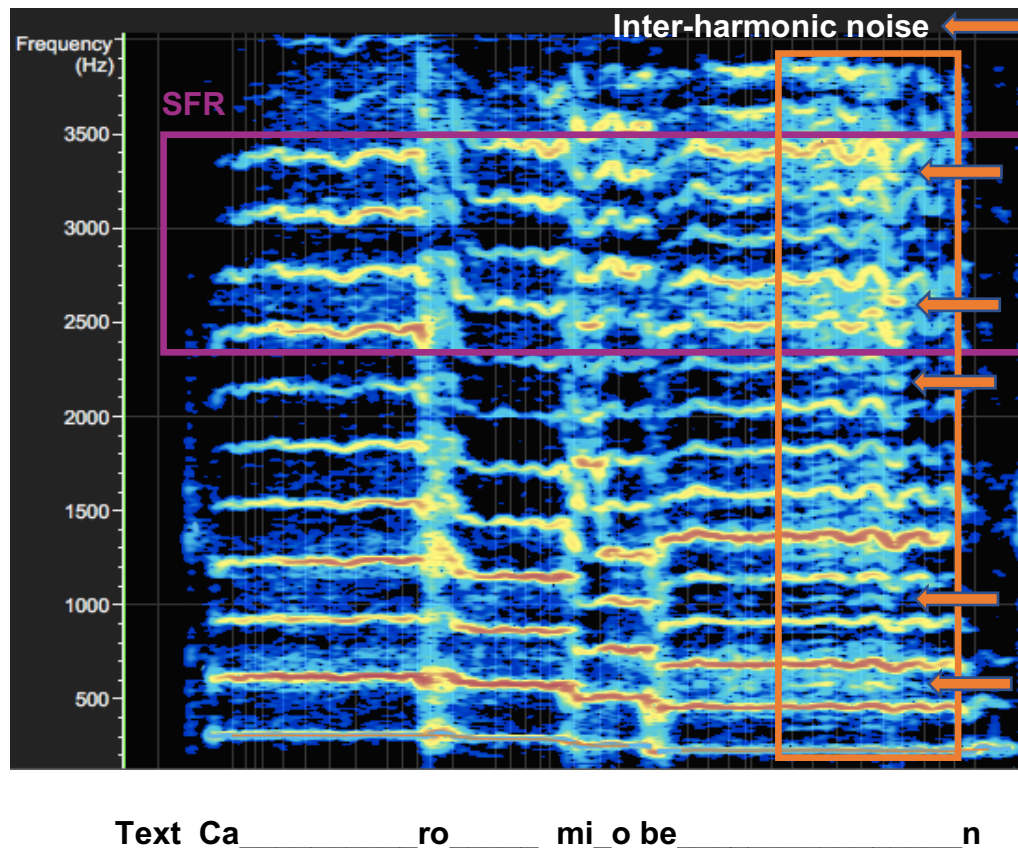


CS5: LTAS of *Caro mio ben* (9 bars)

Week 1, top – Week 8, bottom

This researcher agrees with previous research findings that sound quality cannot be assessed by relying solely on the LTAS for this cohort of teachers and aspiring singers (Mitchell and Kenny, 2004). To be responsibly evaluated this data must also be assessed perceptually. The researcher perceived CS5's sound aurally as pressed for classical singing. This researcher does not make claims of pressed phonation lightly. This pressing tendency can be visualised in a spectrogram (Fig. 11). The boxed **SFR** indicates that the energy is boosted, illustrated by the brighter yellow colour. However, the sound contains aperiodic inter-harmonic noise on the sustained note *ben* that should not be present because the harmonic series is regular and predictable. This visual representation illustrates what the researcher heard as habitually constrained vibrato atypical of the classical style, as well as pressed phonation with an almost rattle-like noise at times.

Fig. 11: Pressed phonation



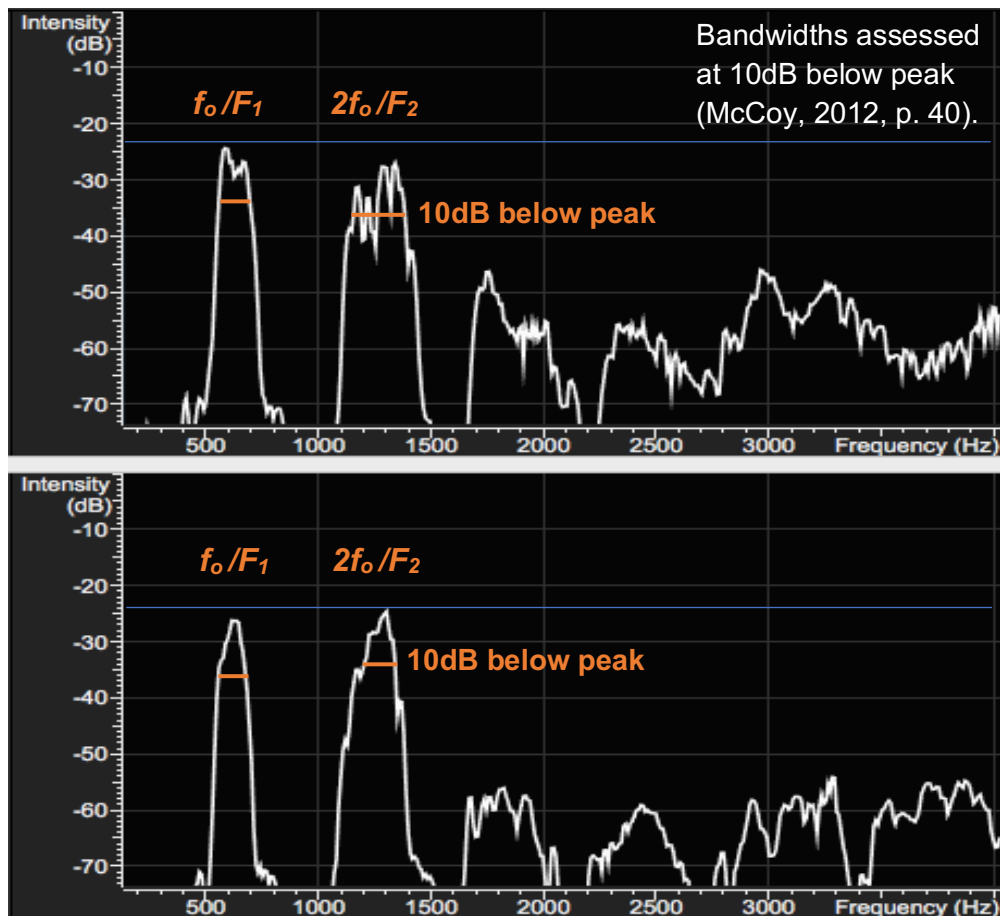
CS5: week 8, *Caro mio ben*

This spectrogram represents an updated version of Jones' (1972) data (p. 213), which clearly illustrates that heightened harmonics do not necessarily equate to an improved and appropriate resonance or timbre.

VOWEL FORMANTS (VFs)

Any attenuated levels in the SFR, due to vocal ease, must be balanced by a clearer VF strategy in the lower part of the spectrum for resonance equilibrium. An excerpted [a] from the first word *Caro* was used to evaluate VFs. Tuning strategies are assessed on isolated vowels since each has an individual acoustic profile. The relationship of F_1 to F_2 defines vowel clarity, colour and style in the 0-2.3kHz region. There were no explicit vowel instructions given during this research.

Fig. 12

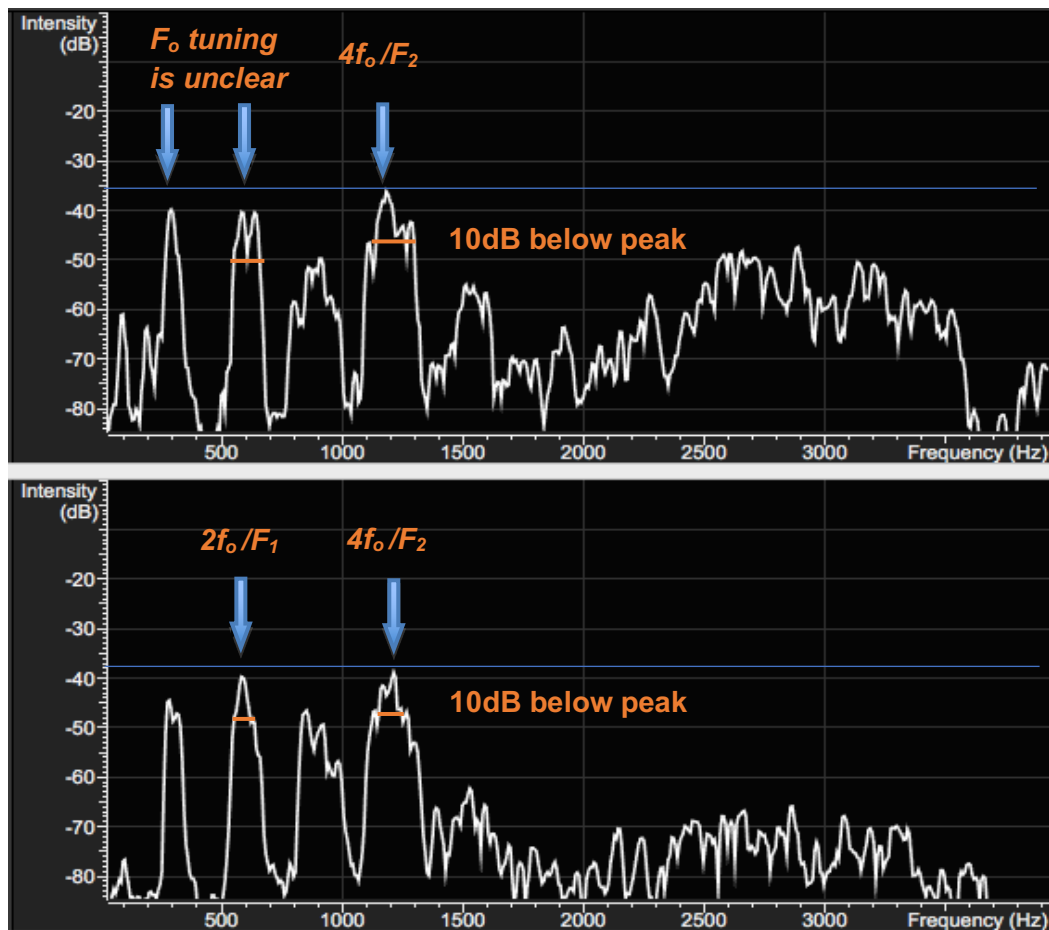


CS1: LTAS of [a] from Caro, E5-flat

Week 1, top – Week 8, bottom

Overall a narrowing in formant bandwidths was found in week eight indicating a more precise formant tuning strategy aligning $2f_0$ and F_2 in female voices (Fig. 12). Narrowing the F_2 bandwidth effectively lowers that formant creating more distance between the VFR and SFR peaks. This corroborates an emerging theory mentioned previously that spectral distance supports chiaroscuro or a balance between light and dark timbral colours. Data consistently revealed narrower VFs for all participants.

Fig. 13



CS4: LTAS of [ɑ] from *Caro*, E4-flat

Week 1, top – Week 8, bottom

Since men sing an octave lower, their spectrum results differ (Fig. 14). Evidence of more precise formant tuning is seen in Fig. 13. The battle between f_0 and $2f_0$ to dominate F_1 in week one resolve into a clearer resonance strategy with $2f_0$ boosted about 5dB higher than f_0 to track F_1 in week eight. CS5's [ɑ] also showed narrower bandwidths, with a boosted $4f_0/F_2$ relationship, although the $2f_0/F_1$ coupling dominates his LTAS. Full LTAS data are found in Appendix O.

Further studies are required to confirm the implication of vocal ease on spectral balance, although there is evidence that less energy in the SFR is balanced by a more precise VF tuning strategy.

QUALITATIVE EVIDENCE OF VOCAL EASE

One of the principal goals of this AT/voice integration programme was to attain greater vocal ease. This was reflected in the participant's journals.

During my voice lesson today, I noticed that I was much more connected than usual. I have been focusing quite a bit on my head neck back relationship while I sing and bringing that into my lesson helped me make some great sounds. Carrying my connection from my high notes (that have always been easy) down to my middle and low voice which have been a struggle for me. They are becoming easier. (CS2)

I noticed while singing today I felt much more stability in the sound and less jaw shaking, and my arms and upper chest are much more relaxed. I did not experience much fatigue. High notes were easier to reach. I could sustain the soft sound more easily and sing the diminuendo which is usually a problem for me. (CS3)

Based on the preponderance of evidence, this researcher concludes that when excess tension was released participants sang with less effort. This was reflected in the balance of spectral energy between the VFR and SFR and their journals. When new resonance patterns emerged, comparable levels of vocal effort were used to stabilise the new vocal coordination.

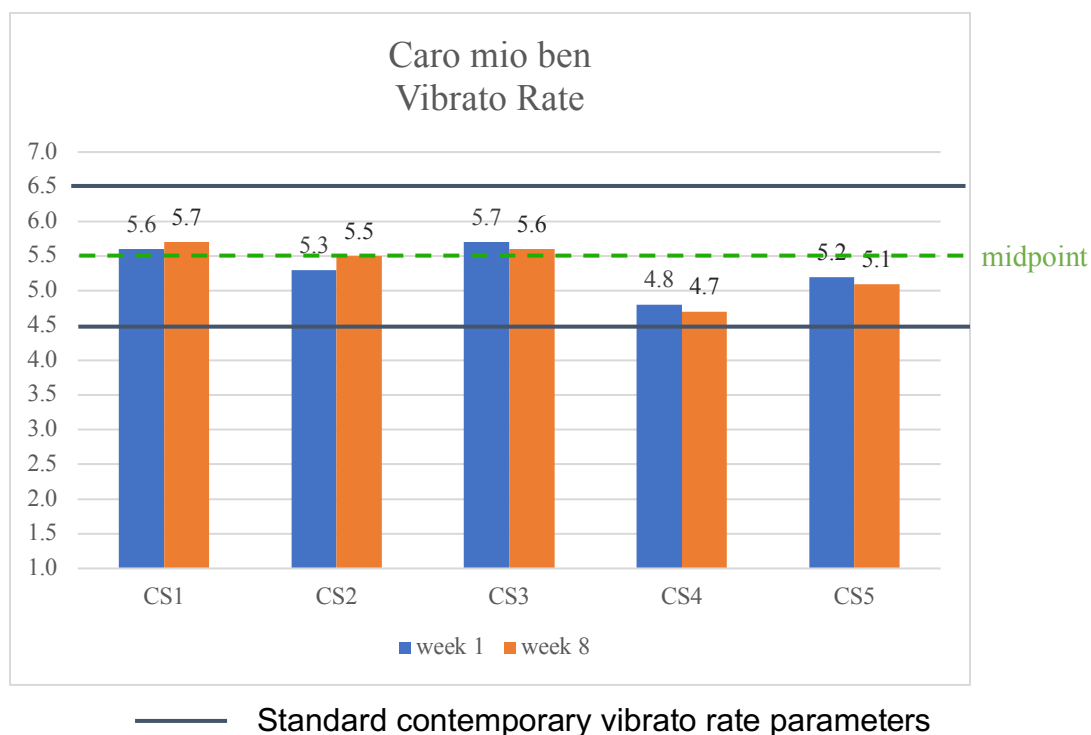
Conversely, if habitual tensional singing patterns were preserved, there was no measurable change in the LTAS or perceptual differences in the singing. Alexander's warning against students with a rigid viewpoint was at times personified in CS5's journal where he suggested that some of the exercises were for "remedial" or "over-trained"

singers, and therefore irrelevant to him. The easiest sounding sample from CS5 occurred in the first week and was likely due to more cautious singing during an illness.

VIBRATO

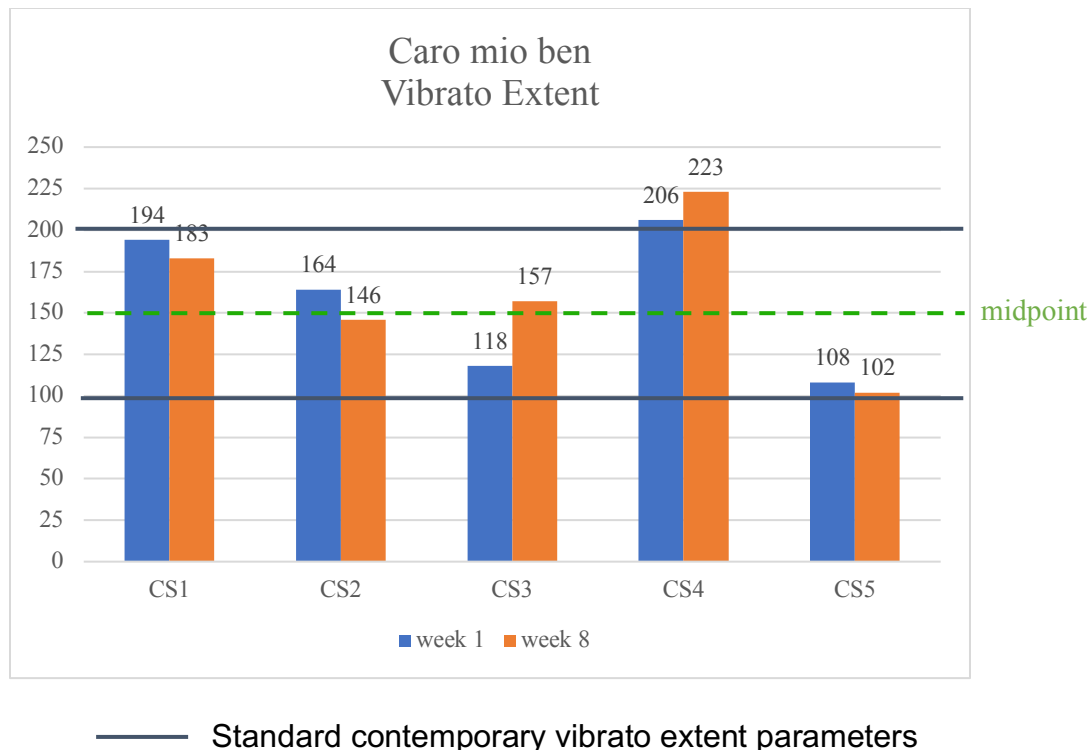
The vibrato rate results in the nine-bar song task (Fig. 14) showed that the entire cohort fit into the standard parameters. The women's data (CS1, CS2 and CS3) showed modest changes that stayed close to the midpoint of the expected rate over the eight weeks. The vibrato rates for both men (CS4, CS5) decreased moving slightly away from the midpoint, but as discussed earlier men's vibrato rates tend to be smaller.

Fig. 14



Vibrato extent results also showed dissimilarities between the genders as expected (Fig. 15). The women's extents all moved toward to the midpoint of the expected range over eight weeks with an average shift of 22 cents. Conversely, the extent in both male participants moved in opposite directions toward, or over, the accepted range limits.

Fig. 15



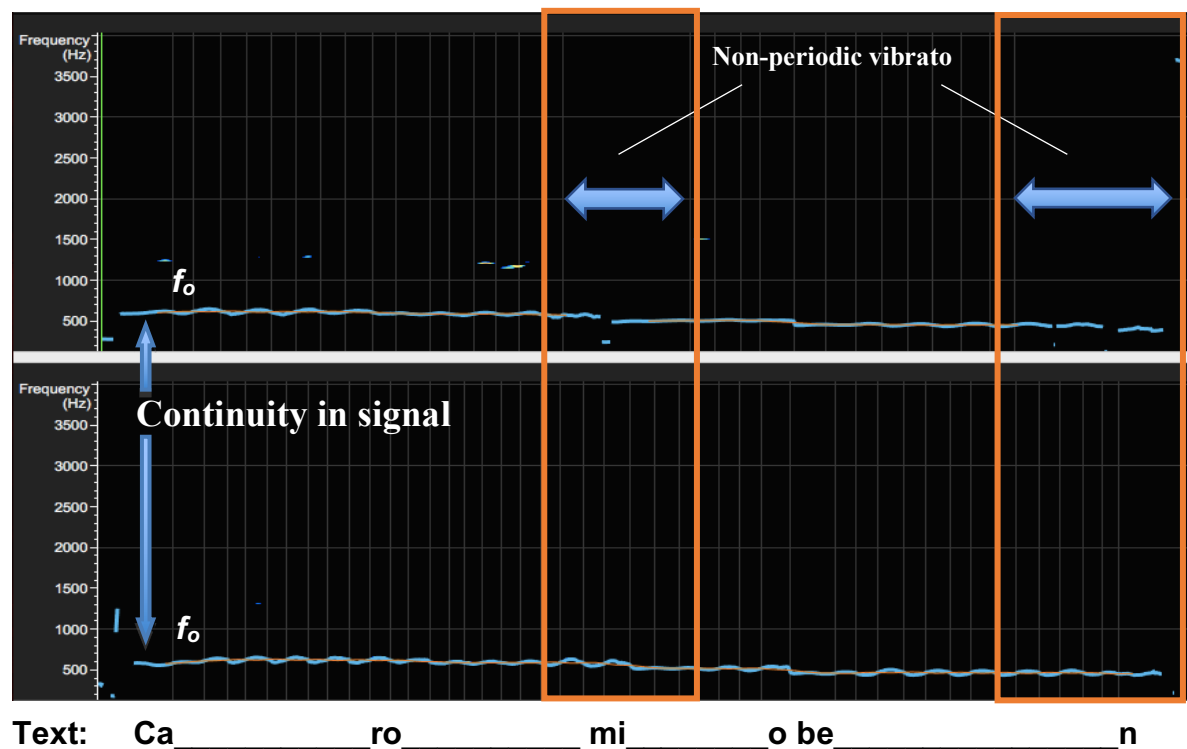
The researcher acknowledges that the issues affecting vibrato extent are multi-faceted, and vibrato can take time to change. However, for the purposes of this research, she found that both male singers tended to stay close to their habitual vibrato pattern over this period, with no spontaneous adjustments toward the typical midpoint.

Throughout this inquiry CS4 consistently demonstrated an extremely variable and high vibrato extent. His data indicate that his voice tended toward a wobble, confirmed perceptually by the researcher. On the opposite end of the spectrum, CS5 preferred to sing with a straighter tone. This was represented in his acoustic data as well as in his journal. He wrote, “I have a concern that my exploration of AT is helping release tensions that are allowing a bigger voice”. His reluctance to release his voice from vibrato constraints was a recurring theme. His overall results reflected an uncommonly low vibrato extent for the identified benchmark of this research.

LEGATO

Legato is foundational to the classical singing style, and reliant on a periodic vibrato. Signal continuity was analysed in the phrase *Caro mio ben*. Many minor performance shifts were observed over eight weeks. Only one participant demonstrated a clear pattern of overall legato improvement in signal continuity and vibrato periodicity over this period (Fig. 16).

Fig. 16: Legato, Fundamental Continuity and Vibrato Regularity



CS3: Spectrogram of *Caro mio ben*

Week 1, top – Week 8, bottom

The energy in the spectrogram (Fig. 16) has been attenuated to see f_0 more clearly. The faint vertical lines represent vibrato cycles, which are more periodic and therefore more stylistically correct for classical singing in week eight. Note the straightened vibrato in the onset of *mio*, and the offset of *ben* in week one versus greater periodicity in week

eight. The consonants are also clearly more connected in week eight especially the [m] of *mio* and [n] of *ben*.

Other indications of legato awareness were found in the journals and were specifically connected to the benefits of working with the *hands on the back of a chair* (HotBoaC) procedure.

I feel like the pulling on the chair helps me with phrasing. While singing a long phrase, the pulling helps to keep it legato. It almost feels like an ebb and flow through whatever piece I am working on. (CS2)

[HotBofC] made me more aware of my legato, and because it was external, it was easier notice. There were times when plosives were interrupting the legato too much. (CS5)

During the final masterclass the researcher took a more emic approach with CS2 and CS4 expressly asking for legato for the first time. This video data is presented in the lecture portion of this research.

CASE STUDY OBSERVATIONS

Some subjects expressed confusion initially as they grappled independently with the material, which is not uncommon in the AT learning process. There was a marked sense of acceptance and greater insight by week seven. “I think this week I had a breakthrough. I really felt like I was grasping the material.” (CS4) Many of the physical observations made below are best presented through moving images. Therefore, the lecture presentation contributes to these research findings.

CS1, a voice teacher and church singer, was the most independent participant as she was unable to attend most master classes. She relied on the video material and three check-up meetings with the researcher. In the video clips submitted, the researcher

noticed that CS1 had a more casual approach to singing posture and wondered if she was too relaxed. This lack of muscular tonus was reflected in her journal:

I find that sometimes sitting up straight in a chair or on the floor is very tiring if held for longer than 2-3 minutes. I believe this may be because my postural muscles, particularly the muscles running along my spine are weak and not used enough.

During these meetings CS1 displayed a curiosity and understanding of AT procedure mechanics. Her head, neck and back coordination improved through her diligent work.

CS2, a music therapist and aspiring opera singer, displayed common tensional issues in the master classes through extraneous head and neck movement. Tension in her tongue and jaw, customary hotspots for her, seemed to diminish somewhat over time. Since AT is a mind/body practice, it is interesting to note her reflections on her mental state after sustaining a work injury.

Today was a rough day at work and there were a lot of restraints that needed to be done. It is hard for me to stay out of the middle of things sometimes. I'm not sure if this is right, but I felt when I was letting other staff members take over the crises, I was kind of omniserving what was going on. It was an interesting concept.

The researcher believes that the ability to detach and not react emotionally relates directly to the issues of performance anxiety and stress. This is a widely touted AT benefit only briefly mentioned in this paper, although it bears further investigation. CS2's singing tensional shifts, and legato improvements between weeks one and eight will be presented in the lecture.

CS3, a teacher and jazz singer with 2 years of classical training, has a background in Estill training and yoga. This participant was very dedicated to the process as evidenced by her frequent journal entries and perfect master class attendance. She began this

process with notable tension in her arms, torso and face. Her journal reflects both the mind and body aspects of AT/voice integration.

It was my third encounter with AT and the most profound one. I have an even greater understanding of the importance of the body's condition, muscle tonus, posture, quality and [comfortable] sound production. My insights include: better body awareness overall, and specifically while singing. I believe I have built the foundation for more awareness while approaching the singing process. Generally, I can say my body feels better after this course.
(Lightly edited for grammar and spelling. The participant is a non-native English speaker.)

CS3's sound was transformed over eight weeks in the song task, with a more reliable classical ring and legato. Her singing tensions were remarkably reduced by week eight. Before and after videos will be shown in the lecture presentation.

CS4, a full time PhD student and music teacher, identifies as a musical theatre singer although his formal training was classical. Diagnosed with a degenerative ailment affecting the spine, he initially displayed excessive arm and head movements. These improved over time. His reflections indicate how he adapted this programme to his personal circumstances with a focus on mindfulness benefits.

I can feel my muscles engage even more as I slowly move from position to position. But I do feel more stabilization and less fatigue. The semi supine pose has been very helpful when used in conjunction with one of my therapy tools (a back stretcher). I feel it release and unlock the lower part of my back. Doing the routine has been very helpful in centering myself before singing.

His legato improvements will be shown during the presentation.

CS5, a voice teacher who sings semi-professionally, identifies as an early music specialist. This participant's results support the overall respiratory and VF strategy findings. However, CS5 seems to have preconceived notions as to how much he is willing to change. Often presenting material for his upcoming Trinity qualification LTCL recital in the master class, he seemed locked in a performance rather than a learning mode. He remained reluctant to make changes even as he noted the observation of others, in this case, a trained musician and his accompanist.

[My partner] perceived that my sound was 'easier' and 'more natural' when I chose more stillness [and] it sounded fuller and easier than my sound before these workshops...I just feel louder, and I don't automatically want that.

The researcher suspects this participant's aim was primarily to extract information, while remaining disengaged from the process of change. Nevertheless, after eight weeks, using indirect means that he was "starting to grind with", there was ultimately improvement in CS5's habitual head tilting and nodding. His attentional focus also improved when performing material of his own choosing. The performance lecture will demonstrate these changes.

DISCUSSION AND REFLECTION

Evidence from this research supported Jones' (1972) findings of reduced respiratory noise and shifts in resonance, although this research parsed resonatory changes more precisely. Attenuated energy in the SFR relating to greater ease was found in 60% of participants, while the remaining two subjects were either new to classical singing or sang in an atypically constrained style. A clearer VF strategy typified by narrower bandwidths (Miller, 2008) was evident in all participants' spectra data. Overall there was a shift in spectral balance toward greater ease and/or efficiency.

Data related to elements intersecting function and style, like vibrato, were inconclusive supporting the claim that vibrato may take time to develop (Mürbe et al, 2007; Mitchell and Kenny, 2010). Similarly, legato must likely be reinforced by explicit unequivocal

instruction similar to conventional voice lessons, after better coordinative function has been established.

Results may have been affected by the assigned repertoire that did not motivate participants to sing their best, even though a standard assessment was required. There was a pervasive feeling in many of the submitted video files of just getting the vocal tasks *out of the way*, without embracing the process. The absence of cueing before testing may have also negatively affected results. Cueing was difficult to institute because participants were responsible for their own recording and submission. Future inquiries may benefit from instituting a cueing protocol with data collected directly by the researcher, even remotely.

CONCLUSION

The Alexander Technique is an iterative re-educative process. After completing this programme, participants showed a greater understanding of AT principles and became more adept with the procedures. The evidence supports the claim that participants started to recognize and confront their habitual tensions, which impacted their respiration and singing.

Four hypotheses were proposed at the beginning of this research.

Hypothesis #1: Respiratory noise will be reduced.

This was found to be true with a mean reduction of 6.8dB. This means that noise was approximately halved.

Hypothesis #2: Greater singing ease will be reflected as less spectral energy in the SFR between 2.3-4kHz, especially in female voices.

This was substantiated in the results of both sopranos (CS1 and CS2) with more modest results for the tenor (CS4). The mean reduction in the SFR for those three

participants was 4.7dB. The mezzo soprano (CS3) showed no change but her SFR revealed a burgeoning development with more precisely tuned formants indicative of the classical style. The researcher posits that CS3 likely used more energy to stabilize this new alignment than she will require in the future. CS5 was an outlier, with no direct data or patterns to support this hypothesis. However, his data results do not necessarily disprove this theory, since this researcher does not believe that CS5 was engaged in the pursuit of greater vocal ease. This was reflected in his comments and the consistently constrained singing style he chose.

Hypothesis #3: Improved resonance will be reflected in the VFR.

This was demonstrated to be true to a degree in all cases as VF tuning became more precise exemplified by narrower formant bandwidths.

Hypothesis #4: Reduction of chronic tension and improved coordination will be reflected acoustically with improved vibrato periodicity and a smoother legato.

Specific concerns, like legato, tended to improve only with explicit intervention. The women's vibrato rate results trended toward the centre of standard ranges with a notable mean shift of 22 cents in their vibrato extent over eight weeks. Men's results tended to stay tethered to their habit at the extremes of the accepted range. A longer longitudinal study is needed to validate claims regarding spontaneous improvements related to stylistic issues.

FUTURE ACTIONS

This research was launched to solve an immediate teaching challenge related to contact restrictions. Going forward there are a number of teaching applications for a programme of this type.

- Reinforcement between private or group lessons.
- University level music courses, lectures or workshops.

- Young artist training workshops.

The independent nature of this online programme greatly reduced constraints such as time and distance allowing the researcher to interact with a diverse pool of subjects. This inquiry has provided a practical framework for a formal online training programme.

Future research involving a more typical cohort, with a conventional classical vibrato rate and extent, would allow for the implementation of vibrato jitter research. More typical data may also provide generalisable results for vibrato, an important classical vocal characteristic, which is theorised to develop naturally over time (Sundberg, 1987). Expanded AT/voice research beyond the acoustic realm may include psychophysical benefits related to cognitive tension, experienced as performance anxiety, and measured through tools like the Kenny Music Performance Anxiety Inventory (Kenny, 2016).

Finally, the knowledge and experience derived from this workplace learning programme synchronises with the emerging American EBVP movement focusing on acoustics and physiology (Ragan et al. 2020). The researcher is motivated to continue clarifying her pedagogical philosophy and formalising her teaching methodology through the development of additional voice exercises instituting AT fundamentals. She plans to pursue publishing these research results to contribute to AT/voice scholarship and to expand on Jones' (1972) pioneering research.

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APPENDICES

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APPENDIX A: REGISTRATION AND MOTIVATION QUESTIONNAIRE

AT/Voice Integration Research for Classical Singers: Registration and Motivation Assessment Form

* Required

All information will be kept confidential and research results will be anonymised. All questions require a response. If you have no answer to contribute to a question, please write 'none'.

1. Full name *

2. Preferred email for research communication *

3. Current age: Yes age is just a number, but it may help to frame some research results. (Participants must be over 18 to participate). *

4. Voice type *

Check all that apply.

- ☐ Soprano
- ☐ Mezzo Soprano
- ☐ Contralto
- ☐ Tenor
- ☐ Baritone
- ☐ Bass

Other: ☐

5. Relevant degrees and training *

6. Singing or voice career goals (if any). *

7. Alexander Technique experience (if any). *

8. Personal goals for this AT/voice training (if any). *

9. AT/voice integration can be effective only if you are an active participant. Do you plan to devote some time each day on AT/voice integration? *

Mark only one oval.

☐ Yes

☐ No

10. Please list any concerns or challenges with the research I plan to collect both weekly or at the beginning and end of this study. All data are itemised in the invitation email. *

11. Are you interested in private AT/Voice lessons as part of this programme? *

Mark only one oval.

☐ Yes

☐ No

☐ Maybe

The following questions are being posed due to the 'independent study' nature of this research. They are meant to assess participant motivation. Please read and answer the following 6 questions carefully. I wish to engage in AT/voice integration training because:

12. 1) I think that this activity is interesting. *

Mark only one oval.

	1	2	3	4	5	6	7	
corresponds not at all	☐	☐	☐	☐	☐	☐	☐	corresponds exactly

13. 2) I am doing it for my own good. *

Mark only one oval.

	1	2	3	4	5	6	7	
corresponds not at all	☐	☐	☐	☐	☐	☐	☐	corresponds exactly

14. 3) I think that this activity is pleasant. *

Mark only one oval.

	1	2	3	4	5	6	7	
corresponds not at all	☐	☐	☐	☐	☐	☐	☐	corresponds exactly

15. 4) Participation is my personal decision. *

Mark only one oval.

	1	2	3	4	5	6	7	
corresponds not at all	☐	☐	☐	☐	☐	☐	☐	corresponds exactly

16. 5) I feel good when I do this activity. *

Mark only one oval.

	1	2	3	4	5	6	7	
corresponds not at all	☐	☐	☐	☐	☐	☐	☐	corresponds exactly

17. 6) I believe that this activity is important for me. *

Mark only one oval.

	1	2	3	4	5	6	7	
corresponds not at all	☐	☐	☐	☐	☐	☐	☐	corresponds exactly

18. Thank you for completing this form. Please list any other thoughts or concerns you may have regarding your participation in this study here. *

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APPENDIX B: SINGING TASKS FOR WBL PROJECT BMPF7008

These vocal tasks will be submitted weekly for acoustic analysis.

Each singer will sing messa di voce on three vowels [i], [u], and [ɑ] at three pitches: 25% - 50% - 75% of the typical operatic vocal ranges for their fach (defined below). Participants screened for this research fall into 4 voice categories: soprano, mezzo soprano, tenor and baritone.

Messa di voce singing task



Instructions: Crescendo and decrescendo on one pitch, with at least an 8 second duration.

3 vowels on each pitch [i], [u], [ɑ]

[i] key	[u] moon	[ɑ] cod
---------	----------	---------

Pitches assigned by voice type:

Soprano	E4	B4	F5
Mezzo Soprano	D4	A4	E5
Tenor	G3-sharp	C4	G4-sharp
Baritone	C3	G3	D4

Song Excerpt:

The first 9 sung bars of Caro mio ben, by Giordani.
Sung a cappella in Italian in the key of your choice.

Typical Operatic Vocal Ranges*

Soprano: A3-C6
Mezzo Soprano: G3-B5-flat
Contralto: F3-A5
Tenor: C3-C5
Baritone: G2 – G4
Bass: E2 – F4

(*Revised from Miller, 1986, p. 117)

APPENDIX C: PROJECT TIMELINE

Work Based Learning Project Timeline: BMPF 7008

Status as of: 13-Jan-21

Integrating the Alexander Technique into Voice Training: Assessing the Efficacy of Independent Online Learning through Pilot Case Studies.

Ethics and Participant Selection			
Activity	Status	Start Date	End Date
Submit Ethics form	Complete	11-Aug-20	-
Approved Ethics form	Complete	28-Aug-20	-
Create questionnaire including SIMS assessing motivation	Complete	2-Sep-20	3-Sep-20
Contact potential research subjects with SIMS questionnaire, collect applications	Complete	2-Sep-20	11-Sep-20
Create research consent document	Complete	6-Sep-20	11-Sep-20
Choose research participants and obtain signed consent	Complete	12-Sep-20	17-Sep-20

WBL Research Design and Composition			
Activity	Status	Start Date	End Date
Project Design: 8 week webinar programme outline	Complete	28-Aug-20	5-Sep-20
Research and open private YouTube channel	Complete	9-Sep-20	-
Create Facebook group page	Complete	9-Sep-20	-
Compose and record AT history and theory, short webinars	Complete	9-Sep-20	14-Sep-20
Compose initial semi-structured interview questions	Complete	17-Sep-20	21-Sep-20
Compose and record week 1 webinars and audio: Semi-Supine and Conscious Control	Complete	17-Sep-20	21-Sep-20
Compose and record week 2 webinars and audio: Standing and Sitting	Complete	28-Sep-20	30-Sep-20
Compose and record week 3 webinars and audio: Moving into Monkey	Complete	5-Oct-20	7-Oct-20
Compose and record week 4 webinars and audio: More Monkey	Complete	12-Oct-20	14-Oct-20
Compose and record week 5 webinars and audio: Whispered "ah"	Complete	19-Oct-20	21-Oct-20
Compose and record week 6 webinars and audio: Hands on the back of a chair (HotBoaC)	Complete	26-Oct-20	28-Oct-20
Compose and record week 7 webinars and audio: Whispered "ah" and HotBoaC	Complete	2-Nov-20	4-Nov-20
Compose and record week 8 webinars and audio: Awareness & Common Singer Tensions	Complete	9-Nov-20	11-Nov-20
Compose and administer final questionnaire based on data gathered.	Complete	12-Nov-20	12-Dec-20

Conducting the Research			
Activity	Status	Start Date	End Date
Framing the research: Post initial AT theory and history webinars (6)	Complete	19-Sep-20	-
Schedule initial interviews	Complete	17-Sep-20	21-Sep-20
Post week 1 YouTube video: AT: Semi-Supine Procedure	Complete	21-Sep-20	-
Post week 1 YouTube video: Voice Application: Semi-Supine	Complete	23-Sep-20	-
Master Class week 1	Complete	27-Sep-20	-
Collect journals and recorded data (week 1)	Complete	28-Sep-20	5-Oct-20
Post week 2 YouTube video: AT: Sitting and Standing	Complete	28-Sep-20	-
Post week 2 YouTube video: Voice Application: Sitting and Standing	Complete	30-Sep-20	-
Master Class week 2	Complete	4-Oct-20	-
Collect journals and recorded data (week 2)	Complete	5-Oct-20	12-Oct-20
Post week 3 YouTube video: AT: Moving into Monkey	Complete	5-Oct-20	-
Post week 3 YouTube video: Voice Application: Moving into Monkey	Complete	7-Oct-20	-
Master Class week 3	Complete	11-Oct-20	-
Collect journals and recorded data (week 3)	Complete	12-Oct-20	19-Oct-20
Post week 4 YouTube video: AT: More Monkey	Complete	12-Oct-20	-
Post week 4 YouTube video: Voice Application: More Monkey	Complete	14-Oct-20	-
Master Class week 4	Complete	18-Oct-20	-
Collect journals and recorded data (week 4)	Complete	19-Oct-20	26-Oct-20
Post week 5 YouTube video: AT: Whispered "ah"	Complete	19-Oct-20	-
Post week 5 YouTube video: Voice Application: Whispered "ah"	Complete	20-Oct-20	-
Master Class week 5	Complete	25-Oct-20	-
Collect journals and recorded data (week 5)	Complete	28-Oct-20	2-Nov-20
Post week 6 YouTube video: AT: Hands on the Back of a Chair (HotBoaC)	Complete	26-Oct-20	1-Nov-20
Post week 6 YouTube video: Voice Application: Hands on the Back of a Chair (HotBoaC)	Complete	28-Oct-20	-
Master Class week 6	Complete	1-Nov-20	-
Collect journals and recorded data (week 6)	Complete	2-Nov-20	9-Nov-20
Post week 7 YouTube video: AT: Whispered "ah" and HotBoaC	Complete	2-Nov-20	-
Post week 7 YouTube video: Voice Application: Support	Complete	4-Nov-20	-

Timeline continued...

Master Class week 7	Complete	8-Nov-20	-
Collect journals and recorded data (week 7)	Complete	9-Nov-20	16-Nov-20
Post week 8 YouTube video: AT: Awareness	Complete	9-Nov-20	-
Collect journals and recorded data (week 8) Voice Application: Common Singer Tensions	Complete	11-Nov-20	-
Master Class week 8	Complete	15-Nov-20	-
Collect journals and recorded data (week 8)	Complete	16-Nov-20	22-Nov-20
Analyse and code data	Complete	15-Oct-20	15-Dec-20
Collect final questionnaire	Complete	14-Nov-20	15-Dec-20

WBL Writing and Presentation			
Activity	Status	Start Date	End Date
WBL Research Proposal	Complete	7-Sep-20	16-Sep-20
Triangulate final data and write WBL report	Complete	18-Nov-20	1-Jan-21
WBL Draft due	Complete	1-Jan-21	-
WBL Draft revisions	Complete	2-Jan-21	14-Jan-21
Work Based Learning Research Due	Complete	15-Jan-21	-
Research presentation (4 pm UK time)	Pending	21-Jan-21	-

APPENDIX D: APPLICATION FOR UWTSD APPROVAL



PG2 / E1 FORM

APPLICATION FOR ETHICAL APPROVAL

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

Full Name:	Michele Capalbo		
Tick all boxes which apply:			
Member of staff:	☐	Student:	☒
Honorary research fellow:	☐		
Faculty/School/Centre:	(WAPPAR)		
Campus:	Carmarthen		
E-mail address:	1817096@uwtsd.ac.uk		
Contact Telephone Number:			
For students:			
Student Number:	1817096	Undergraduate	☐
Programme of Study:	MA in Professional Practice (Voice Pedagogy)	Taught Postgraduate	☒
Director of Studies/Supervisor:	[Debbie Winter]	Research	☒

SECTION B: Approval for Research Activity

Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☒	NO	☐
				Date
If Yes, please indicate source of approval (and date where known):	Research Degrees Committee	☐		
	Faculty Research Committee	☐		
	Other (write in) WPPAR Ethics Board Representative	☒		

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Approval in principle **must** be obtained from the relevant source prior to seeking ethical approval.

SECTION C: External Ethical Guidance Materials

Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines.	
WAPPAR Ethical guidelines	X
AmSAT Code of Professional Conduct	X
NATS Code of Ethics	X

SECTION D: External Collaborative Research Activity

Does the research activity involve collaborators outside of the University?	YES	☐	NO	☒
If Yes, please provide the name of the external organisation and name and contact details for the main contact person:				
Institution				
Contact person name				
Contact person e-mail address				

Where research activity is carried out in collaboration with an external organisation

Does this organisation have its own ethics approval system?	YES	☐	NO	☐
If Yes, please attach a copy of any final approval (or interim approval) from the organisation				

SECTION E: Details of Research Activity

Indicative title:	Alexander Technique and Voice Integration: Assessing the Benefits of Online Training.		
Proposed start date:	28/8/20	Proposed end date:	15/1/21
Purpose of research activity (including aims and objectives) Outline the purpose, aims and objectives of the research activity, including key research questions. Show briefly how existing research has informed the proposed activity and explain what the research activity will add and how it addresses an area of importance. (Maximum 300 words)			
Purpose: As a voice teacher and professional opera singer certified in the Alexander Technique (AT) I have begun to develop an online training program. The purpose of my webinar-based training program is to assess if an online framework can help singers to integrate AT into their voice training. Since AT is generally considered a 'hands-on' technique, the society has not yet adapted to online training. Due to the pandemic many teachers are beginning to experiment online, but I am unaware of any formal program like the one I propose.			
Aims: The goal of this pilot study is to test the efficacy of online/distance AT/voice integration instruction. This mixed method pilot study will combine sound recording, pictures and possibly video with reflection journals and interviews of participants.			
Objectives: My short-term objectives relate to developing effective training methods for singers to incorporate AT. This addresses the question of instruction safety in the current pandemic crisis. Long-term objectives relate to the possibility of delivering remote instruction for AT/voice integration as an alternative to in-person lessons.			

This may address learning constraints including access due to time, cost or geographical limitations. By addressing these issues I hope to make AT/voice integration more universally available.
Proposed methods Provide a brief summary of all the methods that may be used in the research activity, making it clear what specific techniques may be used. If methods other than those listed in this section are deemed appropriate later, additional ethical approval for those methods will be needed. (Maximum 600 words) Methodology: For this work-based learning project I will be employing a pragmatic, mixed method approach. Both quantitative and qualitative data will be gathered to triangulate findings in this pilot study. I expect to use the following instructional tools: -Pre-recorded webinars of AT procedures (to play on demand and repeat at will) -Pre-recorded audio recording for appropriate AT procedures. -Live weekly webinar/master classes to answer questions, give feedback and motivate participants -Closed social media group for participants to share and reflect on the process. -Regular email prompts to boost reflection. -Offer a private (online) AT lesson option. Methods: I propose to collect and measure the following mixed method data. Quantitative data: -Acoustically* analyse weekly sound and/or video files, as well as live master class recordings (Acoustic analysis is expected to consider vibrato [rate, evenness, and style], vowel formant strategies, phonation quality [pressed, aspirate, flow], quality of on/offset and spectral energy.) Qualitative data: -Interviews -Reflection journals -Social media postings on private group site, when posting is relevant. -Observations from changes in alignment and movement (photos or video) -Researcher impressions/reflections during live master classes. The independent and motivated participants I seek will be expected to provide their own data on a timely and regular (weekly) basis. If this is not possible a time may be scheduled for a private webinar to record the participant over zoom or a comparable site. Data may include singing single pitches, scales and a familiar Italian song. The type of data collection will be identified at the beginning of the research period and collection should not exceed 15 minutes each week. Interviews will be conducted via email or in a live private webinar and are expected to last approximately ½ hour at both the beginning and end of this research process. I expect this study to last a total of 8 weeks. Instruction and data capture: The services and sites used to relay information may include but are not limited to email, zoom, facetime, facebook groups, youtube and vimeo. Access to such groups will be private or password protected. Due to the devastating impact covid-19 has had on performers in particular there will be no charge for basic level participation. If a participant wishes to expand their participation, private online lessons will be offered at a discounted rate.

Location of research activity Identify all locations where research activity will take place. I am located in Ridgewood NJ, USA. This is where the data will be collected, analysed and stored. I will not be placing any geographical limits on participants in this work-based learning project.
Research activity outside of the UK If research activity will take place overseas, you are responsible for ensuring that local ethical considerations are complied with and that the relevant permissions are sought. Specify any local guidelines (e.g. from local professional associations/learned societies/universities) that exist and whether these involve any ethical stipulations beyond those usual in the UK (provide details of any licenses or permissions required). Also specify whether there are any specific ethical issues raised by the local context in which the research activity is taking place, for example, particular cultural sensitivities or vulnerabilities of participants. I belong to two professional teacher associations in the United States where I am based. • National Association of Teachers of Singing (NATS) • American Society for Alexander Technique (AmSAT) This proposed worked-based project does not violate any of the ethical guidelines outlined by either teacher association. Copies of these guidelines are included with this application. In addition, I am a certified teacher of the Alexander Technique and insured through AmSAT (letter of certification and certificate of insurance is attached).

SECTION F: Scope of Research Activity

Will the research activity include:	YES	NO
Use of a questionnaire or similar research instrument?	☐	☒
Use of interviews? (Initial and exit interviews)	☒	☐
Use of diaries? (Reflection Journal)	☒	☐
Participant observation with their knowledge?	☐	☒
Participant observation without their knowledge?	☐	☒
Use of video or audio recording? (Both video and audio)	☒	☐
Access to personal or confidential information without the participants' specific consent?	☐	☒
Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
Investigation of participants involved in illegal activities?	☐	☒
Use of procedures that involve deception?	☐	☒
Administration of any substance, agent or placebo?	☐	☒
Working with live vertebrate animals?	☐	☒
Other primary data collection methods, please explain in this box Participant provided: Still images (before/after photos) in addition to video and audio recordings.	☒	☐

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

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Who are the intended participants:	YES	NO
Students or staff at the University?	☐	X
Adults (over the age of 18 and competent to give consent)?	X	☐
Vulnerable adults?	☐	X
Children under 18?	☐	X
Prisoners?	☐	X
Young offenders?	☐	X
Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	X
People engaged in illegal activities?	☐	X
Others (please identify):	☐	X

Participant numbers and source

Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?

I am seeking adult classical singer participants who are highly motivated to work on AT/voice integration for a period of time every day.
I hope to enrol 5-8 participants in this inaugural AT/voice integration study.
The main recruitment tool I used was a passive listing at the end of webinar programs I presented for singers and/or teachers. Specifically the DIY Summer Program (US) and the Voice Workshop Short Program (UK).
I have already been contacted directly by a number of participants expressing an interest in being included in this study. Before enrolling any participant they will be assessed for their intrinsic motivation levels due to the time frame, novel nature, and independence required for this study.
In addition to the recruitment method above, I may reach out to fellow teachers to recommend adult students they feel may benefit from this training.

Information for participants:	YES	NO	N/A
Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	X	☐	☐
Will you tell participants that their participation is voluntary?	X	☐	☐
Will you obtain written consent for participation?	X	☐	☐
Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☐	☐	X
If the research is observational, will you ask participants for their consent to being observed?	X	☐	☐
Will you tell participants that they may withdraw from the research at any time and for any reason?	X	☐	☐
With questionnaires, will you give participants the option of omitting questions they do not want to answer?	X	☐	☐
Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X	☐	☐
Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	X	☐	☐
If NO to any of above questions, please give an explanation			

Information for participants:	YES	NO	N/A
Will participants be paid?	☐	☒	☐
Is specialist electrical or other equipment to be used with participants?	☒	☐	☐
Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
If YES to any question, please provide full details			
Participants will be expected to provide data for this work based learning project pilot study. Data collection will likely include: sound files, photos and video all of which can be taken on a smart phone or similar device. In the event that any participant cannot supply these files a live webinar will be scheduled and the data collection will take place over zoom or similar service at a mutually agreed time. The need to access webinars assumes that participants have access to a computer or personal mobile device and the internet throughout the proposed 8 week process.			

SECTION H: Anticipated Risks

Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them. If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form. Full risk assessment completed and appended? Yes ☐ No ☒
Risks to participants For example: emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information No extraordinary risks beyond what is described in this document are anticipated.
If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities No ethical issues are anticipated.
Risks to investigator For example: personal safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest No risks are anticipated. Any issues that arise will be dealt with using the ethical guidelines of the teacher associations to which I belong. (National Association of Teachers of Singing and American Society of Alexander Teachers). There will be no physical contact between myself and the subjects, and all learning will take place remotely.
University/institutional risks For example: adverse publicity, financial loss, data protection No risks are anticipated. Data will be collected electronically and then held on my personal password protected computer and/or backed up on an encrypted USB drive depending on file size. Any data collected using a virtual storage solution (e.g. a cloud) will be deleted once it is retrieved.
Adverse outcomes

List measures put in place to limit any adverse effects or outcomes of research activity where appropriate. Include any emergency protocols.
A re-educative process like Alexander Technique may include periods of muscular discomfort or unfamiliarity due to the emergence of new muscular patterns. The level of participation is up to each individual subject who is free to stop if they become too uncomfortable. No emergencies are expected and weekly live webinars are offered to provide guidance and clarify any issues including discomfort.

Disclosure and Barring Service			
If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
Has a DBS certificate been obtained?	☐	☐	X

SECTION I: Feedback, Consent and Confidentiality

Feedback What feedback will be provided to participants, how will this be done and when? Feedback to facilitate learning will be provided in an ongoing weekly basis through live webinars, as well as through a private social media group that I will moderate during the 8 week research period. Feedback will also be given in private lessons if that is an option that any subject wishes to include. Generic motivational feedback in the form of emails or social media posts will be sent out weekly to participants.
Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded. After motivation assessment, each subject who is invited to participate will be informed that they will be able to withdraw from this work based learning project at any time should they choose to do so. Although some personal information will be collected, results will be anonymised. Collection data will include name, experience level (voice and AT), age, voice type, and self-identified profession. This data will help to frame the results. Subjects will be informed of their role in this research at the beginning of this process. Each participant is responsible for recording test data files each week. The specific nature of the data (pitches, scales, and/or an Italian song) will be provided at the beginning and assessed weekly during the research process. When this collection is not possible, a time will be made each week to collect data via a live webinar. This process should not take more than 15 minutes weekly. In addition to this acoustic data there will be an initial and final interview, which may take place via email or in a private zoom meeting. This is expected to take ½ hour for each interview. Reflective learning journals are expected to be updated and submitted weekly. Consent will be sought to send weekly motivational emails, which will also be posted to the private social media group. If any relevant post that should be included in a reflection journal is found in the social media group, it will be mined and coded for data. Due to the independent nature of this work a list and synopsis of pre-recorded video and audio material, as well as a schedule of live webinars will be supplied at the beginning of the research. If a subject ceases to actively participate, they could be contacted to assess the reason and may be removed from the research program. All participants will complete a consent form.
Confidentiality / Anonymity

Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case.

The results of this work based learning project will be anonymised. No participant should be identifiable in the presentation of the final research.
Subjects are free to participate in the social media group or in live group classes to their level of comfort. Subjects could reveal information to other participants that may lead others to deduce a subject's identity should they see the final report. However, the final report will not be supplied to participants.

Strict confidentiality of all private interactions and data results including, but not limited to acoustic data, reflection journals, interviews or other private correspondence will be maintained.

SECTION J: Data Protection and Storage

In completing this section refer to the University's Research Data Management Policy and the extensive resources on the University's Research Data Management web pages (<http://uwtsd.ac.uk/library/research-data-management/>).

	YES	NO
Does the research activity involve personal data (as defined by the Data Protection Act)? "personal data" means data which relate to a living individual who can be identified— (a) from those data, or (b) from those data and other information which is in the possession of, or is likely to come into the possession of, the data controller, and includes any expression of opinion about the individual and any indication of the intentions of the data controller or any other person in respect of the individual.	☐	☒
If YES, provide a description of the data and explain why this data needs to be collected:		
(this box should expand as you type)		

Does it involve sensitive personal data (as defined by the Data Protection Act)? "Sensitive personal data" means personal data consisting of information as to – (a) the racial or ethnic origin of the data subject, (b) his political opinions, (c) his religious beliefs or other beliefs of a similar nature, (d) whether he is a member of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) his physical or mental health or condition, (f) his sexual life, (g) the commission or alleged commission by him of any offence, or (h) any proceedings for any offence committed or alleged to have been committed by him, the disposal of such proceedings or the sentence of any court in such proceedings.	☐	X
If YES, provide a description of the data and explain why this data needs to be collected: (this box should expand as you type)		
Will the research activity involve storing personal data on one of the following:	YES	NO
Manual files (i.e. in paper form)?	☐	X
University computers?	☐	X
Private company computers?	☐	X
Home or other personal computers?	X	☐
Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	X	☐
"Cloud" storage or websites?	X	☐
Other – specify:	☐	X
For all stored data, explain the measures in place to ensure data confidentiality, including details of password protection, encryption and anonymisation: All electronic files including personal data will be held on my personal laptop computer, which is password protected and kept at my home office. Research results will be anonymised in the final work based learning project. The researcher expects to interact with participants throughout this research process using websites to deliver video and/or audio instruction. Participants will need to access the internet on a device of their choosing. The services and sites used may include but are not limited to zoom, facetime, facebook groups, youtube and vimeo. Access to such groups will be private and password protected. Participants will be cautioned not to share passwords, which will be changed if non-research participants access the instruction material or private groups. A closed (private) social media group may be utilised to enhance learning. Participation will be voluntary, and any information shared will be the choice of individuals. Relevant data may be mined for inclusion in the final research results. Sound, video and image files will be collected and used to quantitatively assess subjects' progress. These may be sent via email and stored either on my laptop or on a dedicated, encrypted USB (memory) stick depending on the size of the data collected. Qualitative data in the form of answers to interview questions, and reflective journals will be emailed directly to the researcher. This data may be stored long-term to facilitate re-examination of data and to continue to build on my research. Files will be kept strictly confidential with encryption and/or password protection.		
Will the research activity involve any of the following activities:	YES	NO

Electronic transfer of data in any form?	☒	☐
Sharing of data with others at the University?	☐	☒
Sharing of data with other organisations?	☐	☒
Export of data outside the European Union or importing of data from outside the UK?	☒	☐
Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☒	☐
Publication of data that might allow identification of individuals?	☐	☒
Use of data management system?	☒	☐
Data archiving?	☒	☐
If YES to any question, please provide full details, explaining how this will be conducted in accordance with the Data Protection Act (and/or any international equivalent):		
I am a long distance student based in the USA. The transfer of data in and out of the UK is necessary to fulfil the needs of my course of study. Transfer / export of data: All quantitative and qualitative data will be solicited and collected electronically. This is likely to take place over email, but may also include a cloud-based technology if the data files collected are too large. Data is expected to include: sound files, video and photographs as well as written answers and reflective journals. Data may also be collected from a private social media group which is unlikely to be hosted in the UK. Files will be collected and then deleted from the cloud if that is the delivery system used. Geographical limitations: I am located in the United States and will not limit participation in my study to one geographical area. Singers from North America and the UK have already expressed some interest. Therefore, subjects in areas outside the UK will likely be involved. In addition, my paper will be imported into the UK when I submit my findings remotely, and the required presentation derived from the research data will again be imported into the UK when I present my findings. Data management: A reference management tool such as google sheets may be used to sort and code interview questions and reflection journals. Data Archiving: All collected material will be stored on my password protected personal laptop computer or on an encrypted USB stick. Data may be temporarily gathered on the cloud, but will be removed after collection and archiving.		

SECTION K: Declaration

List all who will have access to the data generated by the research activity:
I am the only one with access to the data generated by my research activity.
List who will have control of, and act as custodian(s) for, data generated by the research activity:
I have sole control and am the sole custodian of any data generated by my research activity.
Give details of data storage arrangements, including where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.
Limited confidential data will be gathered and participants will be anonymised in this pilot study. Data may be gathered via email, cloud sites, or private social media sites set up specifically for this research. It will be stored on my password protected laptop computer or encrypted USB stick. I plan to hold the raw data at least through the end of my MA degree (summer 2022). I may refer to the raw data gathered in future related research.

The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants.

In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's [Research Ethics and Integrity Code of Practice](#)

Signature of applicant:

Michele Capalbo

Date: 8/11/20

For students:

Director of Studies/Supervisor:	Nick Samuel
Signature:	<i>N.P. Samuel</i>
Date:	25/8/2020

For staff:

Head of School/Assistant Dean:	
Signature:	
Date:	

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☐	I have attached a copy of final/interim approval from external organisation (where appropriate)
☐	I have attached a full risk assessment (and have NOT completed Section H of this form) (where appropriate)
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Head of School.

RESEARCH STUDENTS AND STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.

You will be informed of the outcome of your claim by email; therefore it is important that you check your University and personal email accounts regularly.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

This form is available electronically from the Academic Office web pages:

<http://www.uwtsd.ac.uk/academic-office/>

Application Process

All staff research projects and all research students must submit the Ethical Approval Form to the **University Ethics Committee** via the Academic Office (pgresearch@uwtsd.ac.uk). Staff research directly in relation to personal study for taught undergraduate or Masters programmes should be submitted via the Faculty procedures explained below.

Taught masters and taught undergraduate research Ethical Approval Forms are considered **within Faculties**. Faculties will provide details of the specific processes for this. Where the Ethical issues within any single ethical application are of particular concern the Faculty will refer these to the University Ethics Committee. Any student activity that involves the collection of primary data needs to undergo Ethical approval, this includes assignment work as well as dissertations.

Notes for guidance in completion of this form

Section A: About You

Please complete all relevant sections

Section B: Approval for research activity

Research proposals must be approved in principle before applying for Ethical Approval. The proposal approval only becomes final when the ethical approval is received.

The process for proposal approval varies according the individual and programme of study:

- Research students, by application on form PG1 to the Research Degrees Committee
- Taught students by review of research proposal within Faculties (Faculties provide specific details of these processes)
- Staff, by agreement by the Head of School/Assistant Dean

Section C: External Ethical Guidance materials

Many discipline areas are required to operate with the discipline specific codes of research ethics (for example health, psychology, education etc.), any such codes must be listed and you must tick to confirm that you have consulted with these.

Section D: External Collaborative Research Activity

Provide details of the external collaborative partners, where appropriate you might want to submit a copy of the external collaboration agreement with the Ethical Approval Form. If the partner requires the research to be subject to its own internal Ethical approval process then please provide details of that process and a copy of any final (or interim) approvals received from the organisation.

Section E: Details of Research Activity

Remember that the individuals reviewing this Ethical Approval Form may not have seen your research proposal, and also may not be experts in the specific area of your research. The information provided should therefore be jargon free and clearly stated.

Indicative Title: please use the same title as used on the research proposal.

Purpose: the Ethical approval process will want to ensure that the methods you propose are adequate and appropriate to address the research aims and objectives. Excessive additional data collection can be seen as unethical.

Proposed Methods: the Ethical approval process seeks to ensure that you understand the methods that are intended, and that the implementation of those methods will be appropriate and without unnecessary impact on respondents. Please be specific.

Location: this needs to mention geographical location and also local situation (for example, within Local Authority Offices in Cardiff, using a private room but close to other individuals). If you are collecting data within an organisational setting then you need to explain the permissions that you have obtained to do this.

Research Activity outside of the UK: please complete this section in detail, and note any guidance you have received. Also describe your own familiarity (or not) with the location that you will be utilising.

Section F: Scope of Research Activity

Please tick ALL of the research activities that might be undertaken. If any additional types of activity are intended then please add an extra box and describe these.

If you have answered no to all questions in F then sections G and J do not need to be completed. Section H should be considered, and may be completed. Signatures are still required in section K.

Section G: Intended Participants

Please tick all categories that might apply.

Numbers & Source: if you are using a series of different methods or research activities please list numbers for each stage/phase. Be clear about how you will find respondents. Will you use intermediaries, and if so how? How will you ensure compliance with your sampling strategy?

Information for participants: all participants should be appropriately informed about the research, what is expected of them and what will happen to the information that they provide. The Ethical review process does not ask to see this documentation, but requires this to be reviewed and approved by the Director of Studies in the case of research students, the supervisor/module tutor in relation to students on taught programmes and the Head of School/Assistant Dean in relation to staff research.

Section H: Anticipate Risks

All research carries some level of risk. The answers you provide to questions in this section will be reviewed to ensure that you have an appropriate understanding of the type of risks involved and how you can mitigate against these risks. If you have completed a full risk assessment, as required for example for laboratory work, field work, clinical tests, diving operations, or by a collaborative partner, you may append that to this form. In that case, please tick the box indicating this has been provided. You will not then be required to complete Section H.

Risk to participants Think very carefully about how your actions/questions/discussions might affect the people you are involving as participants. You might identify the risk as small but it would still be a risk. Many types of question have the potential to make respondents less content with their life / job; you need to recognise and try to ameliorate any such effects. If these are business owners, time with you may reduce profit.

In some locations physical risk is very real to both participants and yourself, please consider this.

Risk to you, the researcher Think about where you will meet people, if there are any dangers involved in the location. If you are meeting people as individuals think about using a public place. In general do not visit people in their own homes or remote locations. If you are talking to individuals about certain issues think about how their responses might affect you emotionally. What about the risk of collecting insufficient data?

Risk to the University When undertaking your research, you are acting as a member of the University (student or staff). Professionalism is important, so it is important to be well organised and well prepared. Punctuality, clarity etc. are all part of this. What will you do to ensure this? You must ensure you do not harm the good name of the University in any way and do nothing to undermine the reputation of the research it conducts and sponsors. Upholding high standards of conduct and integrity are vital in this regard. You must also conduct the research in such a way to minimise the potential for claims of negligence made against the University, its researchers and any collaborating individual or organisation. In this respect you should always comply with ethical, legal and professional frameworks, obligations and standards as required by statutory and regulatory authorities, as well as the university's Research Integrity and Ethics Code of Practice. Research misconduct in this respect can take many forms, including:

- fabrication: making up results or other outputs (eg, artefacts) and presenting them as if they were real
- falsification: manipulating research processes or changing or omitting data without good cause

APPENDIX E: LETTER TO ETHICS BOARD



Michele Capalbo | studio

12th August, 2020

Ethics Board
Wales Academy for Professional Practice and Applied Research (WAPPAR)
University of Wales Trinity Saint David
Carmarthen Campus

RE: Application for Ethical Approval

To Whom it May Concern;

I'm an independent voice studio teacher certified in the Alexander Technique (AT) currently enrolled in the WAPPAR program through Voice Workshop. As part of my research I'm planning to conduct a mixed method study to assess the efficacy of AT/voice webinar training. Due to the current covid-19 pandemic, this research will be conducted completely online with no in-person contact.

Potential adult participants for this independent learning project will be assessed for intrinsic motivation and informed of all testing requirements, webinar schedule and programme contents before they consent to participate. Feedback will be given through weekly live webinars, a closed social media group and emails to the research cohort. Some subjects may utilise private lessons and receive additional feedback then. All volunteer participants will be able to withdraw at any time and will be assessed in the following ways:

- Initial and weekly acoustic testing (video/audio of pre-set test parameters).
- Visual assessment by researcher (photos, private and/or group interactions).
- Ongoing subject reflection journal of observations and process.
- Initial and final interviews.

Data collection for this study may rely on participant equipment and submission. When that is not possible additional data collection meetings will be scheduled. Although the subjects will be known to me, with nominal personal information collected, all subjects will be anonymised in the final report. This study is expected to last 8 weeks.

There will be no fee for subjects to participate in the basic independent learning level of this study; however, some may opt to expand their learning with private lessons at a reduced rate.

Your approval to conduct this study as part of my WAPPAR studies is greatly appreciated.

Sincerely,

Michele Capalbo

Michele Capalbo, BM, M AmSAT

70 Wilson St., Ridgewood, NJ 07450

mail@MicheleCapalbo.com

APPENDIX F: NATS CODE OF ETHICS



National Associate of Teachers of Singing (NATS) Code of Ethics

Retrieved from: <https://www.nats.org/code-of-ethics.html> (Accessed: 19th January, 2020).

These ethical guidelines are established by the Association to outline Members' ethical duties and obligations to students, colleagues and the general public, and to promote professional cooperation and productive relationships among its

Members.

I. PERSONAL ETHICAL STANDARDS

The Association expects its Members to behave professionally and ethically in the representation of their abilities and in their promotional materials and outreach, and to conduct themselves in a manner that reflects positively on the Association.

1. Members shall present themselves honestly, in a dignified and professional manner, and with documented qualifications. These may include appropriate academic degrees, awards, professional affiliations, and teaching and performing experience.
2. Members shall strive to teach with competence by demonstrating knowledge of voice pedagogy, musicianship, familiarity with a variety of vocal repertoire, as well as performance skills.
3. Members should strive for continued growth in professional competencies.
4. Members shall faithfully support the Association and are encouraged to participate in and contribute to its activities and mission.
5. Members should abide by copyright laws and guard against encouraging or allowing infringement thereof.
6. Members shall exhibit responsible and ethical behavior when using print, digital and social media associated with the profession and the studio.
7. Members should be artistic resources for their communities.

II. ETHICAL STANDARDS RELATING TO STUDENTS

The Association is committed to Member/Student relationships which foster excellence and learning in a dignified and professional environment, and which do not involve discrimination, sexuality, innuendo, or favoritism.

1. Members should avoid all types of discriminatory practices. Appropriate guidelines are set forth in statutes such as [*Title IX of the Education Amendments of 1972*](#) and the [*Canadian Human Rights Act*](#).
2. Members should maintain appropriate boundaries in psychological, emotional, and personal contact with students, including insinuations that could be construed as sexual advances, even when a student may encourage or *request* such interaction.
3. Members should respect the privacy and personal integrity of students, not disclosing confidential information except to the extent that a particular legal or academic system requires disclosure.

4. Members should clearly communicate and comply with their studio policies and expectations in a timely and concrete manner.
5. The relationship between teacher and student shall be established, maintained and terminated in a respectful, professional manner.
6. Members should respect a student's prerogative to obtain instruction from any teacher(s) of their choice, including concurrent study with another teacher(s). Transparency should be maintained among all parties.
7. Members should offer their best instruction and career advice to every student under their supervision, and should treat each student in a respectful and impartial manner while taking into account individual differences in ability, learning styles and motivation.
8. Members should refrain from making exaggerated claims or misleading statements concerning a student's prospects for a professional career in music. They should not guarantee performances, professional positions or favorable contacts unless they can fulfill those promises.

III. ETHICAL STANDARDS RELATING TO COLLEAGUES

The Association encourages a mutually supportive atmosphere among its Members, and in their interactions with other related professionals.

1. Members shall refrain from making defamatory or untrue negative public statements or judgments about colleagues or their students, either verbally or in writing.
2. Members shall render honest and unbiased adjudication at auditions and competitions. If they are unable to do so, then they should recuse themselves.
3. In cases where a Member determines that involving other professionals in a student's instruction may be of benefit (for medical, technical, artistic, musical, pedagogical, or other reasons), Members shall strive to work collegially with these professionals.
4. Rules and regulations of accredited academic institutions may at times take precedence over the Association's Code of Ethics, should there be a conflict.
5. Should ethical conflicts arise between Members and/or a NATS Entity, direct communication should be used to resolve problems among the involved parties. If the conflict cannot be resolved, the Association has a specific, detailed process for dealing with concerns.

This version of the Code of Ethics approved by the NATS Board of Directors in June 2018.

APPENDIX G: AMSAT CODE OF PROFESSIONAL CONDUCT



Code of Professional Conduct

Retrieved from: https://www.amsatonline.org/aws/AMSAT/pt/sp/code_conduct

(Accessed: 19th January, 2020).

INTRODUCTION

As members of a professional society, the American Society for the Alexander Technique (AmSAT), we have chosen to set down in this code these ethical guidelines to represent our common standards of professional conduct.

This list is by no means exhaustive and in due course may be added to, modified or reformulated to represent more accurately the consensus of the Society. As members of AmSAT, we accept that the final responsibility for choosing appropriate behavior in any circumstance remains with the individual member whether that circumstance is covered clearly by specific guidelines or not. Any act or behavior, which by commission or omission, disgraces or dishonors an individual member, the membership at large or the profession would be considered a breach of professional conduct. In these guidelines we address those areas of professional conduct of most immediate concern to teacher and pupil. This document does not limit the freedom of AmSAT members to pursue individual paths of inquiry and advanced study, or to develop ideas and express opinions openly or to experiment or work outside an ordinary teaching practice. Instead it presents a practical model of professional conduct to be used in the ordinary day-to-day teaching practice of a teacher with private pupils.

It serves to inform the teacher, pupil, profession and community of actions and behavior that might call into question the ethics, conduct or intentions of a teacher and defame or undermine the reputation and integrity of the Alexander Technique, this Society or the professional community at large. These guidelines then represent a consensus of standards and values to which AmSAT members subscribe and which act as a model of ethical practices for teachers within and without the Society, and against which the conduct of an AmSAT member will be compared if a question arises.

A. The Teacher-Pupil Relationship

A member has a clear understanding of the professional protocol and decorum prevailing in private lessons and group classes and uses that knowledge to maintain a strictly professional relationship with pupils. The chief features of that protocol follow:

1. A member states clearly policies regarding payment, cancellation, lateness, appropriate apparel, etc. and changes them only with fair notice to the pupil.

2(a). No member uses the lesson time as a pretext for seducing the pupil or engaging in any sexual activity. A member does not enter into a sexual relationship with a pupil, nor an emotional relationship which compromises the effective transmission of the principles of the Alexander Technique or disrupts or damages the pupil's family life.

2(b). A member who teaches on a training course, regularly or occasionally, does not seduce a trainee; does not enter into a sexual relationship with a trainee; and does not enter into an emotional relationship with a trainee which compromises the fiduciary teacher-trainee relationship.

3. A member requires of the private pupil no special form of dress or undress other than non-restrictive clothing, does not require or ask for the adjustment or removal of clothing that might make the pupil feel uncomfortable or uncertain of the teacher's intention; if the pupil is wearing an excessively bulky garment the member may ask for its removal provided there is adequate street wear underneath; if for a special project, such as a scientific, medical or academic study or workshop, special dress or disrobing is necessary, this is clearly communicated to the participants well prior to the start and preferably in writing.

4. No member uses the lesson or the authority of the teaching position for influencing the pupil on matters outside the domain of the Alexander Technique, for gaining privileged information outside the concern of the work or for extracting gifts, favors or financial gain beyond the normal business transacted in a lesson.

5. A member always uses discretion with any information gained from a pupil, treats the pupil's privacy with confidentiality and preserves the pupil's anonymity if discussing aspects of the pupil's work with others.

B. The Teacher-Colleague Relationship

A member treats all colleagues with the respect and fairness with which the member would wish to be treated:

1. A member expresses differences of professional opinion without attacking other teachers personally or criticizing their work in a way that may undermine the confidence of the public in the profession, or otherwise reflect badly on the Alexander Technique.

2. A member takes care not to start any unfounded rumor or hearsay that might damage the reputation of another member or teacher.

3. A member may speak directly to another member or teacher about ethically suspect behavior if appropriate before taking the issue further.

4. A member reports only clear evidence of serious ethical misconduct to AmSAT. Such evidence may consist of: (a) direct personal experience; (b) clear first-hand testimony; (c) a substantial body of second-hand testimony.

5. A member informs any pupil of the option of registering a formal complaint with AmSAT about the conduct of a member or teacher.

C. The Teacher-Profession Relationship

A member works to advance knowledge and improve teaching skills and to promote the Alexander Technique, its reputation and the growth of the profession when and wherever possible. A member clearly understands that personal behavior outside the professional sphere might bear upon a teacher's professional standing. Serious misconduct, even if not directly connected with professional activity, could still compromise one's personal integrity which might call into question a teacher's professional ethics and jeopardize a member's standing with the Society.

1. A member maintains the integrity of the Alexander Technique. A member neither presents elements of other disciplines, therapies or practices as part of the Alexander Technique nor presents an amalgam of the Alexander Technique with another modality as the Alexander Technique. A member clearly identifies such material if introduced into a lesson for information, comparison or discussion.
2. A member advises a pupil to seek help from an appropriate professional for problems that lie outside the domain of the Alexander Technique.
3. In order to maintain the integrity of the Alexander Technique, described in the introductory paragraph to provision C and C.1, as well as to protect the welfare of students and potential Alexander Technique teachers, a member may participate in training others to teach the Alexander Technique for an unaffiliated training course only as a guest faculty and not as a Training Director, regular faculty member, or assistant faculty.
4. A member accurately represents professional qualifications and experience and describes the benefits of the Alexander Technique without false or exaggerated claims. Whenever possible a member identifies him/herself as a member of AmSAT. A member may advertise him/herself or any other teacher to be a “senior” teacher only after the advertised teacher has been certified as a teacher for 20 years.

Adopted by Membership, 1992 as The Guidelines for Professional Conduct; amended in 1994; renamed Code of Professional Conduct, by Membership, 1996; amended June, 2004, June, 2009, and May, 2014.

APPENDIX H: GLOSSARY OF ABBREVIATIONS

$2f_o$: Second harmonic. Refers to the second overtone in a complex sound that is heard in the harmonic series. Notation for the harmonic series continues in this pattern ($3f_o$, etc.)

AT: Alexander Technique. A mind and body re-educative technique to reduce tension and stress with the goal of reintegrating better coordination.

CS: Case Study

dB: Decibel. Refers to the amplitude measurements on a logarithmic scale

EBVP: Evidence-based voice pedagogy, based on physiology and acoustics.

F_1 : First formant.

F_2 : Second formant. Formant notation continues in this pattern (F_3 , etc.).

f_o : Fundamental frequency. Refers to the first harmonic or named pitch, ($1f_o$) is assumed.

HotBoaC: Hands on the back of a chair. Refers to an AT procedure used in this study to elicit active antagonistic action or support.

Hz: Hertz. A measure of frequency identifying the cycles per second. Used to denote pitch and vibrato rate.

kHz: Kilohertz. Refers to a measure of frequency equivalent to 1,000 cycles per second.

LTAS: Long-term average spectrum.

SFR: Singer's formant range usually between 2.3-3.5kHz, but can be higher for women.

VF: Vowel formant(s). Refers to F_1 and F_2 .

VFR: Vowel formant range, refers to 0=2.3kHz in this research.

VV: VoceVista Video Pro acoustic software.

APPENDIX I: INFORMED CONSENT

Informed Consent to Participate in Research

Please consent to the [data collection](#), [sign](#), and [date](#) (page 2)

This Informed Consent Document is not a contract. It is a written explanation of what will happen during the study. You are not waiving any legal rights by signing this document. Your signature indicates that this research study has been explained to you, that your questions have been answered, and that you agree to take part in this study.

Project Title: Integrating the Alexander Technique into Voice Training: Assessing the Efficacy of Independent Online Learning through Pilot Case Studies.

Principal Researcher: Michele Capalbo, BM (Performance), PG Cert (Vocal Pedagogy), M AmSAT; ATVoiceIntegration@gmail.com

As a voice teacher certified in the Alexander Technique (AT), I'm committed to the ongoing process of deepening understanding and enacting inclusion. Participants seeking AT/voice re-education and integration are welcome including individuals of all colors, religions, sexes, gender identities or expressions, sexual orientations, national origins, genetics, body types, abilities, ages, and economic statuses.

Purpose of the Study: This is a pilot research study to assess the effectiveness of independent online Alexander Technique (AT) training related specifically to classical singing integration. The process aims to provide a supportive environment in which to explore AT and voice integration.

Number of Participants: Approximately 7 singers will participate in the study.

Length of Study and Expectations: This 8-week study will run from mid-September to mid-November, 2020. The use of a device with high-speed internet access is essential for participation. ***Singers are expected to engage in this integration process by dedicating some time each day to learning the Alexander Technique independently.***

Study Format and Data Collection:

This 8-week independent study program consists of the following:

- A series of on-demand, pre-recorded AT theory and history webinars.
- On-demand, pre-recorded AT and voice webinars, updated weekly.
- A live weekly online master class for performance and questions.

Data collection will include the following:

- Messa di voce on 3 vowels & 3 pitches, ***recorded on video and submitted weekly.*** (Specific pitches based on your voice type will be assigned.)
- The first 9 sung bars of Caro mio ben, by Giordani, ***recorded on video and submitted weekly.*** (Sung in Italian in the key of your choice.)
- A learning (reflection) journal, ***submitted weekly*** via email.
- 2 Interviews (recorded on zoom), at the ***beginning and end of the research.***
- Researcher observations during master classes.
- Participant postings (private Facebook page), if relevant to learning process.

If participants are unable to record and submit recordings themselves, a zoom session to record weekly submissions will be scheduled. Recordings, videos (including stills), as

well as participant journal entries, relevant private group social media posts, and semi-structured interviews will all become part of the data for this research.

I give permission to collect and analyse the written and recorded data outlined above. *(Please choose one.)*

☐ **Yes** ☐ **No**

Confidentiality and Anonymity: All data collected will be kept strictly confidential, and all results of this study will be anonymised. Participant names will be altered, and any details, which may reveal the participant's identity, or the identity of people named by the participant will be changed. This data will be stored at least until the completion of my MA (Vocal Pedagogy) degree has been awarded in 2022.

Voluntary Participation: Participants have the right to withdraw from the study at any time. Participants can refuse to answer any interview question, or submit changes to their answers for a period of two weeks after the interview. Any participant, unable to fulfill the demands of the research or who withholds weekly research submissions, may be eliminated from the study at the researcher's discretion.

Cost and Funding: Participants receive free access to webinars and master class instruction, but no monetary remuneration. Any costs associated with this study will be borne by the researcher.

Study Risks and Benefits: The Alexander Technique is a mind/body re-education. Changes experienced depend on the individual and benefits cannot be guaranteed. This is a process during which there may be some muscular discomfort as muscle tone changes. As coordination shifts, alterations in vocal production may also occur. This may cause some disorientation, and some participants may feel levels of embarrassment due to changes in vocal coordination during some phases of the research. A sense of curiosity and play is essential throughout this process.

Where to Address Questions: Participants are welcome to contact Michele Capalbo any time for clarification or information at ATVoiceIntegration@gmail.com.

Consent: I have had the purpose and nature of the study explained to me in writing and I have had the opportunity to ask questions about the study. I understand that all signed consent forms and original data will be retained by the researcher on her personal computer, at her home office. She is the only person with access to the data. I further acknowledge that this data is being gathered for the researcher's work based learning project outlined above, in partial fulfillment of her MA (Vocal Pedagogy) degree through the University of Wales Trinity Saint David. This data is owned by the researcher and may be used in future conference presentations, published works, etc.

Signature of participant

Date

(A typed name will be accepted if submitted via the participant's email account.)

I believe the participant is giving informed consent to participate in this study.

Signature of researcher

Date

APPENDIX J: AT PROCEDURE INSTRUCTIONS

Semi-Supine

Preparation

- Lie down on the floor with a carpet or yoga mat with your knees bent
- Put a pile of soft covered books 2-4 inches (5-10 cm) high under your head.
- There should be enough books under your head so that your head isn't pulled back and down and not so many that your chin crowds your neck.

Giving Primary Mental Directions (sequential and simultaneous)

- Allow your neck to be free...
- To let your head go forward and up...
- To let your back lengthen and widen...

Sit to Stand

Preparation

- Your feet should be flat on the floor. Put 2 piles of books (equal height) under the entire foot if your heels are lifting.
- Avoid chairs with seats that tilt back (higher in the front and lower toward the back).
- Flat seats often work very well.
- Make sure you are sitting on your sit bones.
- They should act like feet for the top half of your body while seated.
- Bend at the hips while keeping the integrity of the head, neck and back. (There should be no bending at the waist, tilting of the head, or pushing in the arms).
- Rock forward and back on your sit bones several times.
- DO NOT STAND.

Execution

- Once you feel you feel confident your sitting balance is well directed and the head, neck and back are moving as a coordinated unit, check in with your feet.
- Are your feet grounded? Are they close enough to the chair to support you as you stand? (You may want to move them closer.)
- Bending forward from the hip with your head leading, allow your feet to take your weight as you come to stand.
- You may find that you have to bend quite far, and this will likely feel unfamiliar.

Monkey

- Release knees forward into a vertical monkey.
- Bend at the hip while maintaining the integrity of the head, neck and back (check this visually).
- Notice if your legs are tightening and release what you can.
- If you become tense or start to hold come out of this position.

Variation

- Extend your hands and place them on a surface in front of you
- Use feedback from your actively extended hands to come up and back while maintaining the necessary antagonistic action in the muscles.
- The hands should be active, not too tense and not collapsed.

Whispered “ah”

Preparation

- Allow your neck to be free.
- Brighten your eyes and smile inside.
- Gently bring your teeth into the bite position with your tongue resting lightly against the bottom front teeth.
- Releasing at the TM joint and allow the jaw to slide forward until your top teeth rest on your lower teeth. The tongue moves easily with the bottom jaw.
- Open the jaw to the full extent you can manage without forcing.

Execution

- Breathe out without taking a breath, whispering the vowel “ah” without voice.
- Close the mouth allowing the breath to rebound in through the nose for the inhalation.
- After each breath check your balance and the freedom of your neck.
- Repeat.

Hands on the Back of a Chair (HotBoaC)

- Begin in a seated monkey with a chair in front of you.
- Find a position of mechanical advantage.
- Give your directions (neck, head, back) and release into length.
- Bending at the elbow, allow your fingers to lead your hands (like feet) to the top (or rail) of the chair.
- With your palms on the chair, angle your wrists slightly toward the center, so that your knuckles are pointing directly in front of you.
- Bend your fingers to extend straight down in front of the chair and counter this movement with your thumbs at the back of the chair.
- Grasp the chair and gently pull with your forearms to widen across your torso.
- Notice the engagement of the antagonistic action in your entire torso.
- Play with the amount of tension you introduce.

APPENDIX K: SUMMARY OF VOICE INTEGRATION EXERCISES

Autonomic breathing: (breathe out before allowing the air to reflexively come back in through the nose). Do this in any position.

- Don't "take" a breath
- Breathe out any residual air you have in the system.
- Allow the inhalation to enter the body reflexively through the nose.

Kinesthetic memory: Noticing habit without phonation.

While in the semi-supine position, think through a piece of music that you've been working on. Notice if and how your body responds to the music you are thinking about. How present are any tensions just by thinking about the music? Can you release any holding or tensing while in this position?

Awareness: (Omniservation) Use an external focus to expand awareness of space.

Simple Vocal Task: (This exercise is the participants' choice) The purpose was to slow down in order to begin to notice what was really going on vocally.

Exercise Instructions

- Short (one note or a very limited range)
- Uncomplicated (something you consider trouble free)
- In an easy vocal range
- Sung at a softer dynamic

Critical Moment of Phonation: Allow yourself to stop when you notice tensions. What do you notice when you think about singing? Do you over prepare the body with tension? How easy can you make your phonation?

Unvoiced SOVTE: ([f] fan, [s] snake, [ʃ] shut)

Voiced SOVTE: [v] van, [z] zoo, [ʒ] judge

Whispered "ah" with added SOVTE variations

(see separate Whispered "ah" preparation and execution instructions)

Integrative support: phonating mindfully with HotBoaC using the simple vocal task and then adding more difficult selections (participant's discretion)

Means whereby approach to consonants: Slow down and avoid end-gaining to notice what is hiding or being glossed over in the text. Pay attention to consonants (e.g. [g] and [k] as well as rolled and intervocalic flipped r's). Do they intrude on the legato?

APPENDIX L: BIBLIOGRAPHY AT/VOICE INTEGRATION

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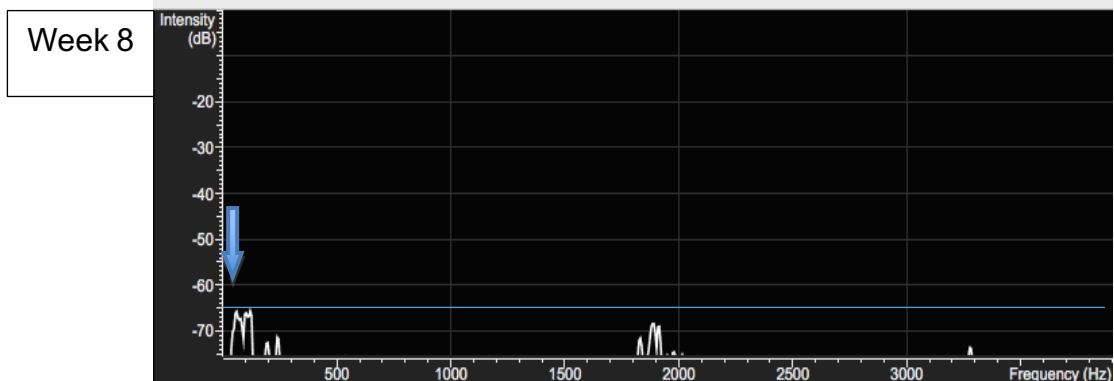
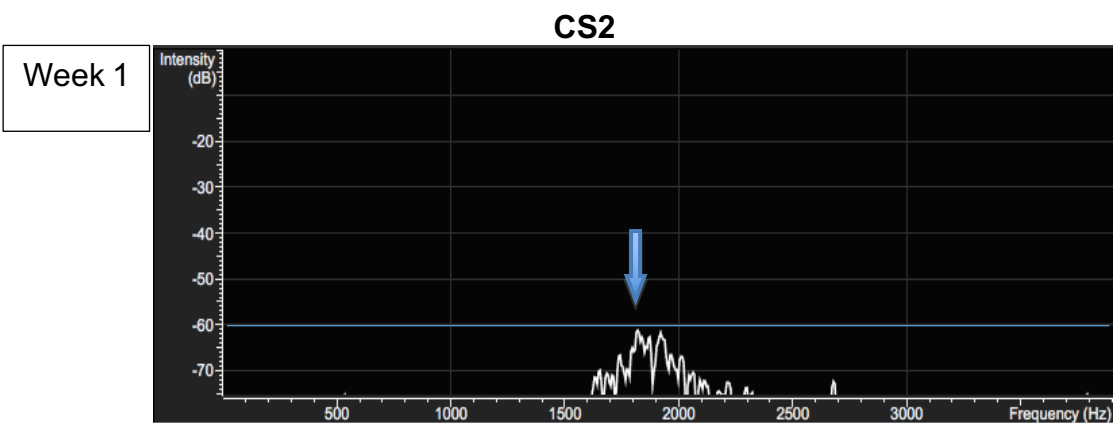
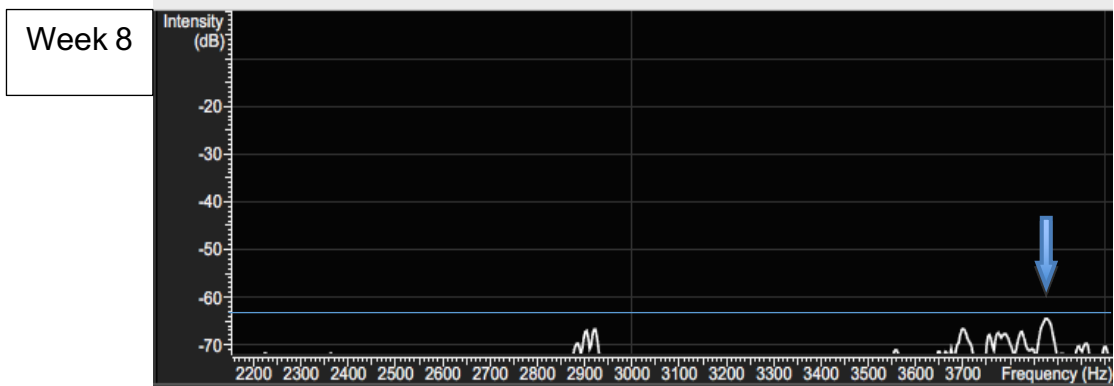
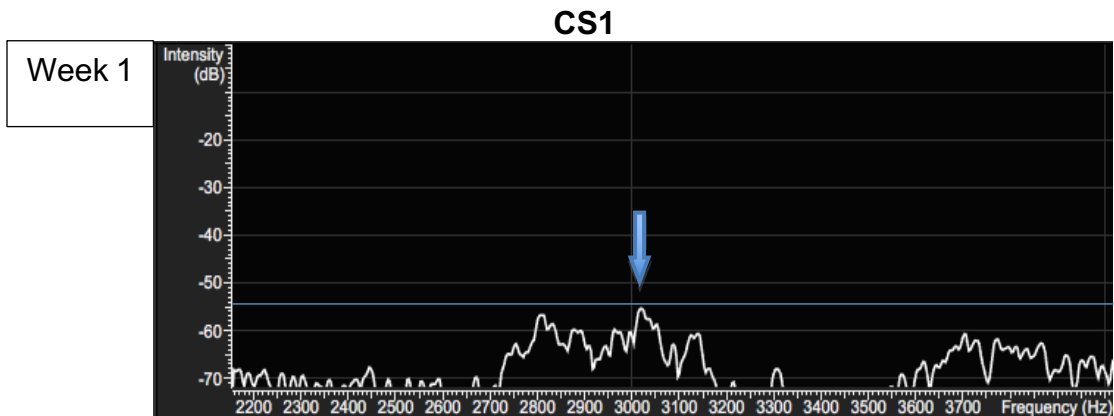
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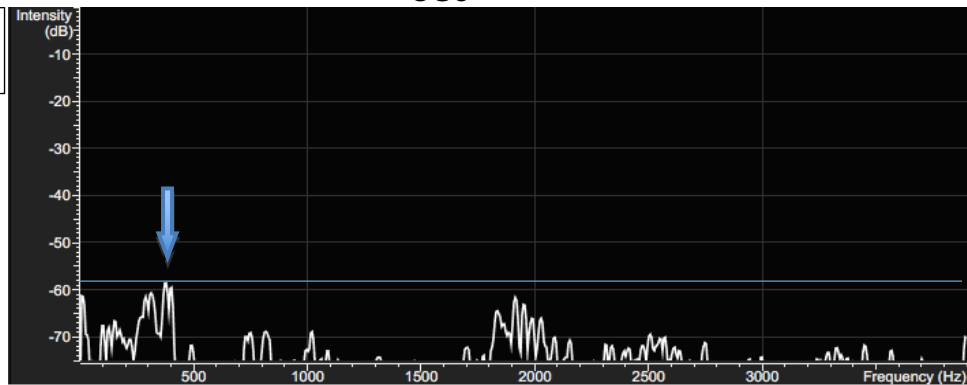
APPENDIX M: RESPIRATORY NOISE (LTAS)

Weekly peak

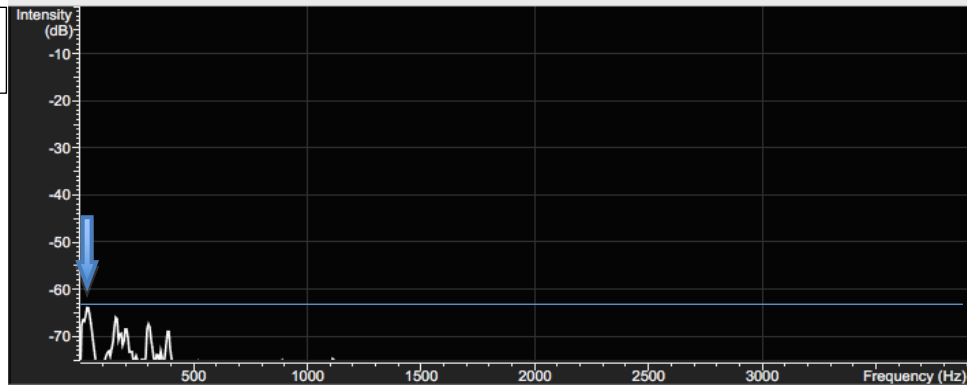


CS3

Week 1

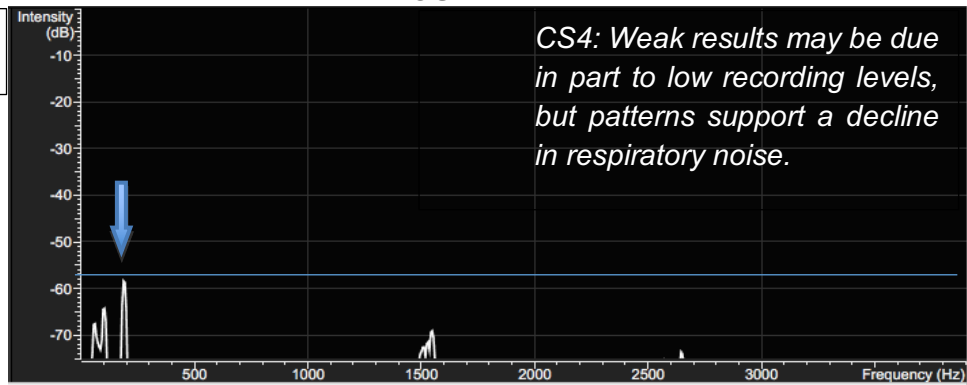


Week 8



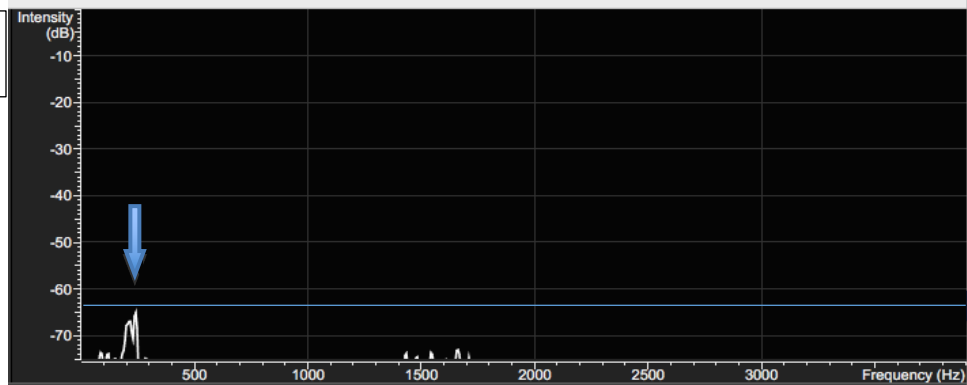
CS4

Week 1



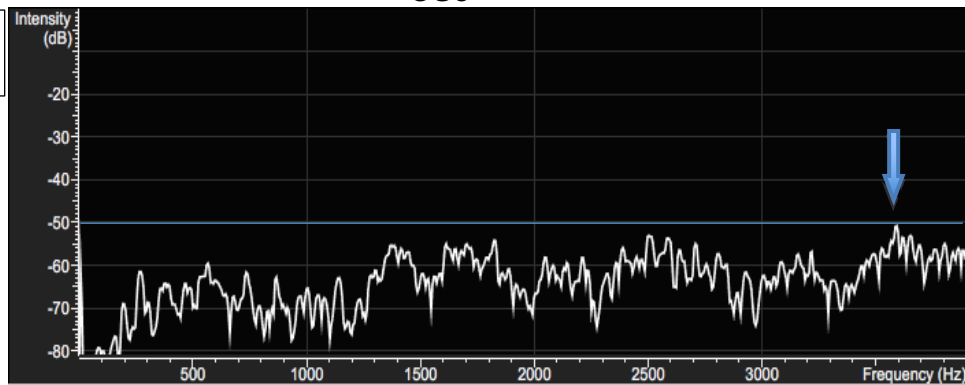
CS4: Weak results may be due in part to low recording levels, but patterns support a decline in respiratory noise.

Week 8

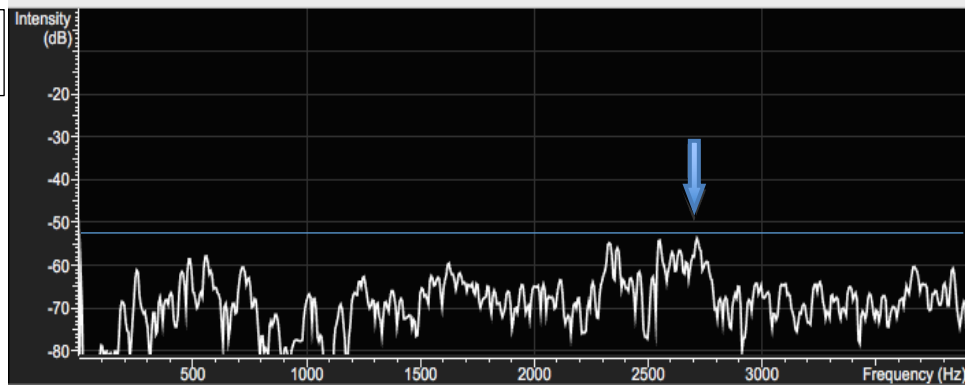


CS5

Week 1

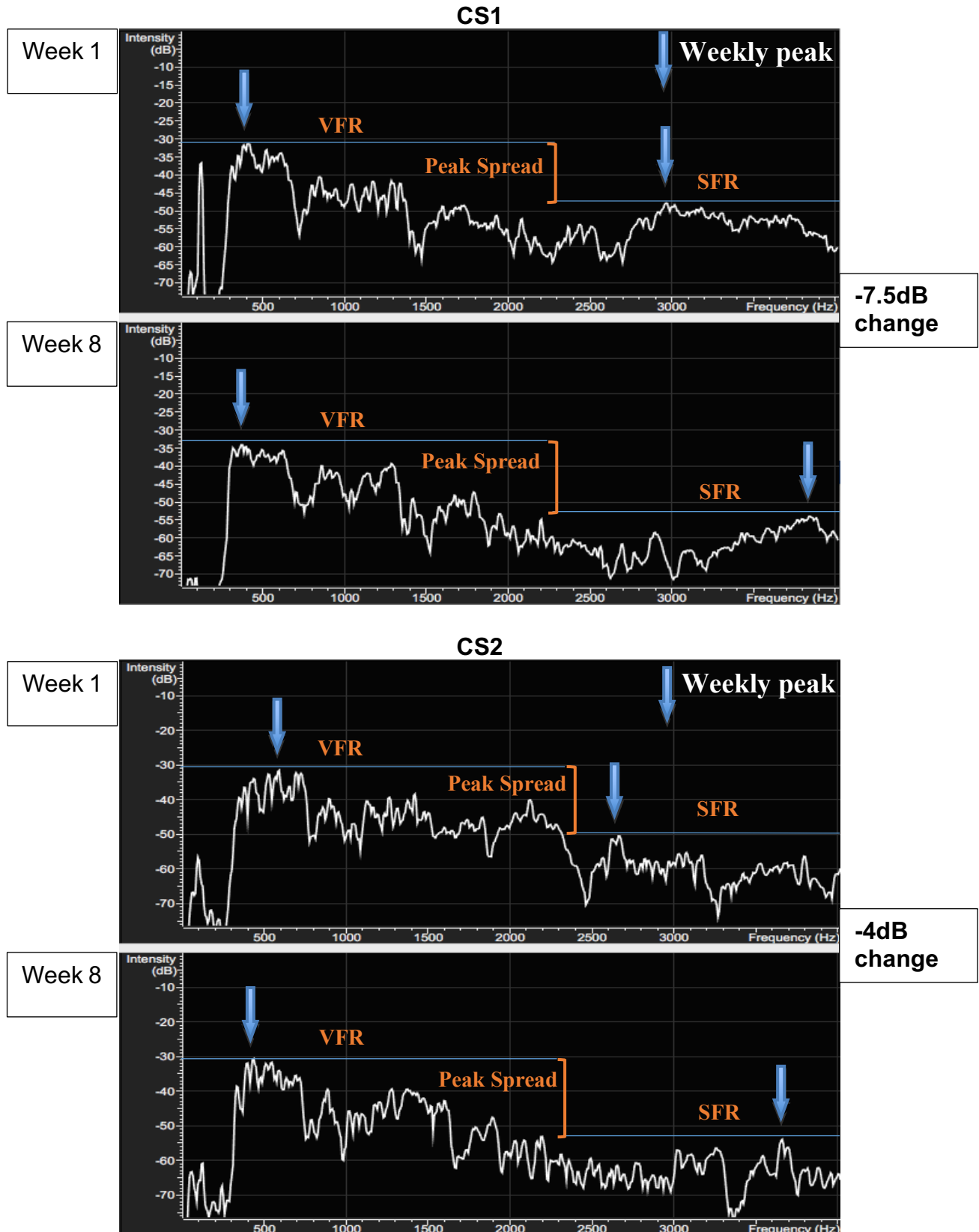


Week 8

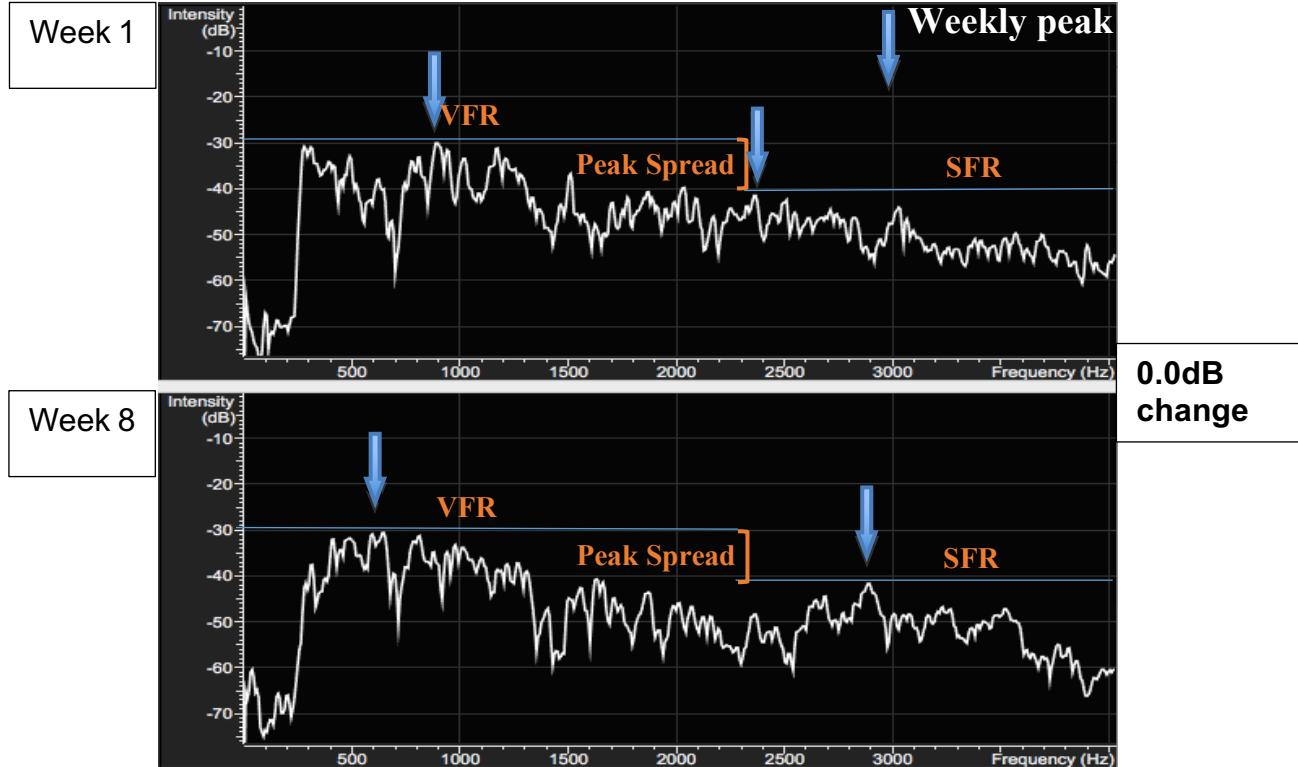


Overall peak to peak reduction was found, however, chronic constriction may be an issue contributing to CS5's habitually amplified aperiodic respiratory patterns.

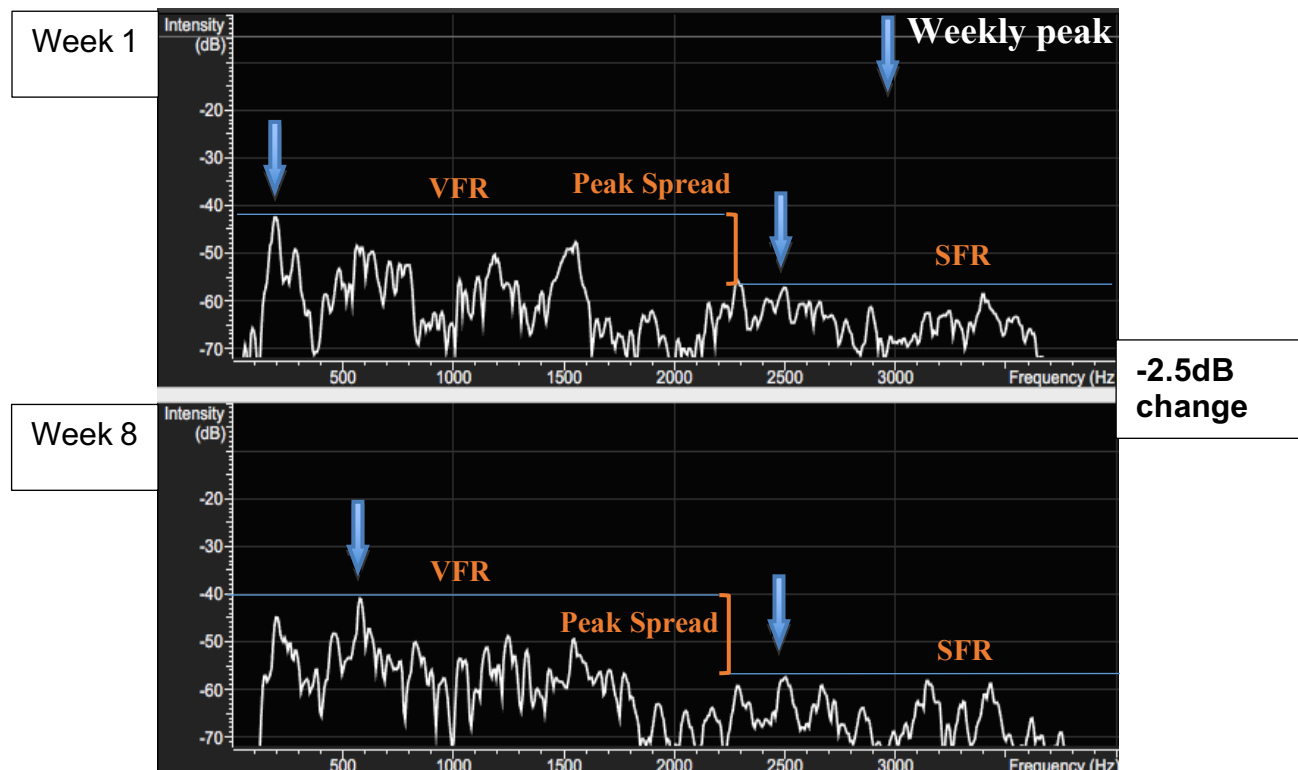
APPENDIX N: SPECTRAL ENERGY (LTAS), *Caro mio ben* (9 bars), VFR versus SFR



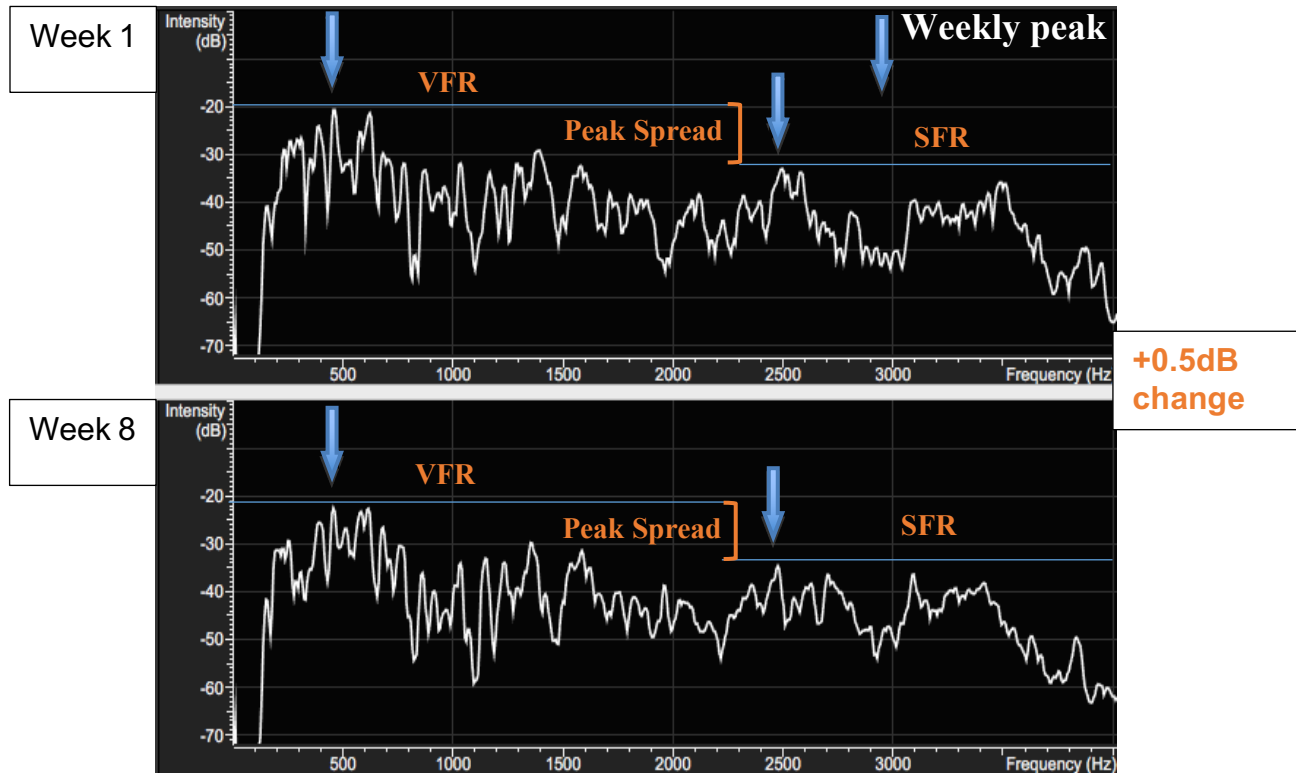
CS3



CS4



CS5



APPENDIX O: VOWEL FORMANTS (LTAS)

Five Case Studies (CS1-CS5)

The two vowel formants: first formant (F_1) - second formant (F_2)

VFR: Vowel formant range identified for this research 0-2.3kHz

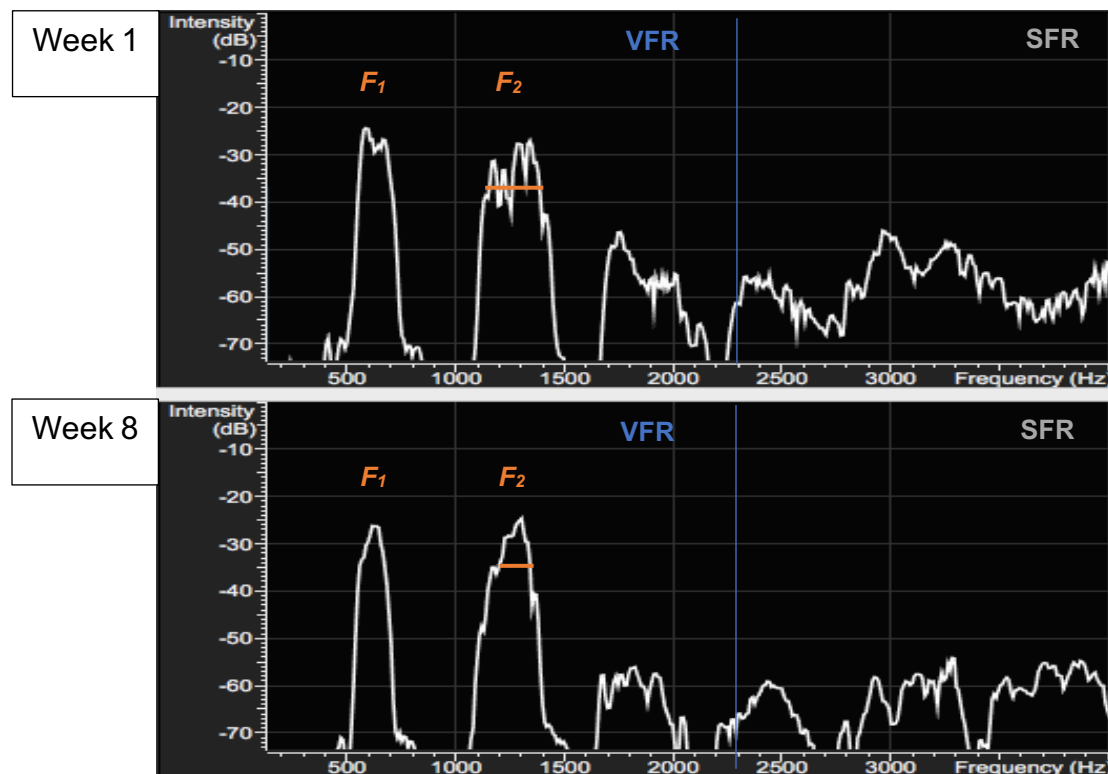
All samples – week 1 over week 8

Commonalities in this data:

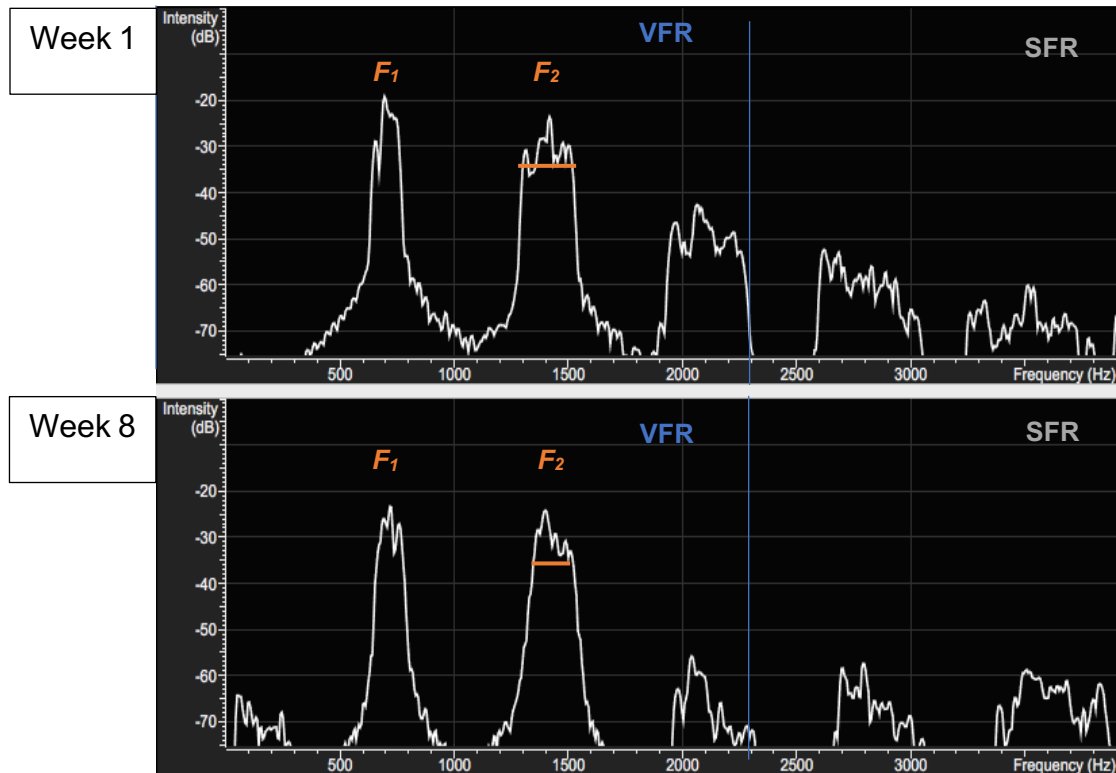
Week 8 shows a trend toward narrower formants in the VFR for every participant, especially in F_2 . This indicates a more precise vowel formant strategy.

Bandwidth measurements are commonly measured 10dB below their peaks (McCoy, 2012).

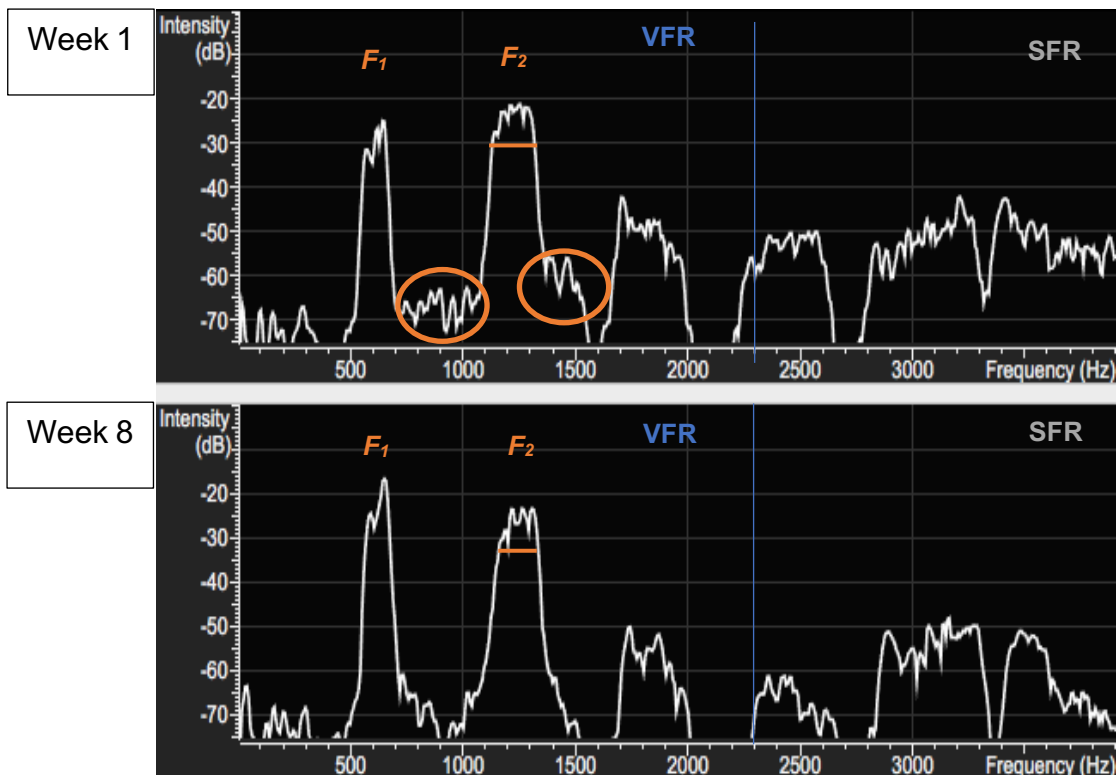
CS1



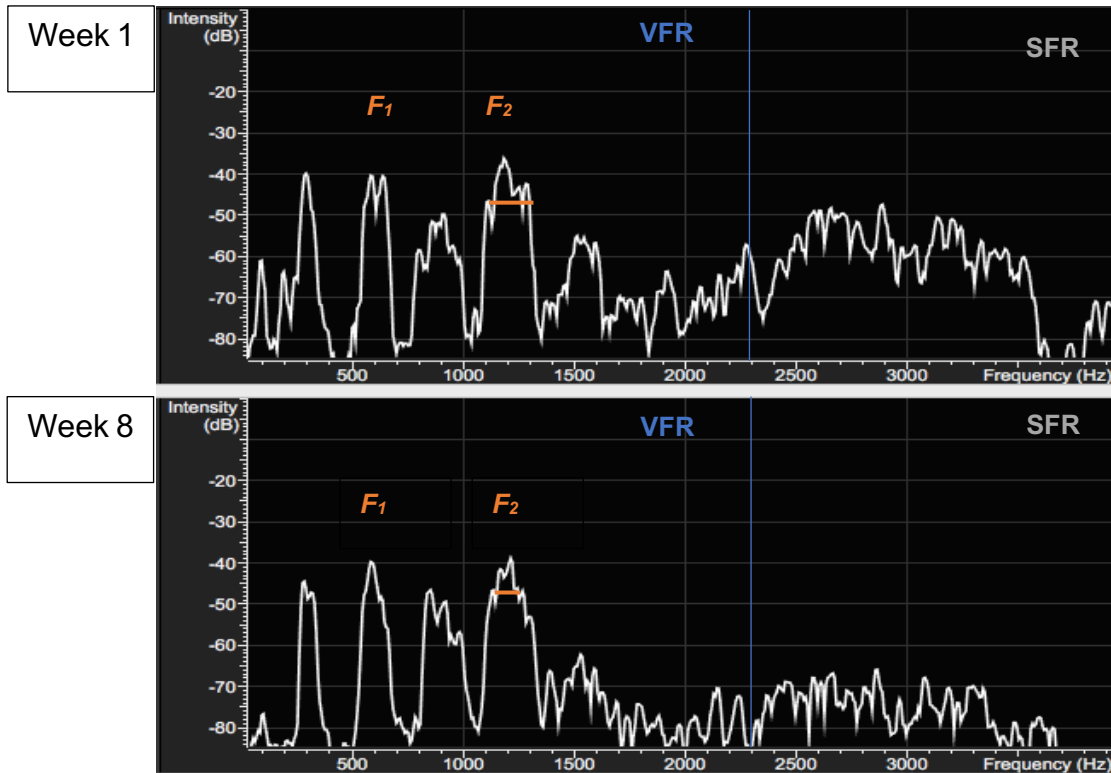
CS2



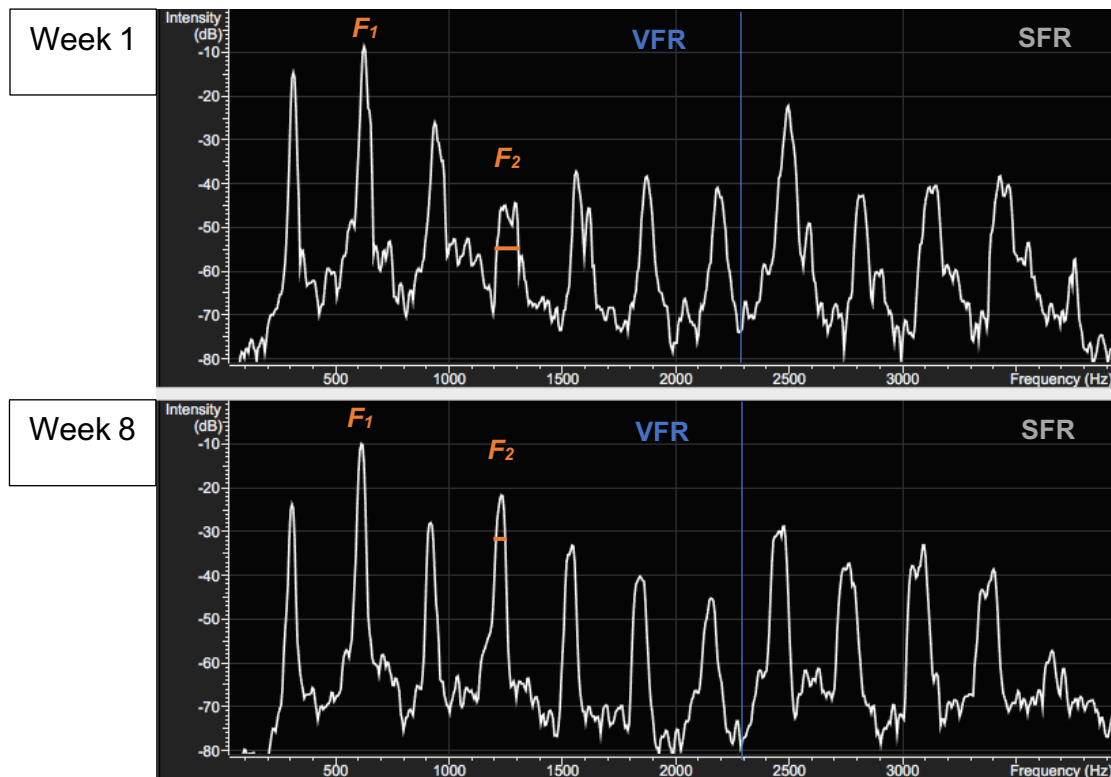
CS3



CS4



CS5



APPENDIX P: DIMON INSTITUTE TRAINING CERTIFICATION

THE DIMON INSTITUTE

356 West 123rd Street
New York, New York 10027

DIRECTOR:

Theodore Dimon, Ed.D.

Teacher of Alexander Technique and Neurodynamics

THIS IS TO CERTIFY that Michele Capalbo has completed the three-year course of study in the theory and practice of Alexander Technique and Neurodynamics at the Dimon Institute as outlined in the Institute's curriculum and is recommended for recognition as a teacher of the Alexander Technique and Neurodynamics.

March 7, 2018



Theodore Dimon, Ed.D.

APPENDIX Q: AMSAT CERTIFICATION



APPENDIX R: AMSAT CERTIFICATE OF INSURANCE

American Society for the Alexander Technique Certificate of Insurance		
Member ID#: 1668304 Member Name: Michele Capalbo Address: 70 Wilson St Ridgewood, NJ 07450-1534	Member Classification: Federation Enrolled Member Effective Date: 08/01/2020 to 08/01/2021	
Coverage for enrolled member's business is limited to claims arising from enrolled member's professional services.		
Business name: Administered By: Healthcare Providers Service Organization Affinity Insurance Services, Inc. 1100 Virginia Drive, Suite 250 Fort Washington		
Insurance Company: Columbia Casualty Company A CNA Company		
Type of Insurance	Master Policy Number	Limits (per enrolled member)
Professional Liability	0289955556	\$2,000,000 each claim / \$6,000,000 aggregate
Occurrence Coverage		Subject to the Master Policy Aggregate
Coverage is afforded through the AMTA Master Policy to the Enrolled Member of The Federation of Therapeutic Massage, Bodywork, & Somatic Practice Organization identified at the top of this certificate of insurance for a period of 12 months concurrent with the Enrolled Member Effective Date or until membership is terminated or expires. If the AMTA Master Policy is non-renewed or cancelled, the Enrolled Member's coverage under this policy will terminate upon the expiration of the Enrolled Member Effective Date and will not be renewed. The Master Policy Aggregate may be reduced by claims paid on behalf of other insureds.		
Additional Coverages (included in Professional Liability Limits specified above): • General Liability • Products Liability • Host Liquor Liability • Personal Injury Liability • Good Samaritan Liability • Malpractice Liability • Fire & Water Legal Liability (subject to \$100,000 sub limit)		
Coverage Extensions License Protection Defendant Expense Benefit Deposition Representation Assault (excluding Texas) Medical Payments First Aid Damage to Property of Others		Coverage Extension Limits \$10,000 per proceeding / \$25,000 aggregate \$10,000 aggregate \$2,500 per deposition / \$5,000 aggregate \$10,000 per incident / \$25,000 aggregate \$2,000 per person / \$100,000 aggregate \$2,500 aggregate \$10,000 aggregate
This coverage is extended to you through the AMTA Master Policy. This material is intended to provide a general overview of the products and services offered. Coverage for enrolled member's business is limited to claims arising from enrolled member's professional services. Only the policy can provide the actual terms, coverage's, amounts, conditions and exclusions. Please contact HPSO at 1-866-461-1227 directly for a free copy of the complete policy.		



HPSO
Healthcare Providers Service Organization

APPENDIX S: FINAL QUESTIONNAIRE

AT/Voice Integration Final Questionnaire

* Required

1. Email address *

2. Name

3. How many years of voice training have you received? (Include all styles).

4. How many years of classical voice training?

5. Which styles or classical music period(s) do you consider your specialty?

6. Please reflect on your overall experience with this training programme. Specifically, how did the experience impact your singing? What are your take aways?

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Google Forms

PRESENTATION SLIDES

Integrating the Alexander Technique into Classical Singing

Assessing the Impact on an Online
Independent Learning Programme

Presentation Slides

Integrating the Alexander Technique into Classical Singing

Assessing the Impact on an Online Independent Learning Programme

An Eight Week Longitudinal Pilot Study



Ethics Approval was received from the University of Wales Trinity Saint David, WAPPAR, 25th August 2020

Introduction

Primary Goal

To develop an online programme integrating the Alexander Technique (AT) into voice training to address existing contact and teaching constraints due to the Covid-19 pandemic.

Introduction

Secondary Goals

1. Verify existing AT/voice integration research Jones (1972).
 - Improvements to resonance
 - Reduction in respiratory noise.
2. Codify future parameters for AT/voice inquiries.

Literature Review

1. Frame the indirect AT teaching approach. (Alexander, 2001)
2. Review existing AT/voice research.
 - Acoustics (Jones, 1972)
 - Multiple case studies (Lloyd, 1986).
3. Provide a brief acoustics primer.
 - Frame and update the existing research claims (Jones, 1972).
 - Identify current classical voice parameters (Titze, 2000).
 - Contextualise the researcher's findings (Miller, 2008; Titze, 2000; Sundberg, 1987).

Research Design: Mixed Methods

This research took a pragmatic mixed methods approach focusing on the human experience (Morgan, 2007).

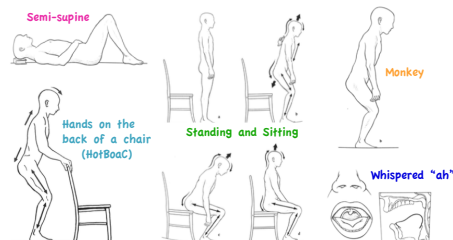
The pragmatic interchange of social and numerical data led to a richer explanation of phenomena (Mitchell, 2018).

Method: Video and Live Guidance

17 Videos Over Eight Weeks (Capalbo, 2020)

- Introduction to AT.
- Two on-demand weekly videos.
 - AT procedure instruction.
 - Application of the weekly AT procedure to the voice.

Alexander Technique Procedures



Voice Integration Exercises

Summary of exercises that evolved as a result of this programme:

Autonomic Breathing
 Kinesthetic Memory
 Awareness (external locus of attention)
 Simple Vocal Task (devised by participant)
 Critical Moment of Phonation (allowing time and space)
 Unvoiced Semi-Occluded Vocal Tract Exercises (SOVTE)
 Voiced SOVTE
 Whispered "ah" with vowel alternates
 Whispered "ah" with SOVTE Variations
 Integrative Support (HotBoaC)
 Means Whereby Approach to Consonants

Insider Research: The Master Class

Each week concluded with a master class.

Participants were invited to ask questions and sing.

During these interactions the researcher's role shifted toward a participant observer on the emic/etic continuum (Cohen, Manion and Morrison, 2007, p. 179). Both roles are valuable in this inquiry (Mercer, 2007).

Mixed Methods

QUALITATIVE data:

- Initial and final questionnaire.
- Initial semi-structured interview.
- Learning journals submitted weekly.
- Researcher observations.

Mixed Methods

QUANTITATIVE data: VoceVista Video Pro (VVP), (Maas et al. 2020).

Spectrum Analysis: Long-term average spectrum (LTAS)

- Amplitude in decibels (dB)

Vibrato Analysis

- Vibrato rate in Hertz (Hz)
- Vibrato extent in cents

Spectrographic Analysis

- Stylistic assessments and confirmation of perceptual findings. (legato, vibrato periodicity, phonation type)

9 recorded bars, *Caro mio ben* (Giordani, n.d.).

Research Findings: Summary

This inquiry tested
four hypotheses.

Research Findings: Hypothesis #1

Respiratory noise will be reduced.

This was found to be true with a reduction for all participants and a mean reduction of **6.8dB**.

Remember a reduction of 6dB reduces the sound by half (McCoy, 2012, p. 21).

Research Findings: Hypothesis #1

Case Study	Change in peak dB inhalatory noise from week 1 to week 8
CS1	-10dB
CS2	-5dB
CS3	-6dB
CS4	-6dB
CS5	-7dB
Mean Reduction	-6.8dB

Research Findings: Hypothesis #2

Greater singing ease will be reflected as less spectral energy in the singer's formant range (SFR) between 2.3-4kHz, especially in female voices.

This was substantiated in three of the five participants (60%). The mean reduction of these participants was 4.7dB in SFR amplitude. (CS1, CS2, CS4)

Spectral Energy: LTAS



Research Findings: Hypothesis #2

Greater singing ease will be reflected as less spectral energy in the singer's formant range (SFR) between 2.3-4kHz, especially in female voices.

This was substantiated in three of the five participants, with a mean reduction of 4.7dB in amplitude in the SFR (CS1, CS2, CS4).

CS3, showed no change in amplitude levels however there was evidence of more precisely tuned formants in the SFR, corresponding to an enhanced perceptual ring indicative of a classical singing style (Manfredi et al. 2015).

Research Findings: Hypothesis #2



Research Findings: Hypothesis #2

Greater singing ease will be reflected as less spectral energy in the singer's formant range (SFR) between 2.3-4kHz, especially in female voices.

This was substantiated in three of the five participants, with a mean reduction of 4.7dB in amplitude in the SFR (CS1, CS2, CS4).

CS3, showed no change in amplitude levels however there was evidence of more precisely tuned formants in the SFR, corresponding to an enhanced perceptual ring indicative of a classical singing style.

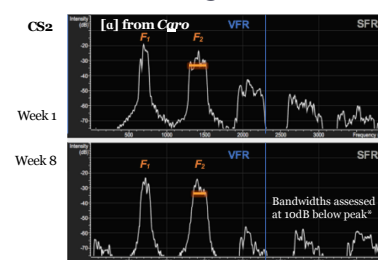
CS5's data did not directly support this hypothesis. However, his data results do not necessarily disprove this theory. CS5's journal and comments reflected his unwillingness to reduce tension if it changed habitual singing style.

Research Findings: Hypothesis #3

Improved resonance will be reflected in the vowel formant range (VFR) between 0-2.3kHz.

This was demonstrated to be true to a degree in all cases as vowel formant tuning became more precise, typified by narrower formant bandwidths.

Research Findings: LTAS



*(McCoy, 2012, p. 40)

Research Findings: Hypothesis #4

Reduction of chronic tension and improved coordination will be reflected acoustically with improved vibrato periodicity, and a smoother legato.

These results related to vocal function affecting the classical singing style are inconclusive.

Legato was reliably improved only with explicit intervention.

Women's vibrato rates stayed or moved toward 5.5Hz (midpoint). Women's extent moved toward the midpoint with an average of 22 cents of movement.

Men's vibrato results did not show spontaneous improvements.

A longer longitudinal study is needed to validate claims related to style.

Consent to Appear in the Presentation

Responses to the request to use their images in this presentation obtained via email.

CS1 – "This is fine with me."

CS2 – "Yes, I'm alright with the use of video."

CS3 – "Sure, you are very welcome to use whatever video with me that you like."

CS4 – "Whatever you need, you have permission to use."

CS5 – "Yes, I give my consent for the video footage from the masterclasses to be shown for academic purposes."

Case Study #1 - Soprano

Initial Observations

Sings with ease in a seemingly relaxed (seated) posture.

Case Study #1



Case Study #1

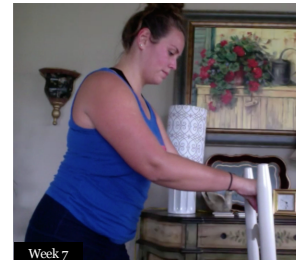
Confronting Habits:

She identified her habit of gasping for air on the inhalation.

She concluded that her postural muscles were weak and worked hard on the monkey to build up her strength.

CS1 met with the researcher three times to check-in on her execution of AT procedures.

Case Study #1 - HotBoaC



Case Study #1

Respiration noise reduction

-10dB

LTAS spectral energy peak to peak reduction

-7.5dB

Case Study #2 - Soprano

Initial Observations

Singing poise is unsettled with her head habitually strongly pulled to her right, unsettling her entire balance.

Tongue tension seems to be an issue.

She chose to use her hands in a particular way this week to stabilise herself.

Note the accented, disjointed legato.

Case Study #2



Case Study #2

Confronting Habits:

Tendency for the head to move toward the right is still present, but the movement is less sharp.

What is clearer in this second example due to the closer angle, is the involvement of the shoulders. This is an area of tension that may have been mitigated by the stabilisation of her hands and arms in the first example, or perhaps it is present because her former habits are being destabilised and a new balance is being sought.

There is a perceptual improvement in her legato as her accented singing style lessens in the next clip.

She is seated in the second example due to a knee injury she sustained at work.

Case Study #2



Case Study #2

Respiration noise reduction

-5dB

LTAS spectral energy peak to peak reduction

-4dB

Case Study #3 - Mezzo Soprano

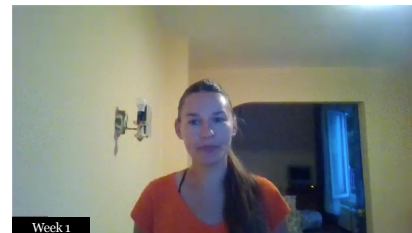
Initial Observations

Tension in the face, especially around the eyes.

High muscle engagement in the arms during phonation affecting her shoulders and entire torso.

Head tilts back especially on the inhalation.

Case Study #3



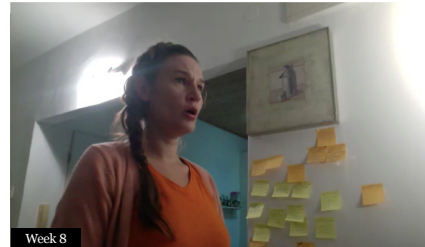
Case Study #3

Confronting Habits:

A reduction in arm and shoulder tension as well as head tilting during inhalation is evident.

Stylistically there is a more ringing quality, although this sample doesn't reflect the same progress she demonstrated in the assessed song task.

Case Study #3



Case Study #3

Respiration noise reduction

-6dB

LTAS spectral energy peak to peak reduction

0.0dB

There was clustering of formants in the SFR.

Case Study #4 - Tenor

Initial Observations

His poise is unsettled, with notable (right) arm tension as if to conduct himself.

Notice also his shifting head balance, which tends to nod along with the pitch near the end of this selection.

Case Study #4



Case Study #4

Confronting Habits:

His right arm is much more settled.

There is a reduction in excess head movement. Specifically, he does not nod with each pitch as he did.

Stylistically, there is a marked improvement in his legato and his vocal quality is more *dolce* rather than *brassy*.

Case Study #4



Case Study #4

Respiration noise reduction

-6dB

LTAS spectral energy peak to peak reduction

-2.5dB

Men tend to have more energy in the SFR due to the classical singing phenomenon of clustering formants (Miller, 2008, p. 120).

Case Study #5 - Baritone

Observations

Postural patterns include excessive head nodding, and movement in the torso during phonation.

His locus of attention is limited to the music on the stand.

Case Study #5



Case Study #5

Identifying Habits

Notice his external focus of attention has improved.

His head and torso movement was greatly reduced over this eight week period.

His whole demeanor is more relaxed and welcoming.

Case Study #5



Case Study #5

Respiration noise reduction

-7dB

LTAS spectral energy peak to peak reduction

+0.5dB

CS5 tended to maintain the same phonation patterns during the eight weeks during the song assessment task.

Conclusion

This research confirmed existing AT/voice research showing a reduction in respiratory noise.

The claim of enhanced resonance was expanded while corroborating existing data.

A modern vocal resonance paradigm was developed for future inquiries.

Supplementary research benefits included a sense of calm and ease.

Practical Outcomes

Teaching Applications

Skill reinforcement between private or group lessons.

University level music course, lectures or workshops.

Young artist training programmes and workshops.

Independent online training programmes.

Glossary of Abbreviations

AT	Alexander Technique
HotBoaC	Hands on the back of a Chair
LTAS	Long-term average spectrum
SFR	Singer's formant range
SOVTE	Semi-occluded vocal tract exercise
VFR	Vowel formant range
VVV	VoceVista Video Pro

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Integrating the Alexander Technique into Classical Singing

Assessing the Impact of an Online
Independent Learning Programme

Thank you!