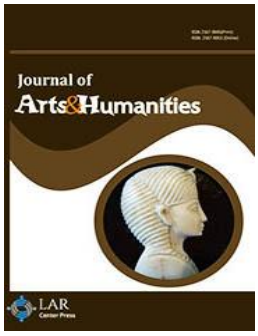

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Teaching Singing in the Digital Age: Observations of Belting Singing Technique (BST) Videos on YouTube

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ABSTRACT

The growing interest to learn belting singing technique (BST) has led to students turning to non-conventional methods of learning, such as YouTube tutorials, to improve their singing. However, it is uncertain that the singing techniques recommended in some of the video tutorials' explanations are safe for learners as they are not supported by scientific inquiry. As YouTube is seen a resource to teach BST, a document analysis was conducted to evaluate reliability and validity of the contents of several popular YouTube singing tutorial videos. Information from the channels were compared to reputable information found in research studies and the findings revealed that except for several YouTube instructors, several YouTube tutorials on BST are ambiguous, insignificant, and may not be perceived as suitable options for novice singers. Hence, heavy reliance on YouTube tutorials as a wholesale replacement for individualized vocal lessons from professionals is not recommended. On the other hand, the accessibility and ubiquity of such YouTube videos may provide a platform for voice pedagogues and researchers to comment and regulate the spread of misinformation regarding BST singing techniques.

Keywords: Belting, free tutorials, teaching contents in YouTube videos, YouTube, voice pedagogy.

1. Introduction

Digital technologies have introduced a proliferation of social media channels which have made information more accessible to many people (Subramanian, 2017). One of the leading social media channels is YouTube, a popular video sharing platform that allows individuals to post videos on almost anything. While most YouTube videos are dedicated to entertainment, there has also been an increase in videos providing instruction on various subjects, including singing techniques. This emphasizes the popularity of two concepts: the common usage of YouTube and the discovery of Contemporary Commercial Singing Technique (CCST) (Marks, 2013). Apart from making the videos accessible to the

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masses, YouTube has become an emerging portal for introducing new singers to vocal pedagogy and a platform where many aspiring vocalists discover one of CCST's key element, the belting technique.

The prominence of belting technique is due to the popularity of talent and demands of the music industry. When it comes to belting techniques, which is used extensively in contemporary songs, YouTube videos teaching belting techniques share several common traits. They deliver an overview of the technique by breaking it down into separate elements. In the videos, belting is presented in several musical contexts which include popular styles of singing and Broadway. A close inspection of the vocal instructional videos on YouTube shows that instructions are usually presented in both academic and informal languages. However, there is a need to evaluate reliability and validity of the contents of several popular YouTube singing tutorial videos. Hence, this paper analysed the contents of YouTube tutorial videos to determine the reliability and validity of the information and techniques.

This motivation behind this paper is the need to identify whether BST-related tutorials available on YouTube imparts safe singing techniques as these videos are often used by novice singers. The researcher is concerned that novice singers, who rely heavily on the tutorials to self-train, may be faced with undesirable negative effects that can affect their vocal health.

This article is separated into five sections, starting with the introduction. After the introduction, the paper reviews related literature and discusses research method used in the study. It provides further details on the use of the method and document selection. The third section examined of the results obtained whilst providing an overview of the information and content on singing technique in the analysed YouTube videos. The fourth section analysed the results by comparing them to fact-based, academic and institutional information obtained on BST. Lastly, the usefulness of YouTube video tutorials as an educational resource is evaluated in the discussion. The concluding section also offers some recommendations on the future of singing pedagogy.

This study's working hypothesis is two-fold:

a. YouTube tutorials contribute to the spread of misinformation about vocal pedagogy.

b. YouTube tutorials are not adequate to be used to teach BST on their own due to misinformation in the contents related to vocal pedagogy.

1.1 Background of the study

BST is used regularly in musical theatres and has been discussed in depth in the female voice than in males. However, belt voice has the tendency to occur higher range in 'chest' register up to approximately D5, 590Hz (Kayes & Welch, 2016). Nevertheless, there are still inconsistencies among instructors and voice scientists regarding its exact limitations (Bourne, 2012; McGlashan et. al., 2017).

The usefulness of videos on vocal pedagogy at large and belting technique depends on the information's accuracy when it comes to teaching viewers proper belting techniques. This leads to the question related to what proportion of the information delivered by the videos which can be described as both inaccurate and unhelpful. A large proportion of such videos is dangerous as many singers would adopt harmful techniques. This could lead to vocal degradation and other vocal issues together with an increase in armature and professional music employing improper or harmful belting techniques. Thus, these issues lead to important questions regarding the quality of YouTube videos as a pedagogical instrument and how it influences not only a new generation of students but also the overall future of formal voice pedagogy.

The proliferation of vocal pedagogy videos on YouTube rejuvenates some vocal pedagogy arguments which many may have considered to be settled. For instance, new pedagogical techniques, which are gaining popularity on YouTube, challenge academic notions which are more structured and less accessible to the general public. Also, using standard pedagogy on the relatively novel medium of the internet-hosted videos brings to the fore a question linked to determining which settings are most suitable to be used in the teaching and learning techniques such as belting. The availability of these videos leads to some important questions: What are the advantages of learning belting technique using the internet with the help of a pre-recorded instructor versus a live and qualified one delivering lessons in academic settings? Blending these two forms of teaching could bring about the potential for more effective, if not convenient, learning programs.

The question explored by this paper is not only timely, but it is also critical as more students are exposed to online vocal pedagogy videos and reference materials available on YouTube. From colleagues' anecdotal experiences, it can be said that pedagogy has become an increasingly popular singing style among vocal students as YouTube become an emerging portal for introducing new singers to vocal pedagogy. Students respect singers who have been successful on YouTube. Hence, advice from these singers is taken more seriously by those who aspire to be like them.

2. Literature review

The rising popularity of YouTube as a place where many students learn to sing places a responsibility on the channel's instructors to act as authorities and filters. This will ensure that they can guide students to use the correct technique while also taking the responsibility of making sure that poor quality or outright false information is called out for what it is. This is required if one considers that YouTube is responsible for the production of students who mimic what they see on the videos without any consideration of the quality of such videos (Marks, 2013).

This proliferation of teaching happening on YouTube is happening simultaneously when the teaching of the classical singing technique is still the leading technique taught in many academic institutions and private vocal studios; notwithstanding the increasing demand for CCST. Meyer and Edwards (2014) advance the view that due to historical bias, the greater proportion of the formal vocal training observed in universities is still linked to classical technique paradigms which while suitable for classical training may not be appropriate for other singing styles. Overlooking conclusions from contemporary research and continuing to approach pedagogical work from a point of view that emphasizes only the classical technique, could result in more harm than good (ibid). This reality is observed by scholars like Barlett (2011) who argue that, generally, most teachers still believe that a classical training regimen is a sole method of ensuring vocal health and longevity.

Voice teachers who believe that classical training technique is the only suitable method are overlooking contemporary evidence (Winnie, 2017; Haldane, 2018). It can be argued that their preference for classical training emanates from a bias towards established singing techniques as the importance of preparing students for contemporary commercial singing is ignored. This is a view supported by Bourne, Garnier and Kenny (2011) who advance the view that contemporary singing, especially belting, calls for an approach which differs from classical singing. The same scholars refer to an approach which deserves its own teaching techniques and a particular breed of instructors. Their view imply that much of the classical training routine is simply inappropriate as teaching inaccurate techniques could be harmful to students' vocal health. The situation worsens when many singing instructors have neither knowledge expertise required for the teaching of techniques like belting. Surveys conducted by LoVetri and Weekly (2003, 2009) concluded that a substantial number of instructors involved in the teaching of CCM do not have any professional experience or training in the area. Edwin (2009) supports these findings and goes on to note that there are too many universities and colleges, whose voice faculties have a shortage of vocal staff, understand the different CCM styles and the voice techniques required to support them.

Based on the reality that there is a disconnection between proliferation of demand in CCST and a dearth of formal expertise and teaching in the area, it is not surprising that vocal instructors and coaches are closing this vacuum by making their services available on channels like YouTube. However, there are doubts whether YouTube resources can be trusted to deliver proper instruction. Since the channel is omnipresent and lacks a mechanism for quality control, there is a need to study how useful it can be as a teaching resource as good and bad videos on YouTube can be used as teaching resources; for presenting both good and poor techniques (McCoy, 2011; Krause & Veblen, 2012).

Consequently, to fill the gaps found in the literature, this analysis aims to identify whether the YouTube tutorial videos spread misinformation about vocal pedagogy and its adequacy to be used to teach BST. The findings is hoped to elucidate the implications for both vocal pedagogues' theory and practice while providing evidence on the impact of using YouTube tutorials to teach and learn BST.

3. Methodology

While several methods are available for the evaluation of YouTube as a pedagogical resource for CCST, it has been concluded that document analysis would be the appropriate method. Bowen (2009) defines document analysis as a systematic procedure which can be used in qualitative studies that use a selection of documents or texts. Making use of a fact-based approach, an array of popular CCST lessons on YouTube were examined to enable issues faced by singers looking for CCST lessons to be addressed. This will be followed by a comparison of their content to conventional scientific knowledge regarding the right singing technique, vocal health, and vocal longevity. The value, reliability and validity of YouTube videos as suitable online resource for prospective singers will be triangulated between academic sources and YouTube videos.

3.1 Document analysis

This study employs the method of document analysis to evaluate and review the degree to which singing tutorial videos on YouTube can be used as an effective pedagogical resource. When using document analysis as a research method, there are basically two main issues regarding the selection of resources to use (O'Leary, 2014). The first relates to the researcher biasness and how they found and chose documents to be used. The second relates to the unwitting content of the document. By this, O'Leary (2014) refers to the biases, sub textual meaning, and agenda. In its attempt to address these issues through contextualization of singing tutorials on YouTube and emphasizing their various purposes, communication methods, and target audiences, this study will employ the interpretivist approach.

3.2 Search strategy

The initial step in document analysis involved searching for suitable videos on YouTube. The selection of videos was carried out in two steps. The first step was video search that was carried out on 13 January 2019 using specific key words: "how to belt"; "belting exercise"; and "belting". For purposes of specification, quotation marks were used during the search process. The keyword search led to the discovery of 63 videos. The videos were screened further using specific inclusion and exclusion criteria.

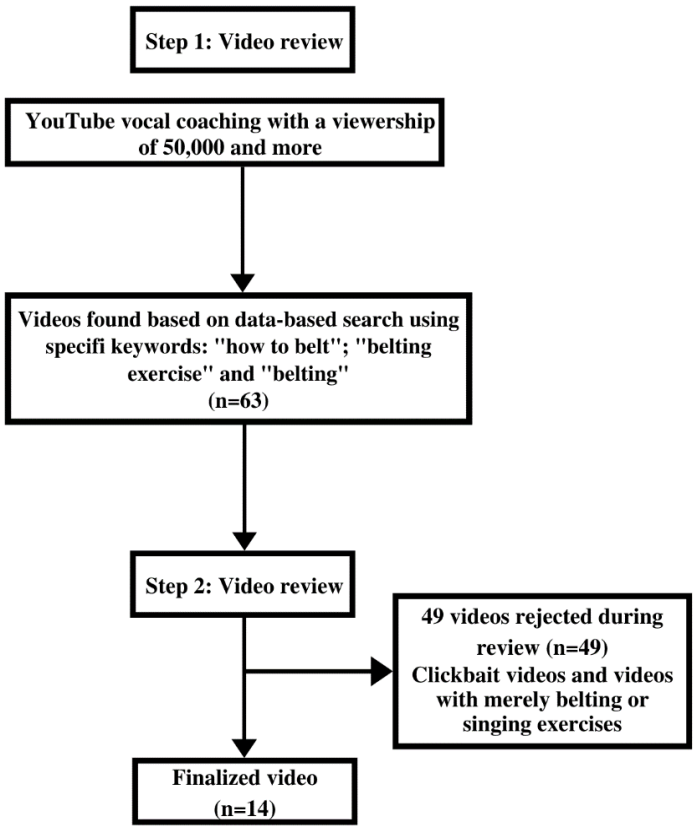

Figure 1. Steps identifying YouTube Videos for analysis

The exclusion criteria are as follows:

i. Videos with merely singing or belting exercises

ii. Viewership less than 50,000

iii. Merely clickbait videos

The inclusion criteria are as follows:

i. Videos teaching belting exercises with pedagogical explanation and techniques

ii. Viewership more than 50,000

Channels and videos were selected based on the number of subscribers and viewership. Videos with a viewership of 50,000 or more were selected (See Table 1). Even though this was not a condition

for selection, all selected videos are produced by individuals claiming of having vast experience in singing or as vocal coaches and instructors. This may imply their expertise and credentials would partly be attributed for their popularity on YouTube.

It is the view of Bowen (2009) that even though a wide range of documents is useful in document analysis, it is more prudent to select a few high-quality relevant documents as opposed to a large number of less relevant and inferior documents. Following the inclusion criteria, only fourteen of the leading singing tutorial channels on YouTube. Hence, videos that did contain information relevant to the teaching and learning of vocal belting with merely singing or belting exercises and clickbait are excluded as they did not include adequate detail regarding the manner in which the exercises should be carried out. Uploads, which were divided into more than one part, were treated as a single file for the purposes of analysis.

A close look at most of the channels shows that they consist of basic content: definition of belting, vocal exercises, and tutorials on the belting techniques. A number of channels also include cover performances (such as Evynne Hollens's "How to Belt Like a Disney Princess" and Justin Stoney's "How to Belt Trilogy 1,2 and 3") and occasional video log updates (such as Dr. Dan's Voice Essentials) with the aim of keeping viewers up-to-date when it comes to the lives of the content creators. All the channels are aimed at an English-speaking audience. One of the channels, HowcastArtsRec, is a general tutorial channel covering several arts and recreational activities. It employs different experts to cover tutorials for different activities. For purposes of this article, only tutorials created by Cari Cole on HowcastArtsRec were examined.

Table 1.

YouTube Video Channels Selected for Document Analysis

YouTube Channel Screen Name	Name of Content Creator	Number of Subscribers	Number of Overall Views	Number of Videos	Belting Video Viewership
AM Vocal Studio	Adam Mishan	88,877	10,416,047	169	130,659
AmaZane Channel	Zane Rima	182,889	9,475,729	128	87,002
Dr Dan's Voice Essentials	"Dr Dan"	63,355	3,796,229	406	54,552[a]
EricArceneaux	Eric Arceneaux	669,848	53,519,593	180	1,053,848
Evynne Hollens	Evynne Hollens	305,720	42,440,415	195	1,361,325[b]
Felicia Ricci	Felicia Ricci	588,471	31,650,854	83	170,735
Freya Casey	Freya Casey	59,654	4,691,230	659	171,130
HowcastArtsRec	Several; Cari Cole	423,885	98,304,532	704	337,304
Ken Tamplin Vocal Academy	Ken Tamplin	557,853	68,712,465	544	239,829
Madeleine Harvey	Madeleine Harvey	168,795	5,995,696	52	425,229[c]
New York Vocal Coaching	Justin Stoney	148,443	15,683,123	145	380,399[d]
Singer's Secret	Nicola Milan	72,892	5,615,971	114	336,434[e]
Singing Success	Several; Chanelle Guyton	161,305	17,423,280	197	306,301
The Songbird Tree	Keri Ho	77,424	5,430,805	175	354,891[f]

Source: Public data from YouTube.com. All numerical figures were calculated according to statistics from 13.01.2019.

a b,c,e, Number of viewership based on 2 uploads

dViewership based on 4 uploads

fViewership based on 3 uploads

Table 1 shows that the selected channels had over 5,000, 000 views by January 2019. Once the channels had been selected based on their popularity, their video libraries were perused to identify videos related to BST and the teaching of belting. To determine if these videos relied on fact-based pedagogy, the videos were triangulated where information found in the channels was recorded and annotated before being compared to pedagogical and scientific studies found in peer-reviewed journals. Bowen (2009) described triangulation as reviewing both peer-reviewed studies and the documents in question, allowing one to arrive at a more comprehensive conclusion with regards to how closely the analysed content is in alignment with the scientific consensus and academic knowledge. With regards to the YouTube singing tutorials, triangulation can assist in determining if YouTube is viable and safe for novice and intermediate singers who want to learn BST. It also helps to get an idea of the degree to which creators of content use verifiable facts creating their teaching material.

Despite using peer-reviewed journals as academic resources, there is still no shared terminology among academics, voice teachers and medical specialists, pertaining to issues linked to the human voice (Bateman, 2012). With this lack of interdisciplinary consensus, inconsistencies can be expected when it comes to the way academics and teachers express scientific concepts and discuss vocal training. These inconsistencies could have negative implications to the teaching and research on vocal health and singing techniques. With the aim of attempting to rectify these discrepancies, this article adopts an interdisciplinary approach which conducts an examination of prevailing scientific research on both belting techniques and specialist BST knowledge held by vocal teachers. Specific attention is given to articles produced by specialists and academics with a background in musical theatre, belting, and contemporary commercial music.

4. Results

Results from video observations and document analysis are as follows.

4.1 Observations

The criteria employed in the videos analysis is founded on two domains: demonstrations and explanations on how to teach belting. Tutorials selected from YouTube can be categorized into four groups:

(i) Power/breath

(ii) Source/larynx

(iii) Filter/vocal tract

(iv) Body, head, and neck posture

Due to the considerable overlap of content in different channels on YouTube, different videos would be discussed as a whole when necessary. However, a note will be made when different channels have discrepancies and conflicting advice.

In most of channels, the snippet style format is used. When using this style, each tutorial uses a short definition of BST. This definition is followed by simple belting tips or vocal exercises linked to BST. As most teachers and coaches who own these channels are experienced, they take advantage of these channels to sell their services. Video tutorials by Dr Dan (2014) and Ho (2012, 2013) conclude by calling users to purchase resources and subscribe form more in-depth lessons.

The most popular types of BST videos from the selected channels are vocal exercises. Generally, these channels emphasize the use of low stress and a relaxed neck posture when performing vocal exercises. Most of the channel creators agree using relaxed vocal exercises is principal when it comes to creating the belt sound and also to reduce tension to avoid vocal injury. Selected YouTube video exercises teaching how to apply the chest voice, chest mixed voice, speech-like voice quality, call voice, or TA-dominant voice are shown in Dr Dan's Voice Essentials (2015, 2016), Hollens (2015), Harvey (2015, 2018), Tamplin (2017), Ho (2012a, 2012b, 2013), Ricci (2011), Stoney (2012, 2014a, 2014b, 2014c), and Guyton (2017). In the same manner, other channels recommend the dropping of the jaw (Mishan, 2017) and the use of a larger backspace mouth (Cole, 2011). In certain cases, the channel content creators emphasize the use of twang in belt voice production.

Among the selected tutorial videos, there are several with instructions which are in disagreement with some academic recommendations on how to effectively achieve belting. For instance, Dr Dan's Voice Essentials (2015), Stoney (2014b), Casey (2015) recommend the application of lower air pressure when using the belt voice. On the other hand, Cole (2011) and Ricci (2011) mention that air is essential when using the belt voice. Also, some instructors agree that efficient belting depends on a tongue placed in a forward position while others like Cole (2011) and Harvey (2018) disagree and suggest that the tongue should either be dropped or flattened when practising or creating the belt voice. Hollens (2015), Cole (2011), and Arceneaux (2007) advise that effective belting results from a widened back mouth posture. However, Tamplin (2017) instructs singers to have the back of the mouth narrowed when singers are practising belting. In addition, Ho (2013) advances the advice that an opened throat makes it possible to extend the belt range without putting any strain on the voice.

Discussions regarding nasal resonance are also a point of focus among certain instructors on YouTube such as Harvey (2015), Hollens (2015), and Stoney (2014b, 2014c). Generally, many of the tutorials state that nasal resonance leads to positive belt quality. Harvey (2015) note that nasal resonance leads to shininess and brightness of the belt voice production.

Among the selected YouTube videos, the belting voice is defined ambiguously. The channels show that there are either no definition of what belting is or a lack of consensus among those attemptinh to define belting. Five channels (Ken Tamplin Vocal Academy (Tamplin, 2017), Evynne Hollens (2015; 2016), Ricci (2011), and Madeleine Harvey (2015) perceive belting similar to the use of mixed voice, which is somewhere between the chest and head registers. Madeleine Harvey (2015) employs the phrase shift and change when advising on how to create a balanced belt voice production. By contrast, one channel, Chantelle Guyton of Singing Success (2017), describes belting as the process of taking the chest voice up to the head register. The same channel defines belting as "taking the chest voice sound – which resonates externally and internally out of the mouth cavity and pulling it up to the head register". Conversely, Dr Dan's Voice Essentials (2015) advances the argument that belting is the direct opposite of yelling. Hence, belting needs its own pedagogy and methodology. While these arguments indicate that is it crucial to have a consistent terminology to describe belting, it can be observed that most channels are in agreement that the best way to develop the belt voice is the performance of vocal exercises with a chest (occasionally referred to in the videos as the call or thyroarytenoid dominant) voice production.

The selected videos also have consistent advice regarding vocal health. The overriding consensus among the channels is that singers must maintain a relaxed body posture and a throat free from tension. Hollens (2015) and Casey (2015) further suggest that belting singers should aim to practise the belting voice frequently as opposed to once off sessions with long durations.

4.2 Comparative document analysis

The analysis showed that the selected YouTube videos produce some dependable content for novice singers. From a non-technical perspective, some channels such as How to Belt by Evynne Hollens and How to Belt – If You're Not A Natural Belter by Nicole Milan advise that maintaining a restricted vocal loudness, being patient, and consistent during the learning process is recommended for good vocal health. This advice is in keeping with the views of Edwin (1998) who notes that voice muscular coordination can benefit from a period of time dedicated to its development. The same author outlines three core foundations for both voice teachers and belt learners: do not be too fast, do not be too loud, and do not be too high. The objective of effective belt pedagogy should be to help learners to be conscious of the differences between classical singing and belting. When discussing approaches in training and learning BST, Casey (2015) and Tamplin (2017) recognise the characteristics of the belt voice and are able to differentiate the belt voice from the classical voice; both in sound and in style. This view is in agreement with Edwin's (2004) ideas that effective approaches to teach belting should start with a recognition of the belt sound, the styles associated with it and being conscious of how these are different from classical singing. The same author also suggests that the study of the belt voice can be divided into three broad categories i) look; ii) sound; and iii) feel.

Technical analysis of selected YouTube tutorials revealed that there are some discrepancies among instructors and voice researchers when it comes to the bodywork involved in belting. Some

studies indicate that body relaxation, releasing tension on the neck and shoulder, such as is endorsed by Hollens (2015) and Ken Tamplin Vocal Academy (2017), may not have the effect of creating the right conditions for effective belt production (Estill, 1988; Roll, 2019; Edwin, 1998; Spivey, 2008). Such studies view belting as an extremely physical condition which requires high levels of energy. To meet this requirement for energy, training on how to engage the muscles in the torso and those of the neck and head should be provided as the body is involved physically when producing the belt voice than when producing the classical voice (Edwin, 1998; Spivey, 2008). Even with this being said, some exercises are not consistent with good practise based on a fact-based pedagogical perspective. For instance, Milan (2015a) advises singers to perform a coughing exercise if they want to feel the closure of the vocal folds. This advice seems misplaced as without proper coaching, learners may perform this coughing exercise improperly. Coughing or clearing the throat in the ordinary way may bring about a negative effect on the vocal folds if not done properly (Kovacic & Budjanovac, 2003; Michael & Goding, 2012a).

In the previous section, it was noted that for online content creators, belting was a source of ambiguity. Available evidence indicates that this ambiguity also extends to academics. For instance, Hall (2007), Edwin (2000), and Bartlett (2014) charge that unwillingness by most pedagogues to move away from classical voice concepts when they teach CCST and belting is the reason behind the extensive confusion in the area of CCM singing styles and techniques. This leads to the dispensing of the wrong advice for CCM performers (Bartlett, 2014; Edwin, 2000). It is for this reason that vocal coaches, instructors, and classical directors often coin new belting terms and spend time involved in debates over the use of terminologies when defining different belt voices. Some of the common terms include mix belt, chesty belt, twangy, brassy belt, and pop belt (LoVetri, 2012). Lately, institutions and researchers have started to dedicate more resources and attention to the study of CCM; which is helping to create a foundation for the formal study and teaching of CCST and belting as genuine subjects deserving to have their own specific methods through which they should be taught (Edwin, 2003, 2007; White, 2011). Nonetheless, there remains a predisposition towards classical and operatic training. This bias is still prevalent in academic institutions and vocal teaching studios. Hence, it can be said that such bias continues to make a contribution to the ambiguous language which is sometimes used when describing and teaching BST and CCST.

Even though the issues discussed above have been recognised, recent research supported by various scholars identifies some characteristics of the belt voice. When compared to classical singing technique, a loud belting voice production largely comes about from the use of a raised laryngeal position, restricted airflow, an elevated velum (Estill, 1988; Miles & Hollien, 1990; Sundberg, Gramming & LoVetri, 1993; Spivey, 2008; Hallqvist, Lã & Sundberg, 2016). However, care needs to be taken when singing from a raised larynx posture because this action risks crowding the hyoid bone, the tongue, and the jaw. This could result in the restriction of movement in the parts that help create vocal proficiency (Titze, 2007; Blake, Mathison & Rubin, 2004). In fact, belters generally have heightened subglottic pressure (Björkner, 2006), a bigger glottal closed-quotient (CQ) ratio than is the case with their classical counterparts. Even when they sing at higher pitches, they continue to employ their thyroarytenoid (TA) together with their cricotyhroid (CT) muscles (Edwin, 2007). On the other hand, classical singers are not prone to exhibiting the same level of TA activities when singing at higher pitches. This allows them to produce a more predictable head voice or CT sound as opposed to a mixed-voice belt (Edwin, 2007; White, 2011). This is a view supported by Bourne, Garnier and Samson (2016) and Titze (2007) who say that belters generally sing with their mouths in a more open and spread position than do their classical counterparts. Finally, belting is normally performed with the tongue in a forward position. This is the reason, according to Winnie (2014) and Kempfer (2014), why the sound produced from belting has a bright vocal resonance. Instead, a loud and bright sound is more desirable in belting (Bestebreurtje & Schutte, 2000).

Notwithstanding that there are inconsistencies when it comes to defining belting, some of the views expressed in the selected YouTube videos are supported by some academic studies. Content from Ken Tamplin Vocal Academy (Tamplin, 2017), Dr Dan's Voice Essentials (2015), and Evynne Hollens (2015b) suggests some vocal exercises aimed at strengthening and engaging the chest voice which is a requirement when developing a belt voice. Arceneaux (2007) and Stoney (2014b) focus on exercises where the tongue is placed in a forwarded position; another skill encouraged in belting.

A number of selected YouTube channels refer to the concept of twang. Instructors on these channels concur that twang is necessary for belting. Dr Dan's Voice Essentials (2015) advices that adding the twang quality to the belt voice will result in the use of less effort when singers perform belting. Ho (2012b) says that when twang is applied, the produced voice is brighter and edgy. These comments are in agreement with the views expressed in research studies (Lombard & Steinhauer, 2007; Sundberg & Thálen, 2009). Literature indicates that the twangy sound can be recognised in both belt and opera. It also shows that that the twang is perceived as a strategy in voice therapy to increase efficiency.

From the selected YouTube videos, there are some unhelpful advice which could be potentially harmful to novice singers. For instance, Cari Cole of the HowcastArtsRec (2011) suggests a bigger space inside the mouth when creating the belting sound (the C shape posture) and a dropped tongue. This advice is not consistent with a fact-based pedagogical approach as Spivey (2008) explains that belting should be done with a narrow pharynx and a tongue in a heightened position with the singer using a TA-voice production. A wide vocal chamber is linked to classical singing. In the same manner, Felicia Ricci's (2011) advice to "tighten the butt" while belting is not in agreement with research as there is no significant evidence showing that tightening of the gluteus maximus is productive in singing (McCoy, 2004; Watson, 2009).

Some of the selected YouTube video tutorials suggest using nasal resonance when belting. However, conclusions from a study by Echternach et al. (2014) suggests otherwise and concludes that the nasal port cavities may not be part of the resonance system. The opening between the nasal and oral cavities is called the velopharyngeal port. The velopharyngeal port closes during deglutition; an activity regulated by the soft palate. When the velopharyngeal port is not totally closed, the result is nasality. For belters to obtain the maximum possible in voice resonance, the velopharyngeal port should be closed. There is no need for a nasalized belt voice. For the majority of singers, the larynx stays at speech level, with the soft palate in a heightened position, the pharynx narrow, and retracted false vocal folds (Trudeau, 2011, p. 103).

Among the selected YouTube videos, singers are generally advised to support the belt tone production, sing from the diaphragm, support their singing from the diaphragm, use the belly to support the voice, support from underneath, or breathe from the diaphragm (Hollens, 2015; Harvey, 2015; Tamplin, 2017; Rima, 2016, Mishan, 2017). This common advice is perceived by many of the instructors as the gold standard of singing and believed to be a panacea for all challenges linked to singing, including belting. However, this advice is not consistent with academic research such as Edwin (2017, 2018) who remarks that phrases like "sing from the diaphragm" and "support" are not fact-based pedagogy terms and should never be seen as the solution to all vocal challenges. This is a view supported by Michael (2010) who notes that when the term support is used learners may overtighten the glottis valve when they sing. This implies that without a proper understanding of the anatomic function and location of the diaphragm, just telling learners to "support from your diaphragm", as is done in the YouTube videos, could result in voice disorders. Secondly, research indicates that belting needs restrained breathing (Spivey, 2008) and a laryngeal posture which is in a high position (Titze, 2007; Popeil, 2007; Spivey, 2008). It also shows that breathing deep into the abdomen could result in the downward pulling of the larynx (Hixon, 2006). Hence, this is a teaching approach that may not be useful when belting.

An additional component recommended by The Songbird Tree Kerri (Ho, 2013) is adding the sob quality to the belt voice with the aim of making the throat deeper and more open. The sob quality is generally characteristically soft, has dark timber, and results from a lowered larynx (Yaganisawa et al., 1989; Steinhauer, Kimberly & Estill, 2008). However, belt voice quality requires a laryngeal position which is elevated. Viewers who follow this kind of instruction may struggle to produce the desired belt voice. Mary Saunders-Barton, in her interview with Hoch (2018, p.235) on her pedagogical approaches, related the sob quality to operatic singing.

Overall, some of the channels analysed contain content that can be used as useful resources for learning BST. However, as McCoy (2011, p.550) notes, "The age of YouTube is delightful and disturbing". This implies that uploaded information can have both advantages and disadvantages for vocal teachers and their students. There are many factors affecting learners' learning process and vocal development,

including professional belters. Leaners may acquire wrong singing techniques if they rely solely on channels like YouTube without the help of individualised coaching. Vocal coaching is required to assist students to reach their full potential, through highlighting and reinforcing the best features of the students' voices. This can be achieved by helping them develop the voice's tone quality, endurance, intensity, and range through individualized practice. This individualised practise needs to be conscious of the strengths and limitations of each learner (Marks, 2013; Kiik-Salupere, 2012).

Due to the availability of many BST teaching and learning resources students who need vocal instructions and advice can get them with relative ease (Vitucci, 2010). These instructions and advice should be based on the individual conditions of the learners such as their vocal health, abilities, and experiences. Moreover, voice teachers with the right knowledge can help learners separate fact-based vocal advice from vocal myths. However, the accessibility and popularity of the YouTube platform provide a possibility for encouraging interdisciplinary communication and development of dialogue between different BST professionals.

5. Discussion

Belting pedagogy should incorporate appropriate techniques to avoid the risk of vocal damage, particularly given the intense nature of belting as a vocal performance style. However, students and performers remain largely unprotected from this risk when watching YouTube belting tutorials, with few videos providing examples of such techniques. For instance, video content could include a demonstration of physical and vocal warm-up exercises to be performed before belting, since the literature indicates that this can benefit students not only in terms of vocal health but also range and cognitive focus (Cook-Cunningham & Grady, 2017; Gish, 2010; Sandage & Hoch, 2018). Similarly, appropriate cool-down exercise could also be included in YouTube belting videos. This could include exercises such as gently performing body stretches, producing a quiet siren sound with /ŋ/, and emulating puppy whimpering while gliding from middle to low pitch. This point is supported by the work of researchers such as Ragan (2018), Gottliebson (2011) and Sandage and Hoch (2018), who suggest that performers who carry out proper cool-down exercises after intense forms of singing, such as belting, may benefit from shorter vocal recovery times and lower levels of vocal discomfort.

It is recommended that belting lessons start with straightforward exercises designed to wake up the body, such as running in place and tapping the head, face, neck, abdomen, chest, and legs. Following physical warm-up exercises, a vocal warm-up can then be performed. This could include exercises such as preparing the larynx for different postures by sliding up and down the pitch on vowel /i/, as well as enunciating speaking phrases with a clear speaking voice quality (e.g., "one, two, three, four, five"), and producing a series of glottal onsets on /i-i/ or /e-e/ in order to practise good vocal closure. Used together, physical and vocal warm-up exercises are important in preparing the voice before moving on to the mastery of the technical aspects of belt voice production.

To achieve healthy and effective belt voice production, voice teachers should discuss topics beyond voice exercises alone. For instance, as Roth and Abbott (2014) and Scearce (2016) assert, voice teachers should also ensure that learners recognise factors that may impact their vocal health and then guide them to take the right steps towards their goals. The findings presented in the current study demonstrate that these aspects of belting are also frequently overlooked in YouTube belting tutorials. It is therefore recommended that belting instructors provide learners with information on a range of beneficial activities, including the importance of hydration, speaking voice quality, healthy living, proper nutrition, regular exercise, and the avoidance of belting during vocal injury or times of illness. Learners should also be educated about conditions and afflictions they may experience in relation to their vocal health and how this should be managed in terms of belting practice. In the YouTube tutorials analysed in this study, a majority of instructors focus only on teaching viewers how to produce a good belt voice sound. This maybe insufficient as learners should understand the issues that can arise when attempting to belt when suffering from laryngitis, nodules, polys, haemorrhage of the vocal folds, or vocal fold edema. Furthermore, it is recommended that instructors who create YouTube belting tutorials should encourage viewers to rest their voice and seek examination from a healthcare professional in the event of vocal injury or illness.

One final point of importance based on the results of the current study is that YouTube belting tutorials may not be appropriate for children and adolescents, particularly given the fragility of young voices and the natural voice mutation that occurs during puberty. As YouTube belting videos tend to attract a young audience, viewers should be cautioned to avoid learning to belt during the period in which their voice is changing. Instructors should also help very young viewers to understand that children's voices differ from adults' voices and can be limited in terms of range and other voice qualities. Therefore, children should be made aware that if they wish to learn belting, the best way to do learn is through in-person lessons with a qualified vocal teacher. With personal guidance in place, YouTube belting tutorials could be effectively targeted towards young singers, using humour and lively energy to engage viewers, whilst also keeping young learners safe.

5. Conclusion

It can be determined that the document analysis did not fully support the first part of the hypothesis alleging that YouTube BST tutorials contribute significantly to the spread of misinformation about the belting technique. Evidence from the analyses indicates that YouTube could potentially be used as a platform to mitigate the spread of misinformation. This depends on the availability of vigilant content creators who have the willingness to respond and challenge BST misconceptions. Most of the disagreements noted from the video tutorials from the selected channels are not confined to the videos, they can also be noted in academic discourse (Spivey, 2008; LoVetri, 2011). It is for this reason that YouTube can be seen as having substantial potential to be a centre where students, teachers, vocal coaches and researchers can congregate and have dialogue.

The second part of the hypothesis alleges that YouTube BST tutorials are inadequate as vocal training resources when used on their own requires qualification. As has been alluded to, some content can be useful for singers. YouTube is a useful platform, particularly for novices who can compare that content on different channels, and in the process develop their own meta-learning skills. However, students looking for a full singing course will need more than these video tutorials. It was noted in this report that the channels analysed also double as marketing portals for the video creators.

Most importantly, these videos lack an important component of vocal pedagogy: the relationship between the student and the teacher. Relying on these video tutorials alone overlooks the reality that students need individualized attention from professional vocal instructors who can address their specific needs. Although the internet and digital technologies make vocal education more accessible, more content development is needed as relationships between teachers and students is still an important aspect of learning.

To conclude, there is an urgent need to investigate belting teaching skills. Studies related to belting pedagogy are limited and there are currently little in-depth information on efficiency in teaching and learning of BST. Most of the current research attempt to define what BST is by examining the physiological, acoustic, and perceptual aspects of belt voice production. These findings may be useful for both voice pedagogues and vocalists, however, there is a distinctive difference between theory in knowing-what and knowing-how. Voice practitioners equipped with knowledge of belting may not have the capability to apply the research findings to teach and perform belt voice effectively and safely. Thus, developing effective practical belting teaching skills by integrating fact-based voice research findings is important in current voice practices.

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