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BEHAVIORAL AND ENVIRONMENTAL ANALYSIS OF  
SELF-REPORTED DYSPHONIC AND NON-DYSPHONIC  
HIGH SCHOOL MUSIC TEACHERS

by

Emily Pence Brown

A Dissertation  
Submitted to the Graduate School  
and the School of Music  
at The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

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May 2016

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ABSTRACT

BEHAVIORAL AND ENVIRONMENTAL ANALYSIS OF  
SELF-REPORTED DYSPHONIC AND NON-DYSPHONIC  
HIGH SCHOOL MUSIC TEACHERS

by Emily Pence Brown

May 2016

Vocal fatigue and dysphonia are considered to be common hazards associated with occupational voice users. Teachers, due to the consistent communication demands of the profession, represent the highest percentage of clinical voice disorder patients (Verdolini & Ramig, 2001). Voice related injuries in teachers could result in lost wages due to missed work, additional costs for medications, therapy, and surgeries, and teacher attrition (Verdolini & Ramig, 2001).

The purpose of this study was to observe specific teacher behaviors and classroom environmental factors among and between three self-reported dysphonic and three self-reported non-dysphonic music teachers. The researcher observed each participant daily during the same ensemble class period for three consecutive days. Participants also engaged in a semi-structured interview following the three-day observation period. The observed behaviors were analyzed in order to determine if teacher talk time, amount of time spent talking over specific classroom noises, and amount of teacher talk within a “very loud” classroom (>80dBA) could be contributing factors for vocal attrition. The results indicated that the difference between amount of time spent talking, talking over students talking, talking over students musicing, and talking over other classroom noise was insignificant among the dysphonic and non-dysphonic teachers.

Interviews revealed that all of the participants are non-smokers, try to remain hydrated, and are all involved in at least one extracurricular activity. Self-reported dysphonic teachers experience high levels of stress as well as environmental or biological concerns such as poor classroom acoustics, chronic vocal nodules, or acid reflux that affect them on a daily basis. Study limitations and further investigations are suggested.

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My participants: Thank you for allowing me to be part of your musical family for a week and for your gracious belief in this project. It was a pleasure to work with you and I am humbled by your talent.

Thank you.

## DEDICATION

To my friends and family: I am constantly reminded that I do not walk this path alone and have a wonderful support system to make me stronger. Thank you to Mom, Dad, and Sam for always reminding me that family is a phone call away and that I am lucky to have your endless love and support. Thank you to my dear friend Julie for never ignoring my text messages and always sending me cute puppy pictures to lift me up and keep me focused. I could not have done this without you.

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## CHAPTER I

### INTRODUCTION

Voice related injuries have become increasingly familiar to the general population due to public celebrity cases and the media attention placed on *vocal fry* in young women. Some high-profile voice users, particularly musicians such as Adele, have undergone surgery, canceled tours, and been required to have long vocal rest periods based on misuse of or damage to their vocal folds.

Many people, not just professional musicians, rely on their voice to effectively perform the tasks associated with their job. Pastors, coaches, salespeople, and teachers are among professionals that are considered occupational voice users. Most occupational voice users are not trained on vocal health techniques (Askren, 2001; Cooper, 1973; Simberg, Sala, Tuomainen, Sellman, & Rönnemaa, 2006; Van Houtte, Claeys, Wuyts, & Van Lierde, 2011) and therefore could be at risk of misusing their voice, which could lead to vocal damage known as dysphonia.

Vocal fatigue and dysphonia are considered to be common hazards associated with occupational voice users. Teachers, due to the communication demands of the profession, represent the highest percentage of clinical voice disorder patients (Verdolini & Ramig, 2001). Teacher voice injuries costs upwards of \$2 billion annually including voice related medications, therapy, surgeries, lost wages, and substitute teachers due to voice related absences (Verdolini & Ramig, 2001). It has been reported that over 20% of the teaching population have had to miss work due to a voice related problem (Sapir, Keidar, & Mathers-Schmidt, 1993).

Teachers may have a tendency to ignore their vocal problems to continue to do their jobs (Kramer, 1994). Teachers will often continue to deliver their planned lessons by speaking over loud classroom noise such as students talking or speaking for long periods of time without any vocal rest intervals, regardless of the presence or absence of a voice problem. Continuing to use the voice under these conditions could contribute to further vocal fatigue, other voice-related disorders, or teacher “burn-out” and attrition (Roy, Thibeault, Parsa, Gray, & Smith, 2004).

In addition to ignoring vocal problems, researchers suggest that providing additional resources regarding teacher vocal health could help inform teachers of contributing factors, possibly alleviating potential cases of dysphonia, which could prevent teacher attrition (Roy et al., 2001). Askren (2001) found that 80% of the participants surveyed felt that a more comprehensive understanding of vocal health maintenance was needed within the teaching profession in order to continue being a successful teacher. Hackworth (2007) echoed these findings by reporting that music teachers that were aware of proper vocal health techniques made significant improvements in their overall vocal health.

Music teachers, particularly those that teach ensemble-based music classes, often experience episodes of acute or chronic vocal fatigue (Hackworth, 2007). Music teachers experience additional classroom noises that are specific to ensemble-based classes such as students signing. Specific additional classroom noise can be attributed to students playing instruments, students singing, metronomes, and instrumental accompaniment. These factors often contribute to the overall loudness of a music classroom and could

possibly add to the strain of vocal energy of the teacher, should he or she continually talk over those noises.

Vocal use and teacher talk time of music teachers have been extensively researched in order to determine optimal rehearsal effectiveness (Caldwell, 1980; Kostka, 1984; Napoles, 2007; Pontious, 1982; Sherill, 1986) but not in regards to vocal attrition. Anecdotal evidence would suggest that more teacher talk time could result in vocal fatigue; however, there may be additional factors that contribute more significantly to vocal fatigue than the amount of time a teacher spends talking. Self-reported vocal health of music teachers as it relates to teacher talk time, classroom noise, and personal vocal habits may provide additional indications as to how vocal health can be improved.

With talking being an essential component of the tasks associated with effective teaching, and only some teachers experiencing voice disorders as a result, a question begins to emerge: what if it is not the quantity of teacher talk time but rather the quality of that time that can have an effect on voice disorders? Additional research regarding teacher talk time as it relates to dysphonia could help contribute to teacher retention, attrition prevention, and overall teacher health. This study not only examined teacher talk time in regards to vocal fatigue but also analyzed the amount of teacher talk time that occurred over a “very loud” classroom (>80dBA).

This investigation sought to discover: (a) What percentage of teacher talk time is dedicated to talking over classroom noise?, (b) Do teachers with self-reported dysphonia talk more during class than teachers without dysphonia?, (c) How often does teacher talk time occur over a “very loud” classroom?, and (d) Are there themes between certain

environmental and/or behavioral factors among self-reported dysphonic and/or self-reported non-dysphonic teachers?

#### Definition of Terms

The terms in the research were defined theoretically and operationally:

1. *Dysphonia* - “defective use of the voice” (“Dysphonia”, n.d.)
2. *Dysphonic* - displays chronic signs of dysphonia
3. *Classroom Noise* - students talking, students musicing (playing instruments or singing) (Elliott, 1993), instrumental accompaniment, bell/intercom interruptions, electronic classroom aides (metronomes, tuners)
4. *Measured Teacher Success* - District Music Performance Assessment rating of Excellent or Superior from the previous school year within observed ensemble
5. *Non-Dysphonic* - displays little to no signs of dysphonia
6. *Teacher Talk* - the amount of time a teacher dedicates to speaking as a product of performing the duties associated with their job (Nelson, 2001).
7. *Occupational Voice Users* - Someone whose “ability to earn a living is impaired by the presence of voice dysfunction” (Rosen & Sataloff, 1997, p. 306). Occupational voice users include salesperson, factory workers, telesales persons, football quarterbacks, clerical workers, teachers, counselors, and singers (Rosen & Sataloff, 1997; Verdolini & Ramig, 2001).
8. *“Very Loud” Classroom* - A class environment in which the sound exceeds 80dBA (“Noise”, n.d.)

9. *Vocal Attrition* – “laryngeal pathology, muscle fatigue, and voice disorders secondary to acute or chronic abuse or misuse of the vocal mechanism” (Sapir, Atias, & Shahr, 1990, p. 991).

10. *Vocal Hygiene* - application of healthy habits and procedures that are related to vocal health and prevention of voice related injury (Hackworth, 2007; Reid, 1983).

11. *Otolaryngologist* – “a medical specialty concerned especially with the ear, nose, and throat” (“Otolaryngologist”, n.d.).



## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### Causes of Voice Disorders

Aronson and Bless (2011) suggest that, “a voice disorder exists when the quality, pitch, loudness, or flexibility differs from the voices of others of similar age, sex, and cultural group” (p.7). Symptoms of dysphonia or vocal attrition (Sapir et al., 1990) include hoarseness, weakness, (Mattiske, Oates & Greenwood, 1998), “throat clearing, voice breaks, tired voice or quick vocal fatigue, pain in throat or back of neck, chronic laryngitis, lump in the throat, dry throat and taut neck muscles” (Cooper, 1970, p. 53). Vocal attrition can cause physical discomfort as well as negatively impact a person’s social, behavioral, and psychological well-being (Smith, Gray, Verdolini, & Lemke, 1995).

The majority of medically-diagnosed voice-related incidences in patients are the result of an environmental or behavioral intervention as opposed to a physical one (Herrington-Hall, Lee, Stemple, Niemi, & McHone, 1988). Dysphonia can result from numerous complications such as a manifestation of a disease such as laryngitis, birth defects, head, neck, throat, or chest trauma, improper use of the vocal mechanism, or psychological disorders (high anxiety, depression, or stress) (Mattiske et al., 1998). Although all of the previously mentioned conditions could contribute to voice-related problems, researchers generally find that the majority of dysphonia cases are a result of improper use of the vocal mechanism, or psychological causes.

Improper use of the vocal mechanism as a result of behavioral intervention has been highlighted as the primary cause of dysphonia in many reports (Calas, Verhulst,

Lecoq, Dalleas, & Seilhean, 1988; Herrington-Hall et al., 1988; Sliwinska-Kowalska et al., 2005; Unger & Bastian, 1981). Sliwinska-Kowalska et al. (2005) researched vocal problems in 425 female teachers. The participants were asked to provide self-reported data regarding their vocal health and were all examined by an otolaryngologist. Sixty-nine percent of the participants were found to have dysphonia. The researchers and medical professionals concluded that the majority of these vocal issues were the result of hypertension due to misuse of the voice. Vocal nodules and incomplete glottal closure were the most common diagnoses within this population and both symptoms were ascribed to continual strain and improper use of the voice.

Improper use of the vocal mechanism can result from high levels of stress. Stress is often a contributing factor towards dysphonia (Cooper, 1973; Dietrich, Abbott, Gartner-Schmidt, & Rosen, 2008; Gotaas, & Starr, 1993; Green, 1989, Seifert & Kollbrunner, 2005). Muscle tension as a result of psychological stress is a common occurrence in voice related injury (Provincial Voice Care Resource Program, 1998).

Seifert, and Kollbrunner (2005) administered psychological consultations to participants that had been declared dysphonic by an otolaryngologist. The results indicated that the participants showed above-average levels of stress and suffered from emotional adjustment problems. The researchers concluded that the voice might be able to act as a “barometer of emotion” (p. 387) and that above-average stress levels may be contributing to the voice disorders. When comparing levels of stress, depression, and anxiety with patients suffering from dysphonia, Dietrich et al. (2008) found that women were significantly more likely to suffer from dysphonia as a result of higher-than-average levels of stress, depression, and anxiety.

In addition to stress and anxiety, a negative perception of a person's intelligence or personality can be developed based on a person's voice disorder (Smith, Verdolini, & Gray, 1996; Zacharias, 2010). Smith, Verdolini, and Gray (1996) administered a Quality of Life Questionnaire to 174 voice disorder treatment-seeking adults and compared the results to a control group of 173 non-treatment-seeking adults. Seventy-five percent of treatment-seeking participants felt that their voice problems had a negative effect on their social lives, which ultimately results in social isolation. Sixty-five percent of the participants experiencing a voice disorder said they have moderate to severe depression due to their voice problems. Other significant effects that were present included negative professional self-esteem, trouble speaking on the phone and in noisy environments, and being perceived by others as less intelligent.

Similar results were found when comparing stress, anxiety, and depression to voice related disorders (Dietrich et al., 2008). One hundred and sixty dysphonic participants were administered stress, anxiety, and depression inventories and the results were analyzed to determine whether or not there might be a correlation between the two. Results indicated that 25% of the participants had higher-than-normal levels of stress, 36.9% showed higher-than-normal levels of anxiety, and 31.2% showed higher-than-normal levels of depression.

### Dysphonia in Children

Causes of adult dysphonia are not dissimilar to the causes of dysphonia in children (Dejonckere, 1999; Green, 1989). As many as 6-23% of school-aged children will suffer from a voice-related disorder (Maddern, Campbell, & Stool, 1991). Vocal nodules were the result of improper use of the vocal mechanism in children ages three to

twelve (Green, 1989). The Walker Problem Behavior Identification Checklist (WPBIC) was administered to 30 dysphonic and 30 non-dysphonic children. The WPBIC is used to measure behaviors and was the instrument used to compare and contrast the typical behaviors of each group of children. The results showed that the children with nodules were significantly more likely to act out, distract their peers, yell, or display signs of immaturity which may have contributed to the overuse and misuse of the vocal mechanism (Green, 1989).

Dejonckere (1999) also studied the causes of voice-related problems in children and found that congenital (birth-related) problems as well as misuse of the vocal mechanism were the two largest contributors to youth dysphonia. Congenital problems could include cysts, lesions, tumors, or airway obstructions. Abuse of the vocal mechanism includes yelling, strenuous screaming, singing, or speaking, excessive coughing, or throat-clearing. Misuse and stress-related injury are recurring themes that are discussed in the literature regardless of the age of the participant.

#### Vocal Attrition and Gender

There are conflicting reports as to the effect of gender on prevalence and self-report of dysphonia in occupational voice users (Askren, 2001; Dietrich et al., 2008; Fritzell, 1996; Lejska, 1967; Smith, Kirchner, Taylor, Hoffman, & Lemke, 1998; Roy et al., 2004; Russell, Oates & Greenwood, 1998; Van Houtte, Claeys, Wuyts, & Van Lierde, 2011). Lejska (1967) examined voice disorders in 772 teachers and found that 16.5% of female teachers reported vocal fatigue compared to only 7% of male teachers. Similarly, after examining 1212 cases of clinical vocal fatigue for six months in Sweden, Fritzell (1996) found that there were twice as many female patients as there were men.

In a separate study, Russell et al. (1998) also found that female teachers were twice as likely to report occupational voice disorders as male teachers. Smith et al. (1998) surveyed 274 male and 280 female teachers regarding overall vocal health. Results indicated that female teachers were more likely to report a vocal problem, either acute or chronic, than males. Smith et al. also reported that females were more likely to report a vocal problem than males regardless of subject area taught, years teaching, teacher age, or hours taught per day.

In addition to the findings that suggest that women are more likely to report dysphonia than men, women may also be more likely to suffer from dysphonia. Using multiple logistic regression, Roy et al. (2004) were able to predict that female teachers were more likely to experience dysphonia during their career than men. Other factors that could contribute to dysphonia were years of teaching experience, family history, and being between the ages of 40 and 59; however, being female was the most significant factor in predicting vocal problems.

### Occupational Voice Users

Individuals whose voices play an integral role in performing the duties associated with their profession are considered occupational voice users (Rosen & Sataloff, 1997). Occupational voice users may include salespersons, factory workers, telesales persons, football quarterbacks, clerical workers, teachers, counselors, and singers (Rosen & Sataloff, 1997; Verdolini & Ramig, 2001), barristers, auctioneers, and radio/television personalities (Mattiske et al., 1998), tour guides, translators, and military personnel (Böhme & Berufsstimmstörungen, 1974). According to Ramig and Verdolini (1998), occupational voice users represent approximately 25% of the working population in the

United States. Clinical voice disorders are common in occupational voice users (Smith et al., 1996; Verdolini & Ramig, 2001).

Mattiske and colleagues (1998) suggest that occupational voice users are people that are “required to speak and/or sing for long periods, often in stressful situations where optimal voice quality and projection are demanded and in environments that are conducive to ineffective and faulty voice use” (p. 490), thus subjecting them to conditions that may be harmful to their voice. According to a literature review on occupational voice users completed by Verdolini and Ramig (2001), teachers make up 19.6% of clinical voice disorder attendees in the United States and Sweden. The second highest clinical attendees were singers at 11.5% followed by salespersons at 10%. The data also showed that although teachers represented 19.6% of the clinical voice disorder population, they only made up 4.2% of the entire population of working people. By contrast, factory workers represented the highest occupation population at 14.5% but only 5.6% of clinical attendees. These results suggest that although teachers represent less than 5% of the occupational population, they represent the largest amount of clinical voice disorder attendees, due to the vocal demands of the profession.

#### Singing Occupational Voice Users

Singers of all ages have been the focus of numerous dysphonia studies due to the required use of the vocal mechanism in order to perform the tasks associated with the profession. Daugherty, Manternach, & Price (2011) administered the Singing Voice Handicap Index (SVHI) to 256 all-state choral students during the course of the three-day all-state rehearsal period. Results indicated that the singers experience increased levels of vocal fatigue and hoarseness, yet 78% of the students surveyed felt as though they had

taken good care of their voice during the rehearsal process. Cohen, Noordzij, Garrett, & Ossoff (2008) also used the SVHI to assess 171 adult amateur and professional singers on their vocal habits and levels of dysphonia. Cohen et al. (2008) found that the largest predictor of occupational dysphonia in singers was age (over the age of 50) and/or genre (primarily, gospel music).

### Voice Disorders and the Teaching Profession

Reports have shown that teachers experience abuse-related dysphonia more than other professions (Edwin & Patricia, 1991; Fritzell, 1996; Saniga, Carlin & Hays, 1986). Multiple studies have suggested that at least 50% of teachers suffered from dysphonia (Calas et al., 1988; Mjaavatn, 1980; Sapir et al., 1993). Marks (1985) suggested that up to 90% of teachers surveyed said that they experienced vocal dysfunction. Vocal fatigue and dysphonia can cause teachers to feel higher levels of anxiety (Gotaas & Starr, 1993) as well as experience teacher burnout (Simberg et al., 2005). Severe cases of vocal problems have required some teachers to leave the teaching profession entirely (Mattiske et al., 1998). Roy et al. (2004) concluded that, “teaching is a high-risk occupation for voice disorders” (p. 281).

Smith, Gray, Dove, Kirchner, and Heras (1997) compared the teaching profession population to the non-teaching profession population. The data were collected through a Likert-type scale that addressed vocal problems (hoarseness, difficult high notes, tired voice, breathy, etc.) as well as the way that the voice has affected their career. Results indicated that teachers averaged two voice symptoms compared to zero voice symptoms of non-teachers. The researchers also found that neither teacher age nor years teaching influenced the results. In other words, regardless of age and/or years teaching, the

teaching group was still more likely to show more symptoms than the non-teaching group. Smith et al. (1997) describe this study as groundbreaking as it was one of the first to examine the teaching population alongside non-teachers. Results suggest, “This profession is at high risk and needs to be taught how to compensate for the voice demands of their vocation” (p. 86).

Sliwinska-Kowalska et al. (2005) also administered self-reported vocal health questionnaires as well as vocal examinations to 425 female primary and secondary school teachers as well as to 83 women who were non-teaching/non-occupational voice users in Poland. The results of this investigation showed that 69% of the teachers showed a history of voice problems as compared to 36% of the non-teaching women. The findings of this study echo Smith et al. (1997) by suggesting that the teaching population is a high-risk population for dysphonia, particularly when compared to the non-teaching population.

In addition to a vocal health questionnaire, in order to receive information on self-reported vocal health, Chen, Chang, Fu, and Chang (1986) conducted a study in which 5218 junior high school teachers in Taipei were examined by an otolaryngologist for dysphonia. Results indicated that 8% of the participants (approximately 417 people) tested positive for vocal nodules. Urrutikoetxea, Ispizua, Matellanes, and Aurrekoetxea (1995) used a similar methodology when examining the presence of vocal nodules in female teachers. Eight hundred and ten randomly selected female primary and secondary school teachers were examined for vocal nodules. An otolaryngologist examined all participants and the results found that 21% of the participants showed signs of dysphonia.



Similarly, Verdolini and Ramig (2001) reported that teachers made up approximately 20% of all clinical vocal disorder attendees in the United States and Sweden.

Significant results were found in a similar study conducted by Russell et al. (1998). Vocal health surveys were disseminated to 1168 teachers (grades Pre-k through 12), and of the 75% of respondents, 16% reported experiencing some form of a voice problem such as hoarseness or fatigue on the day that they took the survey. Twenty percent of the participants stated that they had experienced a vocal problem throughout the current school year, and 19% said they experience voice problems throughout their career (defined as at least one episode of voice problems every six months).

A literature review compiled by Mattiske et al. (1998) examined possible causes of voice disorders as well as the effectiveness of preventative measures on vocal health. Based on the existing literature, Mattiske and colleagues (1998) reported that most researchers ascribe the causes of vocal problems in teachers to overuse and/or misuse of the vocal folds as well as poor classroom acoustics that may lead to strain in the voice. Specifically, the prolonged abuse and habitual misuse of the voice within the daily demands of the teaching schedule are considered to be the primary causes of dysphonia in teachers (Calas et al., 1989; Herrington-Hall et al., 1988; Unger, & Bastian, 1981). Furthermore, people that are experiencing abuse-related dysphonia might not be aware of it and therefore find themselves in a cycle where the dysphonia could lead to job-related anxiety which could lead to more vocal abuse (Cooper, 1973; Gotaas & Starr, 1993).

Regardless of the daily vocal demands of the teaching profession, conflicting data exists regarding years of service and the presence of voice problems in teachers. Marks (1985) compared teachers with voice problems to civil service workers with voice

problem and found that teachers that had more years of experience were more likely to report having a voice-related problem than teachers with less experience. In a similar study comparing the vocal health of female teachers to female non-teachers, Sliwinska-Kowalska et al. (2005) found a positive correlation between years of teaching and the presence of both self-reported and medically diagnosed vocal problems. However, in a vocal health survey conducted by Sapir et al. (1993) the results regarding a possible connection between years of service and a history of vocal problems were insignificant.

#### Implications for Teaching Profession

It has been shown through numerous studies that teachers are a high-risk population for voice-related injury regardless of age, gender, or years of teaching, which could have a large impact on the professional lifespan of teachers. Verdolini and Ramig report that it is estimated that the cost of replacement personnel, pharmaceutical needs, behavioral and surgical interventions for teachers due to voice related injury cost society upwards of \$2 billion annually. Van Houtte et al. (2011) found that 20.6% of teachers surveyed had missed at least one day of work due to a voice problem whereas Sapir et al., (1993) reported similarly that 20% of teachers surveyed have missed days of work due to a voice-related problem. In a further investigation, Smith et al. (1998) found that over 38% of the 554 teachers surveyed felt as though the teaching profession has had a negative impact on their voice. Thirty-nine percent of those teachers also stated that they have had to limit and/or change their teaching activities due to complications with their voice. The most common form of dysphonia reported in this particular study was hoarseness followed by fatigue and lower pitched speaking voice.

Yiu (2002) examined dysphonia, dysphonia's impact on quality of life, and perception of vocal health in practicing teachers as compared to prospective teachers. Fifty-five practicing teachers and 67 prospective teachers ( $N = 122$ ) were asked about their self-perceived vocal health in the teaching profession, as well as the impact of vocal health on their quality of life. Results indicated that practicing teachers felt that their voice was significantly worse and had a more negative effect on their communication skills than the prospective teacher participants. The results of this study suggest that the vocal health of practicing teachers may have an impact on the profession as well as the quality of life outside of the classroom.

#### Voice Disorders in Music Teachers

In addition to voice disorders in teachers, dysphonia in music teachers has been extensively researched, due in part to the unique vocal demands of the profession (Askren, 2001; Bernstorff & Burk 1996; Gilbreath, 2011; Hackworth, 2007; Morrissey, 2004; Morrow, 2009; Schwartz, 2009, Spurgeon, 1995). Vocal music education is particularly demanding because the job requires both teacher talk and vocal modeling throughout the school day (Askren, 2001; Schwartz, 2009, Spurgeon, 1995). Spurgeon (1995) describes a typical vocal music director's schedule as including five to six hours of rehearsal per day and additional after-school activities including private lessons, concerts, and rehearsals. Askren (2001) examined the prevalence of vocal attrition in secondary vocal educators ( $N = 63$ ). After disseminating the researcher-written survey questionnaire regarding vocal attrition, Askren found that 21% of the vocal music teachers surveyed reported symptoms of vocal attrition at least once per month and 44% had received medical treatment due to their vocal symptoms.

Due to the prevalence of vocal attrition in music teachers, Bernstorff and Burk (1996) examined the personal and environmental factors that may influence the vocal attrition of elementary vocal music teachers. Specifically, the researchers isolated lifespan of teaching career, number of students per class period, teaching schedule, length of each class, and the classroom noise level as factors that could affect vocal integrity. Elementary music teachers in an urban school district (N = 45) were given the Voice Conservation Index (VCI) to examine the effect of those three factors on vocal pathology. Results indicated that classroom noise, such as fans, large class sizes, and playground noise, was the biggest predictor of vocal pathology.

Further investigations have been performed to determine if age (Fisher & Scott, 2014) or environmental factors (Gilbreath, 2011) contribute to vocal attrition in music teachers. Fisher and Scott (2014) surveyed 160 male elementary music teachers using the Ten-Question Singing Voice Handicap Index (SVHI-10) to determine if age was a factor in self-reported vocal attrition. The mean age of the participants was 42.82 years with a standard deviation of 11.50. Participants were divided into groups, depending on their age: Group 1 = 24-30, group 2 = 31-40, group 3 = 41-50, and group 4= 51+. Results indicated that there was no significant difference between self-reported perception of vocal health and the age of the participant. “Overall results revealed that male elementary music teachers perceive themselves to be vocally healthy” (Fisher & Scott, 2014, p. 8).

The vocal health of general, choral, band, and orchestra directors in Florida, Georgia, Alabama, and Tennessee was examined to determine if environmental factors contributed to self-reported vocal problems (Gilbreath, 2011). Personal habits such as sleep patterns, smoking, caffeine and alcohol intake, and water consumption were

collected as possible influences on vocal health. Physical conditions such as asthma, acid reflux, and tongue piercings were also taken into account when analyzing the results. Of the 102 participants, 32.35% reported receiving a positive diagnosis for a vocal problem. Results indicated that 41.18% experienced vocal problems throughout the school year, but have not received a medical diagnosis or professional help. Daily water intake was the only environmental factor that had statistical significance when comparing teachers that reported vocal problems (group 1) with teachers that reported no vocal problems (group 2). Caffeine, smoking, weekend phonation, and age were not found to be statistically significant when comparing the two groups.

Conflicting results were found when examining the vocal attrition of music educators (Askren, 2001; Hendry, 2001). Askren (2001) found no significant difference in the number of male and female participants that reported vocal fatigue. Physically, women have a lower amount of hyaluronic acid than men. Hyaluronic acid helps with tissue repair and regeneration. This may account for the higher level of vocal problems reported by female than male teachers (Hammond, Zhou, Hammond, Pawlak, & Gray, 1997).

Similarly, Hackworth (2007) studied the effects of vocal hygiene and behavior modification on improved vocal health of music teachers. The participants (N = 76) were divided into three groups. Groups 1 and 2 received vocal hygiene instruction from a speech pathologist. Group 2 received additional training in behavior modification from a university music educator. The groups were asked to provide written feedback on their overall vocal health during an eight-week period. Results indicated the group that received the behavior modification techniques were significantly more likely to self-

monitor their vocal use and reported a decrease in vocal problems over the course of the study.

### Voice Wellness Intervention Strategies for Teachers

Within the last fifteen years, researchers have started to study the effects of voice treatment programs and their preventative and/or rehabilitative abilities (Bovo, Galcera, Petruccelli, & Hatzopoulos, 2007; Hackworth, 2007; Roy et al., 2001). As few as 25% of teachers that suffer from voice-related complications seek medical attention to address their problems (Van Houtte et al., 2011). Vocal attrition in teachers may be partially attributed to a lack of knowledge or training in proper vocal techniques (Askren, 2001; Bovo et al., 2007; Hackworth, 2007; Roy et al., 2001; Simberg et al., 2006).

The majority of teachers do not receive vocal health training throughout their teacher education programs (Askren, 2001; Cooper, 1973; Simberg et al., 2006; Van Houtte et al., 2011). This could be due to a lack of resources or knowledge regarding vocal health. Cooper (1973) surveyed teachers with clinical voice problems and found that 100% of the participants said that they wished they had more vocal health training before entering into the profession. The teachers also felt that the majority of their vocal issues could have been prevented with proper training and hygiene techniques.

Vocal hygiene techniques as an intervention strategy have shown conflicting effectiveness in the relevant literature (Duffy & Hazlett, 2004; Hackworth, 2007; Hendry, 2001; Roy et al., 2001; Roy et al., 2002; Russell et al., 1998; Scrimgeour & Meyer, 2002; Simberg, et al., 2000; Smith et al., 1998). Vocal hygiene education often involves behavior modification techniques that could help to alleviate vocal stress such as diet, water-intake, sleep patterns, smoking, alcohol consumption, and daily vocal use

(Hackworth, 2007; Roy et al., 2001). When presented with an opportunity to self-evaluate vocal hygiene, 49% of teachers surveyed attribute their voice related problems to poor vocal hygiene, and 84% of teachers feel that they would benefit from vocal hygiene-related education programs (Askren, 2001).

Duffy and Hazlett (2004) conducted an experiment regarding vocal health care training in pre-service teachers. Fifty five pre-service teachers were randomly selected from one university and divided into three groups- control, indirect, and direct. The control group received no vocal training, the indirect group received information about vocal health but no training, and the direct group was given individual training on posture, breathing, vocal mechanism, and sound production. The control group showed vocal deterioration on the Dysphonia Severity Index (DSI), the indirect group showed no significant difference, and the direct group showed improvement/no deterioration. The timeframe for this study was one year, during which all of the participants were enrolled in a teaching program where they were teaching for the first time. Results from this study indicated that teachers may benefit from vocal training and may be able to avoid vocal attrition over time with proper vocal care.

Similar results were found by Gillivan-Murphy, Drinnan, O'Dwyer, Ridha, & Carding (2006). Teachers ( $N = 20$ ) with self-reported voice problems were divided into two groups: a vocal treatment group ( $n = 9$ ) and a no-treatment control group ( $n = 11$ ). All of the participants had been previously diagnosed with nodules, edema (fluid retention), vocal fold thickening, or NAD (nothing abnormal detected). The vocal treatment group received five or six individual 60-minute voice instruction sessions over an eight-week period whereas the control group received no treatment. Results, based on

a self-reported assessment regarding participant perception of vocal health as well as Fibreoptic endoscopic evaluation, suggested that the vocal treatment group showed significant improvement in their vocal health whereas the control group did not show signs of improvement.

Vocal hygiene information has been provided to teachers in an effort to improve vocal health knowledge and wellness (Roy et al., 2001). Vocal hygiene (VH) and vocal function exercises (VFE) were compared to a control group for effectiveness in improving the vocal health of fifty-eight dysphonic teachers. Participants in the VH group ( $n = 20$ ) were taught how to eliminate behaviors that can contribute to dysphonia such as diet, limiting vocal use, smoking, and sleep. The VFE group ( $n = 19$ ) was taught how to perform four vocal exercises that could help to rehabilitate voice related problems. The participants were told to perform all four exercises twice a day for a minimum of six weeks. All participants were given the VHI before and after treatment and the results indicated that the VFE group was the only group to significantly improve their vocal health during that time, suggesting that increasing knowledge and awareness of vocal hygiene could help improve overall vocal health.

Vocal hygiene education courses that were provided to teachers could help raise self-awareness and overall improvement of vocal health. Bovo et al. (2007) examined the effectiveness of a vocal education program for 264 kindergarten and primary school teachers. Teachers (mostly female) were given a voice care course that included a two-hour seminar on vocal care and injury prevention techniques as well as small group vocal therapy meetings totaling three hours. After three months of treatment, 21 of the voice program participants were randomly selected to participate in vocal evaluation including



physical examinations as well as self-reported vocal inventories. Randomly selected participants were matched based on their similar vocal health conditions as well as age. Results indicated that the voice intervention programs significantly improved the vocal wellness of the participants. A reassessment after twelve months found that the positive effects of the intervention remained for the participants. Bovo et al. (2006) report, "...a course inclusive of two lectures, a short group voice therapy, home-controlled voice exercises, and hygiene, represents a feasible and cost-effective primary prevention of voice disorders in a homogeneous and well-motivated population of teachers" (Abstract), which suggests that providing vocal hygiene knowledge and strategies could improve the retention of teachers and reduce teacher attrition due to health-related reasons.

Voice problems may start to develop as early as a person's student teacher experiences during their teacher education program (Simberg et al., 2006). Teacher education courses do not usually contain a vocal health education component, however incorporating vocal therapy such as lectures on vocal health and the presentation of vocal warm-up exercises for as little as seven weeks could help to significantly improve vocal health (Simberg et al., 2006). Similar results regarding the significant improvement in vocal function due to vocal education courses have been reported throughout the literature (Hackworth, 2007).

### Classroom Noise

Teachers often try to overcome the ambient or environmental classroom noise by speaking louder in order to be heard, which may cause vocal stress and fatigue (Askren, 2001; Sataloff, 2001). According to Nelson and Soli (200), classrooms that are considered to be quiet (35 dBA or less) are increasingly rare due to background noise.

Hay (1995) found that a classroom that had students talking and working averaged between 58 and 72 dBA. The American Speech-Language-Hearing Association (ASHA) classifies any sound between 80 and 90 dBA as “very loud.” Teachers often have to speak over loud ventilation systems and neighboring classroom noise (Anderson, 2001) as well as playground noise and large class sizes (Bernstorff & Burk, 1996).

Music teachers, specifically, often find themselves speaking or singing over the sound of the piano, instrumentalists, choir singing, or ambient classroom noise (Schwartz, 2009). According to Askren (2001), 56% of surveyed music teachers attribute at least some of their vocal problems to speaking over background noise in their classrooms. Bovo and colleagues (2006) reported that a significant amount of teachers without any vocal training experienced vocal strain due to the amount of volume needed to speak in the classroom.

Larger class sizes could contribute to the excessive noise in the classroom (Bernstorff & Burk, 1996; Simberg et al., 2005). Simberg et al. (2005) administered a survey regarding vocal health to 478 teachers in 1998 in Finland. Twelve years later, the same survey was administered to 240 different teachers. The results indicated that voice disorders are significantly more frequent in the latter survey. The authors suggest that larger class sizes and the misbehavior/excessive noise of students may have been contributing factors to the increase of voice disorders.

Regardless of the environment that exists in the classroom, sound amplification systems may help to combat the ambient noise found in the classroom and possibly alleviate vocal stress (Jónsdóttir, Rantala, Laukkanen, & Vilkmán, 2001; Morrow, 2009; Roy et al., 2002). Jónsdóttir et al. (2001) conducted a study in which five teachers were

given voice amplification systems to use in their classrooms. The teachers were monitored to see if the systems helped to lessen vocal load. Results showed that both teachers and students noticed improvements in the teacher's voice and they found the sound amplification system to be a valuable tool for communication. A similar study was conducted by Morrow (2009) in which sound amplification systems were provided to elementary music teachers in an attempt to lessen vocal fatigue. The participants felt that the use of an amplification system significantly lowered the amount of vocal stress and fatigue associated with their daily teaching activities.

Sound amplification systems have shown to be more effective than vocal hygiene training in regards to improving the condition of dysphonic teachers (Roy et al., 2002). Forty-four dysphonic teachers were randomly assigned to one of three groups: a sound amplification group, a vocal hygiene group, and a control group. A pre- and posttest showed that the group that used the sound amplification system showed the largest and most significant improvement in vocal quality over the six week treatment period.

#### Teacher Talk Time

Teacher talk time refers to the amount of time a teacher dedicates to speaking as a function of performing duties associated with their job (Nelson, 2001). Teachers are often unaware of the amount of time they spend talking throughout the workday (Nápoles & Vázquez-Ramos, 2013). Optimal teacher talk time periods to avoid vocal fatigue (Gotaas & Starr, 1993) as well as teacher effectiveness (Caldwell, 1980; Kostka, 1984; Pontious, 1982; Sherill, 1986) have been reported.

Many studies have been dedicated to finding critical teacher talk time episodes in order to be most effective in the music classroom. Effectiveness percentages vary greatly

throughout the literature ranging from 35% (Caldwell, 1980) to 44% (Sherill, 1986). Pontious (1982) examined five high school band directors and analyzed their verbal behaviors as they related to teacher effectiveness. Results indicated that successful band directors spoke for 42% of the rehearsal and that the verbal instruction was delivered in short, deliberate phrases. Sherill (1986) found similar results reporting that effective band directors spoke for 44% of the rehearsal time.

When analyzing private piano lessons, Kostka (1984) found that effective piano teachers spoke for approximately 10% of the lesson. Gaulty (2010) suggests that silent rehearsals, known as “monk rehearsals,” can often be the most efficient form of rehearsals. Monk rehearsals require the instructor to convey all directions through conducting gesture, facial expression, and eye contact, which results in no use of the vocal folds.

The quantity of teacher talk time may become shorter and more efficient as a teacher begins to gain more experience in the classroom. Worthy and Thompson (2009) observed the rehearsal procedures of three expert band directors and discovered that the majority of rehearsal time was dedicated to musical activities. Any instances of teacher talk were limited to short and deliberate instructions or feedback. In an earlier study, Goolsby (1999) compared teacher talk time of experienced band directors to novice band directors. Both groups were given an identical piece of band literature to rehearse. The rehearsals were analyzed to provide insight into the percentage of rehearsal time that was dedicated to teacher talk. Goolsby (1999) reported that novice band directors talk more and are less verbally efficient in the classroom rehearsal periods than experienced teachers.

Similarly, Nápoles and Vázquez-Ramos (2013) examined the teacher talk time of pre-service teachers ( $N=32$ ) in a choral rehearsal. After completing the rehearsal, the participants were asked to predict the percentage of time that they spent talking. Their peers also recorded percentages and these results were compared to actual time percentages. Students were shown the video, given the numbers, and then asked to repeat the exercise. Teacher talk during choral rehearsal #2 was significantly shorter and more efficient, and the students' perception of teacher talk time was significantly closer to actual time. Awareness of the amount of time that a teacher dedicates to talking may help to shorten teacher talk episodes and overall teacher talk time.

Excessive teacher talk can often lead to off-task student behavior (Brendell, 1996; Dunn, 1997; Forsythe, 1977; Kostka, 1984; Madsen & Geringer, 1983; Madsen & Madsen, 1972; Moore, 1987; Napoles, 2007; Spradling, 1985; Witt, 1986; Yarbrough & Price, 1981). Napoles (2007) found that high school choral students paid greater attention and were more on-task during rehearsal when the teacher spoke less and the majority of classroom activities centered on musical objectives. Results from this investigation may inform teachers that in an effort to avoid excess classroom noise such as students talking while maintaining efficient use of the vocal mechanism, they should focus on musical activities that do not require vocal energy, such as repertoire rehearsal.

Being able to truncate instructions based on gained experience may help to lessen the amount of teacher talk time, off-task behaviors, and vocal fatigue. Wagner and Strul (1979) compared the amount of teaching activities of experienced music teachers to undergraduate music teaching interns and undergraduate music teaching pre-interns in a 15-minute lesson. Teaching activities include giving academic information, on-task

classroom discussions, and activity instructions. In terms of giving instructions, Wagner and Strul (1979) found that experienced elementary music teachers were able to verbally deliver directions to their students in half the amount of time as undergraduate music teaching interns and undergraduate music teaching pre-interns. Results indicated that the experienced teachers were more verbally efficient but no connections to vocal health were discussed.

Off-task behavior was found to be significantly higher than on-task behavior in elementary music students as a result of teacher talk time (Forsythe, 1977). On- and off-task behaviors were observed in 10–20 minute intervals to determine if certain activities could dictate behavior. After 262 in-class observations, Forsythe (1977) discovered that students' on-task behavior was highest during musical activities and off-task was highest during verbal instruction.

Brendell (1996) found nearly identical results in the high school choral classroom. She examined the rehearsal behaviors of high school choir students to determine whether or not certain activities caused the students to become more off-task than others. The students were off-task during activities that required less active participation such as getting ready and during teacher instruction. Students were more focused and on-task when trying to reach musical objectives such as sight-reading and vocal warm-ups.

## CHAPTER III

### METHODOLOGY

#### Determining Participants

This study examined the behavioral and environmental factors that may have contributed to the self-reported dysphonia and non-dysphonia of six high school music teachers. A music educators association in a Southeastern state disseminated the 30-Question Voice Handicap Index (VHI) (Jacobson et al., 1997) to all registered high school music teacher members ( $N= 1813$ ). Permission to disseminate was granted upon Institutional Review Board (IRB) approval (see Appendix for IRB materials). A digital copy of the VHI was uploaded to SurveyMonkey® (Gillespie, Russell, & Hamann, 2014; Valerio, Reynolds, Morgan, & McNair, 2012) in order to collect data electronically. Music teachers had three months to participate in the survey, which resulted in a response rate of 184 (9.9%). Survey response scores were tabulated in order to locate teachers that self-identified as non-dysphonic (scores closest to 0) and those who self-identified as dysphonic (scores closest to 120). A purposive sample was compiled which included three dysphonic and three non-dysphonic music teachers who were chosen based on their answers to the VHI. The researcher contacted prospective participants via email to confirm if they self-identified as dysphonic or non-dysphonic and if they were willing to participate in further investigation regarding teacher vocal health.

### *Description of Participants*

Participants were chosen based on the following criteria:

1. VHI score (high scores for dysphonic participants and low scores for non-dysphonic participants)
2. Self-identification as either dysphonic or non-dysphonic
3. Measurable success from previous teaching years.
4. Prior vocal health issue diagnosis, if applicable

For this investigation, success was measured through district Music Performance Assessment scores from the previous school year. Each participant scored an Excellent or Superior within the observed ensemble in the 2014–2015 school year. Pseudonyms were used throughout this study in order to protect the identity and anonymity of the participants.

The researcher collected demographic data for each of the 6 participants. Other relevant information was collected during the interview process, including subject area taught, years teaching, highest level of education completed, and any additional information that provided insight into the distinctive classroom environments of the six participants. Data regarding classroom environment included the presence of extraneous noise such as playground noise, hallway noise, class size, student talking, student instrument playing, and student singing. (Askren, 2001; Schwartz, 2009; Sataloff, 2001).



### Description of Self-Reported Non-Dysphonic Participants

Teacher A directs high school and middle school choir in a rural school district in a Southeastern state. Teacher A has instructed at this particular school for two years, but she has been teaching as a high school choral teacher for nine years. Teacher A teaches music appreciation at the high school and choir at both the high and middle schools. Teacher A was observed during the high school SATB choir class that meets daily for 45 minutes. The observed choir class has 25 students enrolled. Teacher A holds both a Bachelor's and a Master's degree in music education from accredited universities. Teacher A's Voice Handicap Index (VHI) score was 7.

Teacher B teaches high school choir, AP music theory, and theater tech classes in a mid-sized city in a Southeastern state. She has been teaching for fourteen years as a high school choir teacher. Observation of Teacher B occurred during the Freshman Women's Choir class. There are 64 students enrolled in that class. Teacher B has a VHI score of 9. Teacher B's class periods are 50 minutes long and meet daily. Teacher B holds both Bachelor's and Master's degrees in music education from accredited universities.

Teacher C instructs high school in a mid-sized city in a Southeastern state. He teaches high school choir, piano, and AP music theory. Teacher C's VHI score is 10. Teacher C was observed during the top-level mixed-voice, audition-only choir class that has an enrollment for 50 students. The choir meets Monday, Tuesday, Thursday, and Friday for 49 minutes, and 40 minutes on Wednesdays. Teacher C has been teaching for four years and holds a Bachelor's degree in music education from an accredited university.

### Description of Self-Reported Dysphonic Participants

Teacher X directs high school orchestra in a mid-sized city in a Southeastern state. He has been teaching orchestra for four years. The observed ensemble was the top-level, audition-only orchestra, which meets daily for 50 minutes. The class enrollment size is 27. Teacher X holds both a Bachelor's degree in music performance and a Master's degree in music education from an accredited university. Teacher X's VHI score was 55 and has reported a diagnosis of chronic vocal nodules.

Teacher Y directs high school band in a rural city in a Southeastern state. Teacher Y has been teaching for seven years and holds a Bachelor's degree in music education from an accredited university. Teacher Y was observed daily during his top-level band class, which consists of 44 wind members. Teacher Y's VHI score was 46 and suffers from chronic voice loss throughout the school year.

Teacher Z directs choir and guitar at a high school in a mid-sized city in a Southeastern state. The observed class was the top-level, audition-only choir, which meets daily for 49 minutes. Teacher Z holds both a Bachelor's and Master's degree in music education from an accredited university and has been teaching for nine years. Teacher Z has a VHI score of 53 and currently teaches with a voice amplification system due to dysphonia issues. She has been diagnosed with vocal nodules twice within the past three years and is currently on medication to treat acid reflux.

### Validity of Self-Reported Voice Inventories

Some researchers have focused on creating and validating self-report questionnaires that participants use to determine how dysphonia affects their daily lives (Bernstorff & Burk, 1996; Cohen et al. 2007; Jacobson et al., 1997; Smith et al., 1996).

Jacobson et al. (1997) created the Voice Handicap Index (VHI) to be used in assessing self-reported dysphonia in voice clinic patients. The original 85-question Likert-type questionnaire was administered to 65 voice clinic patients in order to collect initial data regarding the validity and reliability of each question. Based on the results, the VHI was reduced to 30 questions to provide the highest level of reliability. The reduced VHI was administered to 63 additional participants, which revealed a strong statistical reliability and validity upon further assessment. The results of this process indicated that the VHI is a reliable voice assessment tool that has since been used in numerous voice-related studies (Benninger, Ahuja, Gardner, & Grywalski, 1998; Cohen et al. 2007; Dejonckere et al. 2001; Ma & Yiu, 2001; Rosen, Lee, Osborne, Zullo, & Murry, 2004; Verdolini & Ramig, 2001).

Cohen, Jacobson, Garrett, Noordzij, Stewart, Attia & Cleveland (2007) created the Singing Voice Handicap Index (SVHI) based on the VHI to collect data on dysphonic and non-dysphonic singers of various genres. The SVHI was an 81-question Likert-type questionnaire that was disseminated to 241 singers (112 dysphonic, 129 non-dysphonic). Each question was tested for statistical validity and reliability, which ultimately resulted in 36-question Likert-type questionnaire. Further statistical validity test results were high ( $\rho = 0.92$ ;  $p < .001$ ) (Cohen et al., 2007, p. 405), resulting in a reliable tool for assessing self-perceived dysphonia in singers. The SVHI has been used to assess the vocal fatigue of all-state students throughout rehearsals (Daugherty et al., 2011), graduate students throughout a week of opera rehearsals (Schloneger, 2011), and dysphonia associated with age and/or stylistic specialty of singers (Cohen et al., 2008). Truncated versions of the SVHI, such as the SVHI-10, which only uses ten questions from the original SVHI, have

also been used to determine the vocal health of occupational voice users (Fisher & Scott, 2014). The 30-question VHI was used for data collection in this particular study.

### Observations

The six participants were observed during the month of October for three consecutive days, respectively. Each class period was videotaped using a Zoom Q3 HD (Heath-Reynolds, 2014) to capture teacher behaviors. Videos were analyzed using SCRIBE v.4.2 software (Duke & Farra, 2002) to code the amount of time each teacher spent talking during a class period, how much of that time was talking over students talking, students musicing (singing or playing instruments), and other classroom noises such as loudspeaker announcements (Hendel, 1995), instrumental accompaniment, or electronic classroom aides such as metronomes or tuners.

Additionally, a SoundMeter© 8.1 decibel reader (Nast, Speer, & Le Prell, 2012) was synced with the video recording to provide an accurate read of loudness in the room during teacher talk time. Decibel data charts reported the decibel level in one-second increments. In addition to the decibel level, the chart also provided a time stamp for each one-second interval in order to accurately compare the chart to the recorded observation videos. Decibel data charts were converted from loudest to quietest and were analyzed to see how often teachers spoke over a “very loud” (80 dBA- 90dBA) classroom. The researcher compared time stamp provided by the decibel reader to the corresponding time of the video in order to determine whether or not the teacher spoke during that time. The averaged results for each of the three consecutive days were tabulated individually as well as the total average of all three days. The averages were used to compare the teacher talk time of non-dysphonic and dysphonic participants.

## Field Notes

In addition to videotaping, the researcher took field notes to provide additional support to observations recorded on film (Cavitt, 1998; Daugherty et al., 2011; Hendel, 1995; Waymire, 2011). Field notes recorded during rehearsal periods were only taken once the class had officially began and ended with the dismissal bell. Field notes may offer more detailed information such as off-task behaviors or additional teacher talk due to discipline problems (Titze, 2007).

## Interviews

Each participant participated in a semi-structured interview regarding personal, environmental, and behavioral vocal habits that may contribute to their overall vocal health. The interviews were audio recorded and transcribed by the researcher. The interview questions were constructed based on the vocal habits mentioned in previous literature (Gilbreath, 2011) and were piloted with two volunteer participants to insure question clarity.

### *Interview Questions*

1. Approximately how many hours of sleep do you get per night? Do you wake up feeling rested?
2. Do you currently smoke or have you ever been a smoker? If so, for how long?
3. Have you ever seen a specialist regarding your vocal health?
4. Have you ever received vocal health training?
5. Are you a coffee drinker? If so, how many ounces do you drink per day on average? Do you drink decaf or regular?
6. Approximately how many ounces of water do you drink per day?

7. Do you have any after school activities that require vocal energy (ex: extracurricular ensembles, sports team coaching)? How many hours a week do they meet?
8. How long is your planning period each day? What are your normal daily activities during that time?
9. Is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?
10. Is there anything that you do on a daily or weekly basis that you feel may be beneficial to your vocal health? If so, what?
11. Is there anything else that you feel is worth mentioning concerning vocal health at this time?

Using a grounded theory framework, the transcribed interviews were coded using open coding data and axial coding analysis procedures (Creswell, 2009) to discover commonalities and differences among the participants. To provide validity, the transcribed interviews were given to two music researchers familiar with qualitative research methods that also coded the interview for possible themes.

#### Pilot

An initial pilot of the proposed methodology was conducted in order to test quality of video and audio data, decibel reader accuracy, and efficiency in counting teacher behaviors using SCRIBE v.4.2 software (Duke & Farra, 2002). Three of the six participants agreed to allow the researcher to observe for an extra day to reach the previously mentioned goals of the pilot. Based on that experience, a few adjustments were made to the methodology.

The initial methodology had the researcher place the decibel reader within the focus of the video in order to have the decibels and teacher talk synced within the video recording. The video would then be analyzed in SCRIBE v.4.2 software (Duke & Farra, 2002) by counting the teacher behaviors heard on the video. Upon completion of the observation, the data points recorded on the decibel reader caused the reader to malfunction and all data points were lost. Furthermore, the audio of the teacher talking, although clear on the video, was difficult to count leading to inaccurate results. Therefore, the researcher revised the methodology to include videos of the teacher throughout the lesson and a separate decibel-reading device that could be synced via a time stamp during analysis. The decibel reader would also record at a slower rate (1 reading per second) in order to provide more accurate and reliable data points.

#### Analysis of Data Collected

In addition to coding the interviews for themes, the video footage from each class period was uploaded to SCRIBE v.4.2 software (Duke & Farra, 2002) to measure teacher behaviors including teacher talk time and teacher talk time over classroom noise. The researcher analyzed the resulting data (teacher talk time, average decibel levels during teacher talk time, and amount of teacher talk time over classroom noise) using descriptive statistics. Means and standard deviations for teacher talk time, teacher talk time over classroom noise, and amount of teacher talk time over a “very loud” classroom were reported and compared among the two groups of teachers (dysphonic participants to the non-dysphonic participants).

## CHAPTER IV

### ANALYSIS OF DATA

This investigation was conducted to provide both quantitative and qualitative data regarding the environmental and behavioral factors that exist within the daily lives of three dysphonic and three non-dysphonic music teachers. This chapter presents the data collected as they relate to the original research questions as outlined in Chapter 1:

1. What percentage of teacher talk time is dedicated to talking over classroom noise?
2. Do teachers with self-reported dysphonia talk more during class than teachers without self-reported dysphonia?
3. How often does teacher talk time occur over a very loud classroom?
4. Are there themes between certain environmental and or behavioral factors among self-reported dysphonic and/or self-reported non-dysphonic teachers?

#### Research Question #1

*What percentage of teacher talk time is dedicated to talking over classroom noise?*

Participants were observed for three days. Each daily observation occurred during the same class period in order to insure consistency. The classes were video recorded and that data was analyzed to count teacher talk behaviors. Observation periods ranged from 46 to 50 minutes, with the exception of Teacher Z on day three, which was a 32-minute observation period due to equipment malfunction. Total teacher talk time and teacher talk time over specific noise categories were accumulated and presented in both minutes/seconds and percentages below (see Tables 1-4). Tables 1 through 3 reflect the observed teacher talk behaviors during each individual day. Table 4 presents the means



and standard deviations for the amount of observed behaviors of the participant for the total three-day observation period. Teacher Y's students did not talk on the third day of observation due to a pre-performance tradition of silence. An additional table (see Table 5) was created to reflect the averages of days one and two and the removal of day three for "teacher talk time over students talking" for Teacher Y. This chart was created to reflect the normal daily teacher behaviors due to a break in student routine on their silent rehearsal day.

The average amount of teacher talk time for self-reported non-dysphonic participants was 37.90% and 40.15% for self-reported dysphonic participants. Teacher talk time that occurred over students talking for self-reported non-dysphonic participants was 21.10% and 15.80% for self-reported dysphonic participants. Teacher talk time that occurred while students were musicing from self-reported non-dysphonic participants was 4.16% and 12.20% self-reported dysphonic participants. Self-reported non-dysphonic participants spent 4.70% of their teacher talk time talking over other classroom noises as opposed for 11.39% of self-reported dysphonic participants.

Based on the means and standard deviation scores presented in Table 4, the results indicated that dysphonic teachers spend more time talking during class, talking over students musicing, and talking over other classroom noises than non-dysphonic teachers. Non-dysphonic teachers spend more time talking over students talking than dysphonic teachers.

Table 1

*Day 1 teacher talk behaviors – Total teacher talk time (minutes and percentage of class time), total time talking over specific noise categories, and percentage of teacher talk time spent talking over specific noise categories.*

TEACHER	Teacher Talk		Teacher Talk Over Students Talking		Teacher Talk Over Students Musicing		Teacher Talk Over Other	
	Minutes	%	Minutes	%	Minutes	%	Minutes	%
Teacher A	19:18	49.56%	3:51	19.95%	:53	4.58%	:24	2.07%
Teacher B	13:00	33.57%	3:03	23.46%	:17	2.18 %	:43	5.51%
Teacher C	17:09	34.37%	4:37	26.92%	:30	2.92%	:42	4.08%
Teacher X	22:08	45.39%	1:19	5.96%	4:31	20.41%	:17	1.28%
Teacher Y	23:53	55.65%	3:47	15.84%	:30	2.1%	3:56	16.47%
Teacher Z	13:19	27.89%	5:24	40.55%	1:21	10.14%	1:03	7.88%

Table 2

*Day 2 teacher talk behaviors – Total teacher talk time (minutes and percentage of class time), total time talking over specific noise categories, and percentage of teacher talk time spent talking over specific noise categories.*

TEACHER	Teacher Talk		Teacher Talk Over Students Talking		Teacher Talk Over Students Musicing		Teacher Talk Over Other	
	Minutes	%	Minutes	%	Minutes	%	Minutes	%
Teacher A	19:15	45.55%	3:19	17.23%	:44	3.81%	:21	1.82%
Teacher B	15:29	33.16%	3:10	20.45%	:30	3.23%	:34	3.64%
Teacher C	16:13	36.75%	2:49	17.39%	:58	5.96%	:31	3.19%

Table 2 (continued).

TEACHER	Teacher Talk		Teacher Talk Over Students Talking		Teacher Talk Over Students Musicing		Teacher Talk Over Other	
	Minutes	%	Minutes	%	Minutes	%	Minutes	%
Teacher X	18:09	37.19%	1:29	8.17%	3:07	17.17%	1:24	7.71%
Teacher Y	21:12	49%	1:50	8.65%	:33	2.59%	6:08	28.93%
Teacher Z	18:02	37.51%	5:12	28.84%	2:30	13.86%	1:25	7.86%

Table 3

*Day 3 teacher talk behaviors – Total teacher talk time (minutes and percentage of class time), total time talking over specific noise categories, and percentage of teacher talk time spent talking over specific noise categories.*

TEACHER	Teacher Talk		Teacher Talk Over Students Talking		Teacher Talk Over Students Musicing		Teacher Talk Over Other	
	Minutes	%	Minutes	%	Minutes	%	Minutes	%
Teacher A	18:19	43.03%	3:10	17.29%	:57	5.19%	1:37	8.83%
Teacher B	14:03	34.37%	3:46	26.81%	:10	1.19%	:35	4.15%
Teacher C	15:30	30.70%	3:10	20.43%	1:18	8.39%	1:24	9.03%
Teacher X	16:21	33.14%	:53	5.40%	3:58	24.26%	1:01	6.22%
Teacher Y	19:01	45.29%	0	0%*	:32	2.8%	3:09	16.56%
Teacher Z	9:54	30.27%+	2:51	28.79%	1:38	16.5%	:57	9.6%

\* Students did not speak this day due to a pre-game day tradition of silence.

+ Recording truncated due to equipment malfunction at 32:55

Table 4

*Mean percentages of total observations – Total percentage of teacher talk time, percentage of teacher talk time spent talking over specific noise categories.*

TEACHER	Teacher Talk		Teacher Talk Over Students Talking		Teacher Talk Over Students Musicing		Teacher Talk Over Other	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Teacher A	46.05%	3.29	18.16%	1.55	4.53%	.69	4.24%	3.98
Teacher B	33.71%	.061	23.57%	3.18	2.2%	1.02	4.43%	.97
Teacher C	33.94%	3.05	21.58%	4.87	5.76%	2.74	5.43%	3.15
Teacher X	38.57%	6.24	6.51%	1.46	20.61%	3.55	5.07%	3.37
Teacher Y	49.98%	5.25	8.16%	7.93	2.5%	.36	20.65%	7.17
Teacher Z	31.89%	5.01	32.73%	6.78	13.5%	3.2	8.45%	1

Table 5

*Revised mean percentages of total observations – Total percentage of teacher talk time, percentage of teacher talk time spent talking over specific noise categories.*

TEACHER	Teacher Talk		Teacher Talk Over Students Talking		Teacher Talk Over Students Musicing		Teacher Talk Over Other	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Teacher A	46.05%	3.29	18.16%	1.55	4.53%	.69	4.24%	3.98
Teacher B	33.71%	.061	23.57%	3.18	2.2%	1.02	4.43%	.97
Teacher C	33.94%	3.05	21.58%	4.87	5.76%	2.74	5.43%	3.15

Table 5 (continued).

TEACHER	Teacher Talk		Teacher Talk Over Students Talking		Teacher Talk Over Students Musicing		Teacher Talk Over Other	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Teacher X	38.57%	6.24	6.51%	1.46	20.61%	3.55	5.07%	3.37
Teacher Y	49.98%	5.25	12.25%	5.1*	2.5%	.36	20.65%	7.17
Teacher Z	31.89%	5.01	32.73%	6.78	13.5%	3.2	8.45%	1

\* Data reported for days 1 and 2. Day 3 was removed due to a change in daily classroom routine

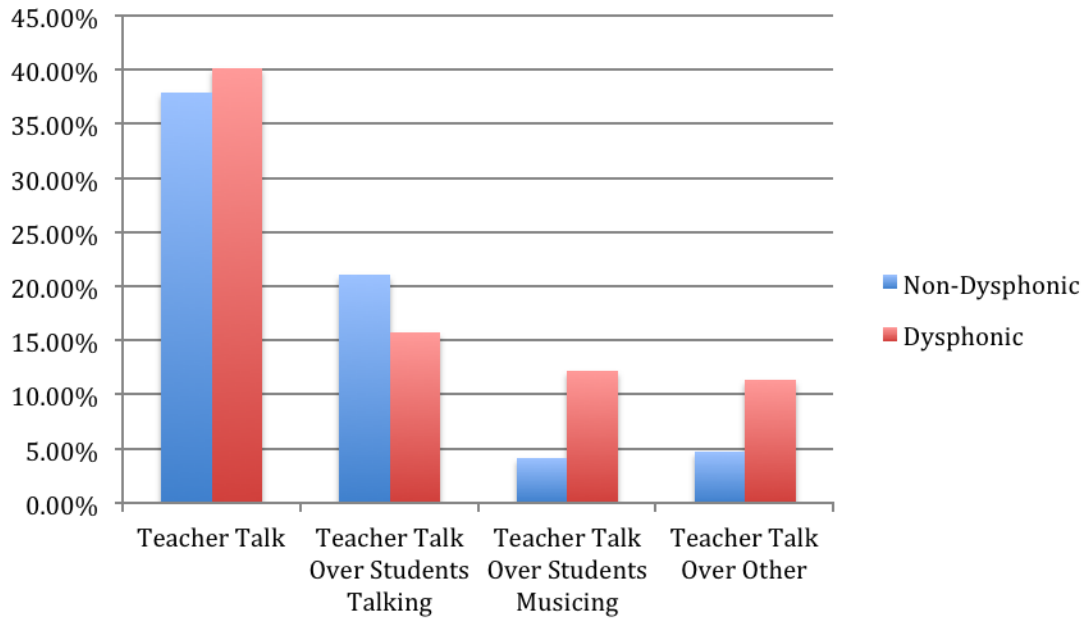
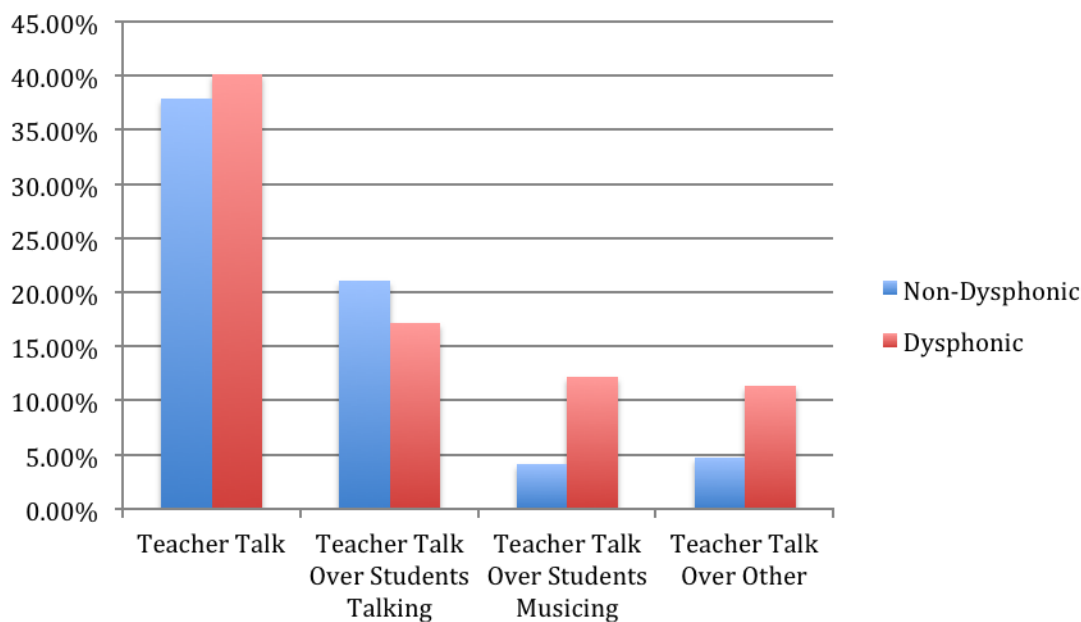


Figure 1. Total mean averages of observed behaviors among self-reported non-dysphonic and dysphonic music teachers.



*Figure 2.* Revised total mean averages of observed behaviors among self-reported non-dysphonic and dysphonic music teachers

### Research Question #2

*Do teachers with self-reported dysphonia talk more during class than teachers without self-reported dysphonia?*

Based on the observed behaviors of the participants, the results indicated that the self-reported dysphonic participants spoke for more time during rehearsal periods than self-reported non-dysphonic participants. Self-reported dysphonic participants spoke for an average of 40.15% of total rehearsal time whereas self-reported non-dysphonic participants spoke for 37.90%.

### Research Question #3

*How often does teacher talk time occur over a very loud classroom?*

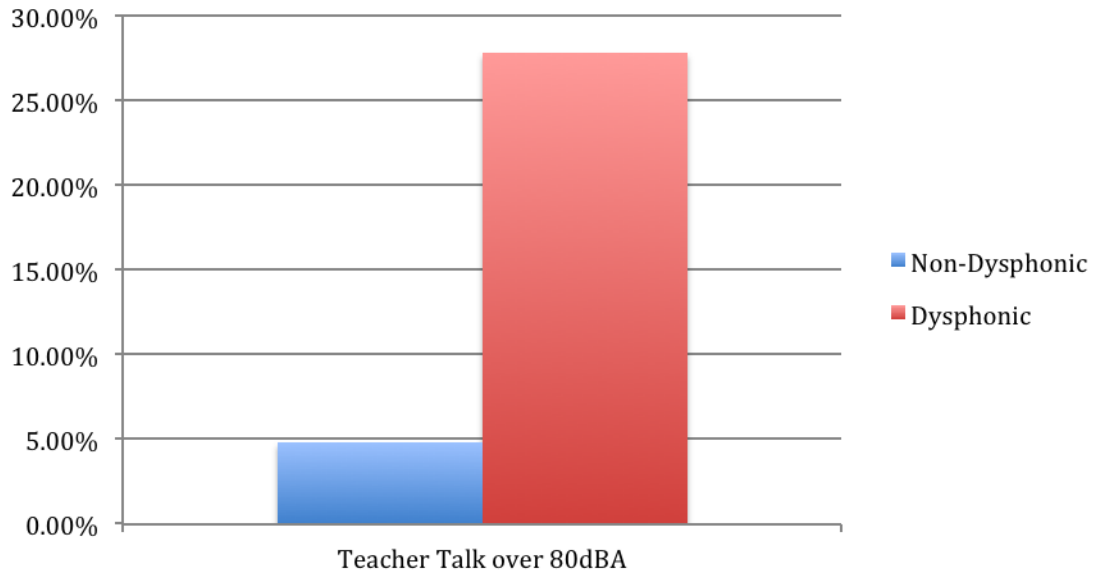
The decibel level data log that was accumulated during each class was condensed to display only the times when the classroom was very loud (>80dBA). The time stamp

for each of those recordings (one per second) was cross-referenced with the video to determine how many times (minutes and seconds) the teacher spoke over the very loud classroom. The average percentage of time that the non-dysphonic teachers spent talking over 80dBA was 4.78% and the average percentage of time the dysphonic teachers spent talking over 80dBA was 27.79%. Table 6 (page 45) displays the amount of time and the percentage of total talk time that each teacher spent talking over 80dBA for each of the three observed days as well as the mean and standard deviation for the total observation period.

Table 6

*Total time (minutes and seconds) and percentage of teacher talk occurrences during a “very loud” classroom (>80dBA)*

TEACHER	Day 1		Day 2		Day 3		Mean	SD
Teacher A	1:00/19:18	5.18%	:43/19:15	3.72%	2:49/18:19	15.38%	8.09%	3.35
Teacher B	:14/13:00	.79%	:31/15:29	3.34%	:10/14:03	1.19%	2.11%	1.11
Teacher C	:38/17:09	3.69%	:38/16:13	3.91%	:46/15:30	4.85%	4.15%	.62
Teacher X	3:57/22:08	17.85%	:32/18:09	2.11%	1:58/16:21	16.11%	12.02%	8.63
Teacher Y	9:18/23:53	38.94%	13:12/21:12	62.26%	8:25/19:01	44.26%	48.49%	12.22
Teacher Z	2:30/13:19	18.77%	2:56/18:02	16.27%	3:19/9:54	33.5%	22.85%	9.31



*Figure 3.* Mean averages of total teacher talk time over 80dBA for self-reported dysphonic and self-reported non-dysphonic participants.

#### Research Question #4

*Are there themes between certain environmental and or behavioral factors among self-reported dysphonic and/or self-reported non-dysphonic teachers?*

#### Interviews

All participants were asked an identical set of interview questions at the conclusion of the classroom observations. The researcher conducted interviews to gain additional information regarding the behavioral factors that could suggest commonalities or differences among the dysphonic and non-dysphonic participants. The questions focused on additional behavioral aspects that could not have been recorded during the classroom observations. The following interview results directly address research question #4: *Are there themes between certain environmental and or behavioral factors among self-reported dysphonic and/or self-reported non-dysphonic teachers?*



*Interview Question 1: Approximately how many hours of sleep do you get per night? Do you wake up feeling rested?*

Teachers A, B, and C averaged 6.5 hours of sleep during the week and reported feeling rested. Teacher B said that she gets more sleep during the weekend. Teachers X, Y, and Z averaged 6.2 hours of sleep per day during the week and all reported they do not wake feeling rested. Teachers Z reported that she tries to get more sleep on the weekends in an effort to feel more rested. A *t*-Test for independent means revealed that the amount of sleep between the two groups was insignificant [ $t(4) = .76, p = .49$ ], however all of the non-dysphonic participants said they felt rested during the week whereas dysphonic teachers did not feel rested.

*Interview Question 2: Do you currently smoke or have you ever been a smoker? If so, for how long?*

All of the participants (100%) stated they are not currently nor have ever been smokers. Teacher X admitted to having tried cigarettes in the past, but was never a smoker beyond that.

*Interview Question 3: Have you ever seen a specialist regarding your vocal health?*

Teachers A, C, X, and Z had seen a voice specialist whereas Teachers B and Y had not. Teachers A, C, X, and Z made the decision to consult a voice specialist due to voice related concerns. Teachers A and C first met with a voice specialist during their undergraduate degrees, Teacher X had his first appointment in fifth grade, and Teacher Z's first appointment was after completing several years of teaching as well as a Master's degree.

Teacher A mentioned that she visited an otolaryngologist during her undergraduate degree due to frequent voice loss, particularly after recovering from illness. Teacher A did not have vocal damage, but concluded that it was vocal fatigue due to the amount of singing both in choirs and as a soloist. Similarly, Teacher C sought the expertise of a voice professional near the end of his undergraduate degree due to suspected voice complications. Teacher C indicated that he saw an otolaryngologist twice during that time and despite having a diagnosis of acid reflux, the doctor concluded that he did not have any voice problems.

Teacher X and Z were both diagnosed with vocal nodules by an otolaryngologist. Teacher X remembers asking his mother to see a doctor because his voice was frequently hoarse and was later diagnosed with vocal nodules. Teacher Z stated, “I went initially because I noticed something was up with my voice, and wanted to make sure I didn’t have nodes, well, I did. I went on really strict voice rest for 3 weeks, and then they went away. The following year, I got them again.” Teacher Z said that she was also diagnosed with acid reflux, which she manages with medication to help prevent further voice problems.

*Interview Question 4: Have you ever received vocal health training?*

Within this study, two out of three (66.7%) of dysphonic teachers report having vocal health training and one out of three (33.3%) non-dysphonic teachers report having received vocal health training. Teachers C, X, and Z have had vocal health training whereas Teachers A, B, and Y have not. Teacher C had a voice teacher in college that was a certified voice and speech pathologist and recalls that he often addressed vocal health during voice lessons. In addition to voice lessons, Teacher C reports that he took a

voice science class that also focused on vocal health and the vocal mechanism. Teacher X received vocal training from a speech pathologist during the school day in fifth grade after being diagnosed with vocal nodules. Teacher Z received similar training from a speech pathologist as a result of a positive diagnosis for vocal nodules and also stated that she had received voice lessons to help with vocal health.

Teacher A reported that she took vocal pedagogy as an undergraduate student but the class did not address vocal health. Teacher B had a similar response that she has had voice lessons and vocal pedagogy but neither specifically addressed vocal health.

*Interview Question 5: Are you a coffee drinker? If so, how many ounces do you drink per day on average? Do you drink decaf or regular?*

Teachers A, X, and Z drink regular coffee on a daily basis. Teachers B, C, and Y do not drink coffee on a daily basis. Based on those answers, one out of three (33.3%) non-dysphonic teachers drink coffee on a regular basis, and two out of three dysphonic teachers (66%) drink regular coffee daily. Teacher A drinks approximately 20 ounces of regular coffee in the mornings. Teacher Z drinks at least 12 ounces of regular coffee per day. Teacher X drinks approximately 16 ounces of regular coffee daily, and usually drinks it throughout the day, not just in the morning. Teacher B does not drink coffee on a daily basis, but says that if she does then it is usually less than 8 ounces and only drinks decaf. Teacher Y also rarely drinks coffee, but says that it is regular coffee when he does drink it. Teacher C recently stopped drinking coffee in an effort to avoid caffeine, but says that he used to drink at least 24 ounces of regular coffee per day.

*Interview Question 6: Approximately how many ounces of water do you drink per day?*

The non-dysphonic participants (Teachers A, B, and C) drink 45 ounces of water daily, on average. The dysphonic participants (Teachers X, Y, and Z) drink an average of 41 ounces of water on a daily basis. A *t*-Test for independent means revealed that the amount of water consumed daily between the two groups was insignificant [ $t(4) = .19, p = .86$ ].

*Interview Question 7: Do you have any after school activities that require vocal energy (ex: extracurricular ensembles, sports team coaching)? How many hours a week do they meet?*

All participants reported that they were involved in at least one extra-curricular activity throughout the week. Teacher A said that she spends approximately five hours per week working with small group sectionals after school, which she describes as not vocally strenuous due to the small amount of people that she is working with. Teacher A also sings in a community and church choir, which requires three hours of rehearsal per week. Teacher B also spends about five hours per week working with students after school in extra-curricular choirs. Teacher C does not have extra-curricular school-related obligations, but he does conduct a church choir, which meets for one rehearsal and two services per week, totally three hours.

Teacher X directs a chamber music program that meets once per week for two hours. Teacher Y spends between twenty and twenty-two hours per week running extra-curricular activities such as marching band, sectionals, and performances. Teacher Z teaches private voice and piano lessons after school for approximately three and a half hours per week. On average, the non-dysphonic teachers spend 5.3 hours on extra-

curricular activities per week and the dysphonic teachers spend 8.3 hours per week on extra-curricular activities. A *t*-Test for independent means revealed that the amount of time spent with extra-curricular activities between the two groups was insignificant [ $t(4) = .56, p = .61$ ].

*Interview Question 8: How long is your planning period each day? What are your normal daily activities during that time?*

Teacher A has one 45-minute planning period per day, which she spends traveling between the three schools at which she works, checking her mailbox, turning in money, and making sure that her classroom and lesson plans are set for the day. Teacher A adds, “Most of my planning period is spent silently unless I am interacting with an administrator or support staff member.”

Teacher B has one 50-minute planning period per day and spends that time doing silent, administrative activities such lesson planning and answering emails. Teacher C does not have a planning period, due to an over-loaded, seven-period schedule. Teacher C tries to use time before and after school in order to catch up on emails and other administrative tasks.

Teacher X has one 50-minute planning period per day plus travel time to go to his other school. He spends that time lesson planning, talking with peers, eating lunch, and answering emails. Teacher Y has one 45-minute planning period each day that he spends doing paperwork or preparing for the day. He adds, “I have first period planning so much of the business type work can’t happen that early.” Teacher Z has one 50-minute planning period four days per week and one 90-minute planning period one day per week. Teacher Z states, “On a 50-minute class period plan, I usually answer emails, or

walk up to the main office. Sometimes I talk to people, sometimes not. When I have a 90-minute bloc day plan, I do some of the above, but will also visit middle schools and teacher there, or just talk to the kids about my program.”

When coding for themes within this interview question, a theme of silent activities emerged from the non-dysphonic teachers. Teachers A, B, and C used their free time to plan lessons, answer emails, and get prepared for the day. The dysphonic teachers reported silent activities as well, but Teachers X and Z also use a portion of their planning period to talk to coworkers or students.

*Interview Question 9: Is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?*

Teacher A reports that she sings in a community and church choir, which requires vocal energy, but does not feel as though that is doing harm to her voice. Teacher A also says that, “If I’m at rehearsal and I feel like my voice is very tired, I generally just audiate and follow my music instead of singing.”

When addressing this question, Teacher B states, “I’m sure teaching does, I try very, very hard not to strain the voice.” Teacher C says that he does not feel as though any of his activities are harmful to his voice because he tries to be conscious of his vocal health everyday.

Teachers X, Y, and Z stated that vocal straining throughout their daily teaching routine causes vocal harm. Teacher X said, “If anything, teaching, but usually it’s ok, but since it’s something I’m doing weekly, it’s a concern. But the amount of time that my vocal cords are actually hurting or tired is possibly once a month.” Teacher Y also cited teaching as a cause for concern and added, “My classes are large and loud. I am yelling

on an every day basis mostly because of size of ensemble. I also use a metronome and sometimes try to put my voice over it”. Teacher Z echoed Teacher Y by saying, “I notice that I instinctively ‘project’ my voice more in order to be heard.”

*Interview Question 10: Is there anything that you do on a daily or weekly basis that you feel may be beneficial to your vocal health? If so, what?*

Staying hydrated, periods of vocal rest, and vocal warm-ups were common themes from all participants. Teachers A and Z suggests that staying hydrated and doing some vocal warm-ups in the car on the way to work is a benefit to her maintenance of vocal health. Teacher B focuses on resting her voice at home after work and Teacher C says that he uses a sinus rinse daily and stays hydrated. Teacher Y also says that staying hydrated and resting his voice on weekends is something that he does in order to combat vocal attrition.

Teacher X says that he does not consciously do anything on a daily basis in order to benefit his voice. Teacher X notes, “Some days I don’t talk to people. I try to use non-verbal actions to get my ensemble’s attention when they are talking. I also wait until they are done talking before I speak. I try not to talk over them. Of course when I get carried away it’ll happen, but I try to make a conscious effort to not yell over the kids as much as possible.”

*Interview Question 11: Is there anything else that you feel is worth mentioning concerning vocal health at this time?*

Teacher A stated, “It’s important to educate your young singers and vocalists on vocal health also. When I taught in Texas, I would have one of our voice teachers come and give a vocal health mini-seminar to all our chorus classes. She had extensive vocal

training and has sung at the met. She was very good at this. I have heard of other teachers inviting in professional singers to speak on this subject also. It's important for students to know and be self-aware. Many times in high school, I sang too much and was taught to ignore when I was experiencing vocal strain. We need to be more careful as teachers to educate students about what is happening. Often times, I find that just by telling them, physiologically what is happening, that you can help them understand the difference between mild discomfort and when they truly should not sing because it's dangerous to their voices."

Teacher B stated, "I am keenly aware of vocal health issues, and do try my very best to keep my voice safe! I want to have it for many many more years!"

Teacher C stated, "Nope!"

Teacher X stated, "I could probably do a better job of doing vocal warm-ups in the morning, which I actually sometimes do in the car on my way to work. But I really feel that directors have control over how they choose to interact with the ensemble and that can make or break someone's voice at the end of the day."

Teacher Y stated, "Our room and facilities does not support good acoustics so many times I am straining my voice because if I choose to speak over my ensemble, even at a soft dynamic I have to speak quite loudly."

Teacher Z stated, "Yea, I have really bad acid reflux, and since this summer have increased my medication. I have noticed the medication working much better. When I feel the acid creeping up my throat, I can definitely tell the difference in makes to the way my voice feels."



Following the interview data collection period, the researcher asked a follow-up question regarding stress levels. This question was formed based on the existing literature on stress and the presence of voice related problems (Cooper, 1973; Dietrich et al., 2008; Gotaas, & Starr, 1993; Green, 1989, Seifert, & Kollbrunner, 2005). Participants were asked, *“In general, how would you describe your work-related stress level? What are the contributing factors to higher levels of stress?”* via email and they responded with the following answers:

Teacher A: “I would describe my work-related stress level as low right now. But when I taught in Texas, it was phenomenally high. I was in a district where our job security depended on our contest scores, and the reputation of our program also contributed to our job security. We were expected to perform at the local, state, and regional, sometimes even national levels.

The work related stress I'm currently experiencing is due to the fact that I'm stretched too thin between 3 schools. It's difficult to manage the work load of one school, let alone three when it comes to fundraisers, scheduling trips, any paperwork, etc. But as far as stress and job-related stress. I feel relatively low stress working in my current position. That's partially due also to the fact that this is my 9th year of teaching.”

Teacher B: “My stress level is minimal. I really love what I do.. it doesn't seem like work at all. The stressful times are just before performances, etc... and paperwork. LOL.”

Teacher C: “My work-related stress level is usually pretty high, especially if we are in the weeks prior to a concert or performance assessment. The contributing factors are things like paranoia over the level of preparation, lack of confidence in self and students as we are getting ready to perform, feeling like I could/should have done more or something

different to get us more prepared, etc. The day before a concert, I worry about the logistics and making sure everything goes smoothly, whereas on the day of, I no longer have stress, or I try to minimize it. By the day of, if we do not know something, we aren't going to know it, so there is no reason stressing over the things I cannot change.

Unrelated to the actual classroom and music, I find I have a lot of stress regarding the other school related things like budget, paperwork, administrative expectations, standards, evaluations, and the rest of the red tape nonsense that bogs most teachers down, especially in orange county. I try not to let these affect my demeanor and/or behavior in class, but as some of my students will bravely point out to me, I am unsuccessful at times. Some of this, admittedly, I bring on myself. For example, I do not HAVE to take my advanced ensemble on a trip each year, but I do it for the kids. Yes, this creates an exorbitant amount of stress, but it ends up being worth it when we make the trip happen and the kids are finally on the trip. Similarly, outside of work stress can sometimes play a part, but I think I am rather good about managing the level of stress outside of school and not bringing it into the classroom.”

Teacher X: “I am a generally happy, go-with-the-flow kind of person, and find a lot of joy in life. However, about 99% of the little stress in my life comes from work. The job itself holds pressures and stresses: long hours, lots of energy required, answering emails, structuring lessons, teaching lessons, classroom management, parent phone calls, checking in with administration, etc. etc. etc. I also hold myself to a high standard, and my own expectations of myself and my student successes heighten my stress level. When lessons don't go as expected, I feel highly responsible for the outcome, and will spend hours perseverating about possible remedies.”

Teacher Y “I would describe my work-related stress as overwhelmingly high. We are the only high school so the number of other high school band directors in our county is 0 which makes for a hard support system. The amount of work can contribute enough as it is but my students make that part easy. It is the other stuff that makes my job stressful; Dealing with parent complaints that are a waste of time but you have to deal with because the school wants to try and appease every single person, Trying to fill out paperwork with 2 hours' notice in the middle of a school day, or having a deadline of 3 pm for stuff like grades when I have a rehearsal right after school. The system is what makes my job stressful. Schools have become such a political entity and less about kids. Kids are the reasons to be here. Everything else are the reasons to leave.”

Teacher Z: “Stress levels for me always go from average to pretty high when we have a lot going on...like in the fall, we have a concert, and also several auditions like candlelight, all-state, acda, and then participate in things like All-County chorus, and also Stetson Honor Choir....when I don't get a Saturday off for 6 weeks in a row...my stress level is pretty high.”

Based on the responses, four of the six participants stated that their job-related stress level was high. The two participants that said that they had low stress were both non-dysphonic participants. Teacher C was the only teacher in the self-reported non-dysphonic participant population that said that he had high levels of stress. All of the participants that have self-reported dysphonia stated that their stress levels were high.

#### Interview Summary

Overall, the main themes that emerged from the interview were that all of the participants do not smoke, try to remain hydrated, and are all involved in an

extracurricular activity that requires vocal energy in addition to their daily job responsibilities. When addressing perception of vocal health, the non-dysphonic teachers expressed that they are aware of their voice and consciously try to preserve it by doing vocal warm-ups and taking vocal rest periods whereas the dysphonic teachers did not discuss having this awareness. The amount of sleep reported from all participants were similar in length, however, all of the non-dysphonic participants reported that they wake feeling rested throughout the week and all of the dysphonic participants said that they did not feel rested. A theme that emerged among the dysphonic teachers is that there are environmental or biological concerns such as poor classroom acoustics, chronic vocal nodules, or acid reflux that affect them on a daily basis.

Dysphonic	All Participants	Non-Dysphonic
<ul style="list-style-type: none"> <li>• Wakes feeling tired/not rested</li> <li>• talks during planning periods</li> <li>• High stress levels</li> <li>• Environmental concerns</li> </ul>	<ul style="list-style-type: none"> <li>• Approx. 6 hours of sleep/day</li> <li>• Non-smokers</li> <li>• Approx. 43 ounce of water/per day</li> <li>• Extra-curricular vocal activities</li> </ul>	<ul style="list-style-type: none"> <li>• Wakes feeling rested</li> <li>• mostly silent during planning periods</li> <li>• low stress levels</li> <li>• awareness of voice</li> </ul>

Figure 4. Emerging interview themes among and between participants.

## Field Notes

The researcher took field notes to provide additional information that could otherwise not be provided by the recorded video analysis. The following notes describe what the investigator saw within each participant's classroom during the three-day observation period.

### *Teacher A:*

Teacher A's classroom was in a temporary portable classroom. The classroom was its own building and did not experience excess noise from other classrooms. The students were assembled in seven rows of approximately six students per row. The teacher's keyboard and amplifying speaker were positioned at the front of the classroom with empty space between the first row of students and the keyboard to provide room for the teacher to move closer to the students more easily.

Teacher A's daily routine was similarly structured throughout the three observation periods. Teacher A started each class period with a series of vocal warm-ups, then transitioned to a sight-singing exercise, followed by the rehearsal of repertoire. The researcher observed that there was less talking or off-task behavior during the warm-ups and sight-singing portions of the class. Any off-task behavior occurred as the class progressed towards the rehearsal of repertoire. Generally, the overall off-task behavior was minimal and was rarely addressed by Teacher A.

During the observation period, Teacher A was preparing her choir for both a Fall Concert within the next three weeks and a pep-rally performance. The repertoire that the choir was working on was familiar and the rehearsal periods were dedicated to refining the music in order to make it ready for the performance. Most of the teacher talk content

was dedicated towards fixing dynamics, vowel modification, and pitch accuracy problems.

Teacher A and the choir members appeared to have a positive rapport and mutual respect. When Teacher A delivered instruction, the students focused their attention on her and responded accordingly. Teacher A never used her voice to discipline or engage in off-task conversations. If the students started to get off-task and began talking, Teacher A would pause and wait for the students to stop talking and re-focus.

*Teacher B:*

Teacher B taught in a music building and her classroom was located next to the band room as well as practice rooms. During the observed class periods, the researcher could hear some of the band students practicing in the practice rooms, but it was not loud enough to distract the teacher or the students. The choir faculty office is attached to the choir room with the main door opening up into the classroom. Another choir teacher and her student teacher both have a planning period during the observed class period and can be heard talking within the office, as well as be heard coming in and out of the office throughout the class period.

Teacher B's classroom seemed to be the largest of all participants, with tiered seating, a grand piano at the front of the classroom, and a podium for the teacher to conduct from. The other choir teacher at the school accompanied the rehearsal on piano; therefore Teacher B spent the majority of the class period standing on the podium where all students could easily see her.

Teacher B, much like Teacher A, had a daily routine that she followed for each of the observed class periods. Teacher B started each rehearsal with vocal warm-ups and

then would project a sight-singing exercise on the white board for all students to see and sing. After the sight-singing portion of the class, the teacher would then project a list of the songs that they would rehearse during that class period so that the students could organize their music for class.

In addition to the daily routine, Teacher B spent time on day 2 to talk about administrative concerns regarding the upcoming concert. The class that was observed was the Freshman Women's class, and this concert that they were preparing for was to be their first high school choral concert. As a result, Teacher B dedicated a large portion of that class period to discuss logistics and answered questions regarding procedures. Teacher B reviewed the concert expectations on day 3, but did not present as many details as the previous day.

The Freshman Women's choir is a non-auditioned choir and contained students with a wide range of ability and interest level. The off-task behavior seemed consistent throughout the three-day observation. Observed behaviors included talking, using cell phones, and refusing to participate. Teacher B ignored silent off-task behaviors such as refusing to participate but would often shush or tell the students to be quiet in order to re-focus the students.

Most of the observed off-task behaviors occurred during transition periods. Although Teacher B projected the daily activities on the board, she would often give the students a rest period in between songs when she would stop to drink water, talk to the other choir teacher, or address individual student questions. Teacher B would often have difficulty regaining the focus and on-task behavior of the students following those rest periods.

*Teacher C:*

Teacher C's school was an outdoor campus with separate buildings that require students to walk outside in order to go to their different classes. Teacher C's choir classroom was located in a building dedicated to instrumental, vocal, dance, and piano classrooms. The choir room was located at the end of the hallway, with its own door to the outside campus. The nearest classroom is the band classroom, which is located on the other side of the hallway and cannot be heard in the choir room. Teacher C organized his classroom so that the piano was in the center of the classroom, with the students located in two rows of chairs that line three walls surrounding the piano.

Unlike Teachers A and B, Teacher C's daily routine varied over the course of the observation. On days 1 and 3, Teacher C started class with a sight-reading exercise followed by the vocal warm-ups. On day 1 the sight-reading exercise was a four-part chorale and on day 3 the exercise was a rhythmic chant without pitch. On day 2, Teacher C did not schedule a sight-reading component within the lesson and started with the vocal warm-ups instead. Teacher C informed the researcher that this was the established routine and that the students were familiar with the class procedures.

Despite the established routine, Teacher C experienced a wide variety of off-task and discipline issues throughout the three-day observation. On day 1, Teacher C introduced the researcher to the students and told them that the observation would focus on him and not the students, but to be on their best behavior, regardless. Throughout the class, Teacher C had to stop instruction to address excessive talking and lack of participation. Following the class, Teacher C apologized to the researcher and explained



that this was not the normal classroom environment and that the students were uncharacteristically off-task.

Day 2 began with a warning to the students from Teacher C regarding their behavior and informed them that should their behavior not improve that he would have to remove performance opportunities as a result. The researcher observed that the students were more focused and on task during this day and that Teacher C was able to spend more time focusing on his lesson. Teacher C did not have to raise his voice to reprimand any off-task student behavior during this day's class.

Student behavior on day 3 was similar to the behavior that was displayed on the first day. Teacher C was required to spend time addressing student talking and refusal to participate throughout the class. Unlike Teachers A and B, Teacher C expelled vocal energy to reprimand students as opposed to silently waiting for them to regain focus. Despite the amount of time that Teacher C used to address off-task behavior, he refrained from speaking over the students as they were singing and mainly used that time to conduct or play the piano.

*Teacher X:*

Teacher X taught in a converted loading dock that was attached to the cafeteria. The room was divided into two sections, one side holds the orchestra class and the other holds the dance class. The dance and orchestra classes meet during opposite class periods, but due to the physical room restraints, the orchestra was confined to half of the available room. In addition to the main classroom door, the classroom had two sliding garage doors and an additional door that rattled when any of the other doors open or closed. Teacher X allowed three of the orchestra section leaders to practice for an

audition in the adjoining cafeteria during day 1, which could be heard inside the orchestra classroom.

Teacher X's routine was nearly identical during the three-day observation. Teacher X started each class by having the concert master tune followed by the rest of the ensemble. During the tuning portion of the class, Teacher X would give verbal cues to each section to encourage them to tune other notes. Upon completion of the tuning exercises, Teacher X discussed announcements, talked through the daily schedule, and made sure that the students did not have any questions before moving on.

The second part of the class was dedicated to playing scales and arpeggios. Again, during this time Teacher X would talk to various sections and presented objectives for them to achieve during that time. For example, the Viola section was having difficulty shifting through a transition, so Teacher X would correct their technique by telling them what to focus on as they were playing.

Upon completion of the scales and arpeggio exercises, Teacher X used part of the class to do seat reassignment tests by having each member of one specific section play a predetermined musical excerpt. During this time both the students and the teacher listened as each student played the excerpt as a solo. Following each student's performance, the students were encouraged to shuffle their feet as a sign of praise for the work that the student had just done.

Following the individual testing period, Teacher X would transition into the repertoire rehearsal portion of the class. The research observed that it was during this portion of the class that the teacher spoke the most. Teacher X would select a portion of the music to rehearse and would occasionally stop to address a specific section, but

would generally correct the students by talking over them as they continued to play. It also appeared to the researcher that as the music got louder or faster, that the teacher would talk more often and with a louder volume in order to be clearly heard over the sound of the ensemble.

*Teacher Y:*

Teacher Y's band classroom was located in a building that holds the vocational studies classrooms as well as the band room. The band room had practice rooms, a director's office, and a large instrument storage room attached. The room had two series of double doors and concrete walls through which no extra hallway or classroom noises could be heard.

The students were practicing for an upcoming marching band competition and Teacher Y decided to have the students stand in a circle and face the center of the classroom. Teacher Y had an amplified metronome with one speaker facing the West wall and another facing the East wall. Teacher Y stood in the middle of the circle at the center of the classroom and stayed in that location for the majority of the class periods.

Teacher Y started each class period with the same instrumental warm-up selections and then transitioned into the rehearsal of the band's performance pieces. The teacher would use the amplified metronome throughout the rehearsal in order to maintain a consistent tempo. The students would either march in place or turn to the right and walk around the circle as they rehearsed their music. During the rehearsal Teacher Y would stand in the middle of the circle, listen to the song, and then stop the ensemble in order to address problem areas or parts to think about for the next run through.

Concerning discipline, Teacher Y did not experience off-task student talking or lack of participation very often. Occasionally, a few students would begin talking, but the researcher noticed that they were usually talking about the content of the lesson. Teacher Y did not experience any student talking on the third day of observation due to a pre-performance tradition of silence within the ensemble. The researcher noticed that it was more quiet than usual when entering the classroom and when asked, Teacher Y explained that the students refrain from speaking for the entire day before a performance as an exercise of focus and discipline. Because of this tradition, Teacher Y experienced zero episodes of student talking throughout that rehearsal.

In addition to rarely addressing student discipline, Teacher Y also seldom spoke over the sound of the ensemble rehearsing. Occasionally Teacher Y would have a short vocal outburst directed towards a specific section of the ensemble, but they only occurred on days 1 and 2. The majority of his teacher talk time was dedicated to speaking in between the rehearsal of the music while the students were not playing or counting along with the metronome in order to start the band in tempo.

*Teacher Z:*

Teacher Z taught in a performing arts building which holds the classrooms for dance, theatre, stagecraft, band, piano, and choir. The choir room was located near the band room and could occasionally be heard throughout the observation period. The choir room was organized to have five rows of approximately fifteen chairs each facing the piano, which was located at the front of the classroom. Also, at the front of the classroom was an overhead projection system that could project computer images as well as play music through the speakers.

Teacher Z had an established daily routine that began with the student leadership members administering breathing and stretching exercises. Once the exercises were complete, Teacher Z would transition into vocal warm-ups and then a sight-singing example. Following the warm-ups, Teacher Z focused on a set of music that they were preparing for a performance that included an instrumental accompaniment recording. Teacher Z would transition between using the recordings and playing parts or singing A Cappella as the choir rehearsed. Teacher Z told the researcher that she uses a microphone throughout class so that she does not have to strain as much. The researcher observed that Teacher Z only used the microphone when she was talking over the instrumental recording and not during the warm-ups or A Cappella rehearsal periods.

According to the field notes, the researcher observed that Teacher Z's students had the most consistent off-task behavior as compared to the other participants. The students would talk to each other throughout the lesson and were rarely asked to re-focus by either Teacher Z or the section leaders. Whenever Teacher Z addressed off-task behavior it would be in the form of a "shush" sound or a verbal command to refocus. Despite those efforts, the researcher observed that the students did not generally respond to those requests and only stopped talking when they had to start singing. Despite the amount of off-task talking, Teacher Z dedicated the majority of her talk time to addressing objectives within the music and reinforcing technique as opposed to addressing discipline.

#### Field Notes Summary

Field notes revealed that there were often additional behaviors associated with vocal behaviors during teacher talk time that were consistent among all of the

participants. In addition to talking, teachers would often show a body gesture such as a “thumbs up” or a smile for praise, an instrumental fingering to fix intonation, an up-bow or down-bow gesture to fix musical expression and rhythmic accuracy.

Gilbreath (2011) suggested that water consumption can have a positive effect on the vocal health of teachers. Field notes revealed that all of the non-dysphonic teachers drank water throughout the lesson on all three observed days. Teachers A, B, and C all drank some water during transition periods between songs. The dysphonic teachers did not have water or other beverages with them during the lessons and therefore did not hydrate during the class periods themselves.

Two of the participants (Teacher X and Teacher Y) are instrumental music education teachers and have the unique ability to use their instruments as a non-verbal tool to assist in instruction. For example, occasionally when Teacher Y wanted to showcase a phrasing technique, he would use his instruments and play it, instead of verbally describing the objective to the students. Having this tool could allow for some vocal relief throughout the class period that is not as readily available to the vocal music teachers, due to the vocal energy required to model for the students.

There was also a wide variety of vocal loudness throughout the classes that were observed. Teacher A would speak very softly when the class was starting to get off-task and talk in order to re-focus their attention whereas Teacher X would make loud exclamations to show excitement. The loudest vocal outbursts from all participants regardless of vocal health were either praise such as “Nice!” from Teacher X, or “Good for you!” from Teacher B or quick directions for the next section such as “Subito Piano!”

from Teacher X, “Whip and Nae Nae-ers go!” from Teacher A, or “Trumpets!” from Teacher Y.

Proximity to students was similar throughout the observed lessons of all participants. All teachers positioned themselves near the ensemble and occasionally walked around the room throughout the lesson. All students were positioned facing the teacher with a clear view of the teacher when he or she was in front of the room. Teacher Y had a unique classroom formation in which the students stood in a circle facing the center of the room while the director stood in the center. This allowed the teacher to be in close proximity to all students and to walk around the room freely in order to address individual students.

## CHAPTER V

### SUMMARY

The purpose of this study was to address the following research questions:

1. What percentage of teacher talk time is dedicated to talking over classroom noise?
2. Do teachers with self-reported dysphonia talk more during class than teachers without self-reported dysphonia?
3. How often does teacher talk time occur over a very loud classroom?
4. Are there themes between certain environmental and or behavioral factors among self-reported dysphonic and/or self-reported non-dysphonic teachers?

Based on the results of this investigation, the dysphonic participants had a higher average of teacher talk time occurrences, teacher talk time over students musicing, teacher talking time over other classroom noises, and teacher talk time over a very loud classroom. The non-dysphonic participants spent more time talking over student talking than the dysphonic participants. Although the non-dysphonic teachers averaged more teacher talk time over students talking than dysphonic participants, Teacher Y's observation on day 3 was unique due to the students' tradition of silence before a performance, which may have affected the overall average.

The largest difference between means was evident within the teacher talk time over a "very loud" classroom observation, which resulted in the dysphonic teachers spending 27.79% of their total talk time talking over a "very loud" classroom as opposed to the non-dysphonic teachers at 4.78%. Due to the number of participants (N = 6), this study would need to be expanded to include a larger number of participants, possibly



among more than one region of the United States, in order to test for statistical significance as well as make generalizations regarding both populations.

Themes that emerged through field notes and interviews include a focus on hydration and vocal warm-ups among the non-dysphonic teachers and environmental and biological concerns as well as stress that affect the dysphonic teachers. All of the participants stated that they were non-smokers, received a similar amount of sleep, spent a similar amount of time on extra-curricular activities, and drank similar amounts of water. Additionally, the non-dysphonic teachers stated that they woke feeling rested throughout the week, performed primarily silent activities during planning periods and were very aware of their voices and maintaining vocal health. The dysphonic teachers reported feeling tired throughout the week and engaging in activities that included talking throughout their planning periods.

#### Relationship of Results to Literature

The demographic of the participants directly reflects the current literature regarding vocal attrition and gender. The participants that emerged based on the participant guidelines resulted in four female and two male participants with a variety of teaching experience. Lejska (1967) found that of the total number of participants, 16.5% of female teachers self-reported dysphonia as opposed to 7% of male teachers. The findings of Lejska are directly reflected in the purposive sample that was assembled for this particular study.

Although vocal attrition and gender were consistent with previous research findings, years of service were not. Sliwinska-Kowalska et al. (2005) found a positive correlation between years of service and self-reported voice problems. There was not a

connection between dysphonia and years of service, according to the data from this study. Specifically, the teacher with the most amount of experience (fourteen years) was a non-dysphonic participant (Teacher B) and one of the teachers with the least amount of experience (four years) was one of the dysphonic participants (Teacher X).

In addition to gender and teaching experience, the cyclical effects of stress and vocal attrition have been extensively researched (Cooper, 1973; Dietrich et al., 2008; Gotaas & Starr, 1993; Green, 1989, Seifert & Kollbrunner, 2005). Research consistently states that stress can often have a negative effect on vocal wellness and that voice related disorders could cause stress within occupational voice users. Results from this study showed that all of the self-reported dysphonic participants reported high levels of stress associated with their current jobs. Two out of the three self-reported non-dysphonic participants stated that their job-related stress levels were low. Teacher C was the only non-dysphonic participant who reported high levels of stress, however he is the youngest, appeared to have poor classroom management at times, and has the lowest amount of teaching experience within the group (four years as opposed to nine and fourteen), which may be a contributing factor towards stress, regardless of vocal health (Russell, Altmaier, & Van Velzen, 1987).

Additional themes that coincided with relevant literature were the need for vocal wellness education as well as the hazards of classroom noise. A positive perspective on the benefits of vocal health and wellness intervention education has been echoed in a litany of research (Cooper, 1973, Roy et al., 2003). During the interview process, Teacher A specifically discussed the need for vocal health education and the benefit that it could provide for teachers as they go through their teacher preparation programs. Similarly,

Teacher C discussed his involvement in a voice science class and the training that he received from his voice teacher during his undergraduate degree and how that has helped him be very aware of his voice.

Hazardous classroom noise was also a theme that emerged during the interview process, particularly among the self-reported dysphonic participants. Askren (2001) reported that 56% of music teachers attribute part of their dysphonia to environmental factors within the classroom, which is directly reflected in the findings of this study. Teacher X reported that his classroom that is a converted loading dock presents acoustical problems and Teacher Y also said that he feels the acoustics in his classroom cause him to strain his voice. Teacher Z's environmental concerns centered on the overall loudness that often causes her to project her voice in order to be heard.

#### Application of Findings

As mentioned in the results section, the loudest vocal outbursts from all participants regardless of vocal health were either praise phrases or quick directions in the middle of repertoire rehearsal to remind the students of an upcoming section. Regardless of what was said, the field notes and observations revealed that those vocal outbursts were normally accompanied by a non-verbal gesture such as a thumbs-up, a smile, or a conducting gesture to show dynamics. Research suggests that high-magnitude verbal responses are often accompanied by a non-verbal gesture (Biddlecombe, 2012) and that those non-verbal gestures aid in the overall effectiveness of the teacher (Heath-Reynolds, 2014). Because the students may not be looking at the teacher at that specific moment, a verbal command can often reach a larger population without interrupting the flow of music making within the rehearsal. When examining that behavior from a vocal

health perspective, however, it might be beneficial for teachers to modify those behaviors and provide more non-verbal gestures without the vocal outburst. This change of behavior may take some adjusting due to the necessary re-conditioning of the students, but slowly transitioning towards non-verbal gestures that force the students to watch may help conserve some of the teachers' vocal energy.

Teacher Y had the largest single episode of teacher talk over a very loud classroom with 62.26% of his teacher talk time occurring over a classroom environment of 80dBA or more on day 2. The researcher observed that most of this talking episodes occurred while speaking over an amplified metronome that often peaked the decibel reader at 106dBA. Teacher Z spoke over a very loud classroom for 33.5% of her teacher talk time on day 3, which mainly occurred while projecting over the choir singing through repertoire. These two teachers were using their voices to achieve directorial objectives such as setting tempos in order to start the ensemble together or to help the ensemble reach a new objective such as a dynamic change or blend. Research suggests that short and deliberate instructions are a component of effective teaching (Goolsby, 1996), however when those verbal instructions are being projected over a loud decibel level, they may be adding stress and fatigue to the voice.

#### Limitations of Present Study

The scope of this research is not generalizable. The field notes, observations, and interviews were designed to document the behaviors of six high school music teachers and do not reflect a generalized perspective on the high school music teaching population. Other vocal behaviors, such as vocal modeling or singing along with the ensemble, were not considered for this particular study. Although vocal energy is used

during that behavior, the focus of this study was the spoken word, as the research literature suggests that although proper vocal techniques may be used in singing, they do not naturally transfer to speaking. Furthermore, the teachers of instrumental ensembles did not incorporate vocal modeling or singing into their daily lessons, making a comparison of those episodes would be inaccurate. Further studies regarding teacher vocal behaviors as they relate to vocal attrition are needed.

Piano accompaniment was originally designed to be its own category for behavioral analysis but was moved to the “other” category due to the limitations within the design of this study. Talking over piano accompaniment was a recurring behavior in all of the choir directors, regardless of being dysphonic or not. Piano accompaniment is not a daily component for band or orchestra directors, therefore for this study piano accompaniment was recorded in the “other” category. Replicating this study with only choir teachers could include piano accompaniment as its own category and may provide a unique perspective on specific vocal behaviors or choir teachers.

#### Suggestions for Further Research

The current investigation examined the behavioral and environmental factors of high school music teachers. Based on the criteria established for this study, the specific area of music taught (i.e., band, choir, guitar, orchestra) was not a factor in selecting participants. The researcher found that regardless of musical discipline, the daily routines of the participants were similar and therefore a replication of this study could occur in order to gain more specific insight into the vocal behaviors of music teachers. As mentioned in the limitations, this study is not generalizable for an entire population. An additional study with a larger sample size could use the same methodology and provide a

larger data set that could then be used to compare the behaviors of populations and perhaps address correlation between teacher talk time and vocal health. Collecting more quantitative data could aid in the generalizability of this area of research.

In addition to expanding the sample size, a further study could isolate specific disciplines and/or different student age groups in order to examine dysphonia through a similar methodology. Additionally, similar studies could examine the behavioral and environmental factors that could have an effect on vocal health in elementary and middle music teachers, respectively. Further information could be attained regarding vocal health of teachers based on chosen music-based methodology for classroom instruction such as First Steps in Music, Kodaly, and Orff-Schulwerk in elementary schools. Beyond current practicing teachers, further research could examine vocal behaviors of pre-service teachers as well as student teaching interns in order to record behaviors and address possible intervention strategies for vocal wellness.

Vocal intervention strategies in terms of overall vocal wellness and awareness could also be examined. The majority of teachers do not receive vocal health training throughout their teacher education programs (Askren, 2001; Cooper, 1973; Simberg et al., 2006; Van Houtte et al., 2011). A longitudinal study addressing the possible effects of vocal intervention and wellness strategies could provide additional insight into their effectiveness as well as help to formulate a practical curriculum that addresses such issues.

Findings from the current study warrant future research in the area of teaching effectiveness as it relates to teacher talk time and vocal use. Reports have suggested that optimal teacher talk periods for rehearsal effectiveness are between thirty-five (Caldwell,

1980) and forty-four (Sherill, 1986) percent of total rehearsal time. Based on the teacher talk time episodes recorded in this study, Teachers B, C, and Z speak less than thirty-five percent, Teacher X speaks between thirty-five and forty-four percent, and Teachers A and Y speak more than forty-four percent of total class time, on average. Although the six participants were considered effective teachers based on the established criteria for this study, a more in-depth rating of teacher effectiveness, particularly while speaking over “very loud” noises, could be examined. Further research is needed to examine teacher talk time and vocal use in terms of effectiveness.

### Conclusion

The impetus of this investigation was the multitude of literature that presents significant statistics on vocal attrition and the teaching population. The initial review of extant literature revealed a lack of information being provided to teachers regarding vocal health. Beyond that, investigations regarding teacher talk time primarily focused on talk time in terms of teacher effectiveness and efficiency, not vocal health. Therefore, this present study focused on combining those findings into applicable information for teacher awareness and retention.

The number of participants in this study was intentionally low in order to focus on the quantitative and qualitative factors that could contribute towards vocal health. As mentioned previously, the findings suggest that teachers with self-reported dysphonia not only talk more than teachers who are non-dysphonic, but they spend more of that time talking over loud decibels within the classroom. Changes in behavior such as using more non-verbal gestures in place of verbal commands, taking vocal breaks, and pacing your

vocal use in order to avoid fatigue may help teachers when addressing concerns with vocal behaviors and fatigue.

Regardless of teacher talk in terms of effectiveness, the results from this study suggest that in addition to the quantity of teacher talk time, the quality of that time should be a consideration in terms of vocal wellness. Teachers that are aware of the noise levels within their classroom as well as the amount of time they spend talking over those loud noises may be able to make adjustments to their behaviors in an effort to alleviate vocal fatigue.



## APPENDIX A

### INSTITUTIONAL REVIEW BOARD NOTICE OF COMMITTEE ACTION



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#### NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15020204  
PROJECT TITLE: Self Reported Vocal Health of High School Music Teachers  
PROJECT TYPE: New Project  
RESEARCHER(S): Emily Pence  
COLLEGE/DIVISION: College of Arts and Letters  
DEPARTMENT: Music  
FUNDING AGENCY/SPONSOR: N/A  
IRB COMMITTEE ACTION: Expedited Review Approval  
PERIOD OF APPROVAL: 02/06/2015 to 02/05/2016  
**Lawrence A. Hosman, Ph.D.**  
**Institutional Review Board**

## APPENDIX B

### INSTITUTIONAL REVIEW BOARD NOTICE OF COMMITTEE ACTION



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- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15032504  
PROJECT TITLE: Behavioral and Environmental Analysis of Self-Reported Dysphonic and Non-Dysphonic High School Music Teachers  
PROJECT TYPE: New Project  
RESEARCHER(S): Emily Pence  
COLLEGE/DIVISION: College of Arts and Letters  
DEPARTMENT: Music  
FUNDING AGENCY/SPONSOR: N/A  
IRB COMMITTEE ACTION: Expedited Review Approval  
PERIOD OF APPROVAL: 03/26/2015 to 03/25/2016  
**Lawrence A. Hosman, Ph.D.**  
**Institutional Review Board**

## APPENDIX C

### VOICE HANDICAP INDEX

#### VOICE HANDICAP INDEX

Name: \_\_\_\_\_ Date: \_\_\_\_\_

These are statements that many people have used to describe their voices and the effects of their voices on their lives. Circle the response that indicates how frequently you have the same experience.

0-never      1-almost never      2-sometimes      3-almost always      4-always

**Part I-F**

My voice makes it difficult for people to hear me.	0	1	2	3	4
People have difficulty understanding me in a noisy room.	0	1	2	3	4
My family has difficulty hearing me when I call them throughout the house.	0	1	2	3	4
I use the phone less often than I would like to.	0	1	2	3	4
I tend to avoid groups of people because of my voice.	0	1	2	3	4
I speak with friends, neighbors, or relatives less often because of my voice.	0	1	2	3	4
People ask me to repeat myself when speaking face-to-face.	0	1	2	3	4
My voice difficulties restrict my personal and social life.	0	1	2	3	4
I feel left out of conversations because of my voice.	0	1	2	3	4
My voice problem causes me to lose income.	0	1	2	3	4

**SUBTOTAL** \_\_\_\_\_

**Part II-P**

I run out of air when I talk.	0	1	2	3	4
The sound of my voice varies throughout the day.	0	1	2	3	4
People ask, "What's wrong with your voice?"	0	1	2	3	4
My voice sounds creaky and dry.	0	1	2	3	4
I feel as though I have to strain to produce voice.	0	1	2	3	4
The clarity of my voice is unpredictable.	0	1	2	3	4
I try to change my voice to sound different.	0	1	2	3	4
I use a great deal of effort to speak.	0	1	2	3	4
My voice is worse in the evening.	0	1	2	3	4
My voice "gives out" on me in the middle of speaking.	0	1	2	3	4

**SUBTOTAL** \_\_\_\_\_

**Part III-E**

I am tense when talking to others because of my voice.	0	1	2	3	4
People seem irritated with my voice.	0	1	2	3	4
I find other people don't understand my voice problem.	0	1	2	3	4
My voice problem upsets me.	0	1	2	3	4
I am less outgoing because of my voice problem.	0	1	2	3	4
My voice makes me feel handicapped.	0	1	2	3	4
I feel annoyed when people ask me to repeat.	0	1	2	3	4
I feel embarrassed when people ask me to repeat.	0	1	2	3	4
My voice makes me feel incompetent.	0	1	2	3	4
I am ashamed of my voice problem.	0	1	2	3	4

**SUBTOTAL** \_\_\_\_\_

**TOTAL** \_\_\_\_\_

The Voice Handicap Index (VHI): Development and Validation  
Barbara H. Jacobson, Alex Johnson, Cynthia Grywalski, Alice Silbergelt, Gary Jacobson, Michael S. Benninger

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## APPENDIX D

### VOICE HANDICAP INDEX APPROVAL

From: **Jacobson, Barbara H** barb.jacobson@Vanderbilt.Edu  
Subject: RE: Voice Handicap Index  
Date: November 17, 2014 at 12:50 PM  
To: **Emily Pence** emily.pence@eagles.usm.edu



Hi Emily:

You do not require any specific permission to use the VHI. However, if it is to be published in a journal/text - meaning the questions from the original article, then you must request permission from ASHA, who holds the copyright.

Please let me know if you have other questions and good luck with your research!

Best,

Barbara Jacobson, Ph.D. CCC-SLP  
Associate Director, Medical Speech-Language Pathology  
Assistant Professor  
Vanderbilt Bill Wilkerson Center  
Department of Hearing and Speech Sciences

-----Original Message-----

From: Emily Pence [mailto:emily.pence@eagles.usm.edu]  
Sent: Monday, November 17, 2014 12:46 PM  
To: Jacobson, Barbara H  
Subject: Voice Handicap Index

Dr. Jacobson,

Good afternoon. I am interested in using a portion of the VHI for my dissertation study. The study will focus on the self-reported vocal attrition and health of teachers. Please let me know what additional steps are required in order to receive permission to use the inventory. Thank you very much.

Sincerely,  
Emily Pence  
Graduate Assistant  
The University of Southern Mississippi

Webb Parker  
Dissertation Advisor  
Webb.Parker@usm.edu

## APPENDIX E

### INTERVIEW: TEACHER A

R = Researcher A= Teacher A

R: Approximately how many hours of sleep do you get per night? Do you wake up feeling rested?

A: I get anywhere between 5-7, so on average about 6. I do wake up feeling rested...unless it's contest day.

R: Do you currently smoke or have you ever been a smoker? If so, for how long?

A: I have not, will not, and won't ever be a smoker. Gross.

R: Have you ever seen a specialist regarding your vocal health?

A: I actually have. In my first two years of undergrad studies, I was losing my voice every time I got sick (even if it was just a cold, and then it was difficult to get back. I saw an otolaryngologist and was scoped and he ruled out vocal damage, but I was very careful about the amount of hours per day I was singing. At the time, I think it was just misuse between being in three choirs and daily practice. Since then, I became aware of the time I spend using my voice and try to be more careful.

R: Have you ever received vocal health training?

A: I have not, with the exception of taking vocal pedagogy, but that probably doesn't count as formal vocal health training. I think vocal health training would benefit music education majors greatly and it should be taught as part of their vocal pedagogy sequence.

R: Nice. Ok, are you a coffee drinker? If so, how many ounces do you drink per day on average? Do you drink decaf or regular?

A: I drink regular coffee, probably about 20 oz. per day each morning.

R: Approximately how many ounces of water do you drink per day?

A: On average, I consume about a liter and a half of water per day throughout the day.

R: Nice, ok, so do you have any after school activities that require vocal energy like extra curricular ensembles, or sports team coaching or anything? How many hours a week do they meet?

A: I am perpetually working with small groups after school. But it's usually one on one, and is not as vocally strenuous as teaching. I work to prepare students for all-state auditions, solo and ensemble contest, and various solos throughout the school year. On average, I would estimate I spend 5 hours per week in after school rehearsal.

R: How long is your planning period each day? What are your normal daily activities during that time?

A: I get one 40 minute planning period each day. However, it is broken up and attached to drive time. Usually, after I arrive at each school (I'm at 3), I check my mailbox, turn in money, and make sure my classroom is set up and ready for my next group of students. Most of my planning period is spent silently unless I am interacting with an administrator or support staff member.

R: Um, is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?

A: I sing in community chorus and at church, but I feel like those activities aren't harmful to my voice. If I'm at rehearsal and I feel like my voice is very tired, I generally just audiate and follow my music instead of singing.

R: Is there anything that you do on a daily or weekly basis that you feel may be beneficial

to your vocal health? If so, what?

A: Drinking water. Stay hydrated. I also make it a point to sing each morning with my first class when we are doing vocal technique exercises at the beginning of each day. I also am cognizant of always speaking with supported tone, so I'm not speaking in vocal growl and straining my voice.

R: Cool. Is there anything else that you feel is worth mentioning concerning vocal health at this time?

A: It's important to educate your young singers and vocalists on vocal health also. When I taught in Texas, I would have one of our voice teachers come and give a vocal health mini-seminar to all our chorus classes. She had extensive vocal training and has sung at the met. She was very good at this. I have heard of other teachers inviting in professional singers to speak on this subject also. It's important for students to know and be self-aware. Many times in high school, I sang too much and was taught to ignore when I was experiencing vocal strain. We need to be more careful as teachers to educate students about what is happening. Often times, I find that just by telling them, physiologically what is happening, that you can help them understand the difference between mild discomfort and when they truly should not sing because it's dangerous to their voices.

## APPENDIX F

### INTERVIEW: TEACHER B

R= Researcher B = Teacher B

R: Ok, so approximately how many hours of sleep do you get per night? Do you wake up feeling rested?

B: On school nights? About 6-7. On weekends between 7-9. I feel mostly rested.

R: Do you currently smoke or have you ever been a smoker? If so, for how long?

B: NO WAY

R: (Laughs) Alright, have you ever seen a specialist regarding your vocal health?

B: No, I haven't.

R: Ok, have you ever received vocal health training?

B: If you count undergrad/graduate voice lessons...

R: I do

B: Then yes.

R: Are you a coffee drinker? If so, how many ounces do you drink per day on average?

Do you drink decaf or regular?

B: Less than 8oz, but not every day. I only drink decaf.

R: Cool, approximately how many ounces of water do you drink per day?

B: 24 plus.

R: Do you have any after school activities that require vocal energy such as extra curricular ensembles, or sports team coaching? How many hours a week do they meet?

B: Yep, about 5 hours of after school "stuff", mainly ensembles.



R: How long is your planning period each day? What are your normal daily activities during that time?

B: 50 minutes. I spend that time answering emails and doing surveys.

R: (Laughs) Alright, is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?

B: I'm sure teaching does... I try VERY VERY hard not to strain the voice...

R: Right, is there anything that you do on a daily or weekly basis that you feel may be beneficial to your vocal health? If so, what?

B: I do rest my voice when I get home as much as possible.

R: Last one, is there anything else that you feel is worth mentioning concerning vocal health at this time?

B: I am keenly aware of vocal health issues, and do try my very best to keep my voice safe! I want to have it for many many more years!

## APPENDIX G

### INTERVIEW: TEACHER C

R: Approximately how many hours of sleep do you get per night? Do you wake up feeling rested?

C: 6-8 hours, mostly, though I can definitely tell when I didn't get as much sleep as I need.

R: Do you currently smoke or have you ever been a smoker?

C: Nope, never smoked

R: Have you ever seen a specialist regarding your vocal health?

C: Yes, senior year of college

R: Can you elaborate on that?

C: Ok, so I saw a vocal health specialist my senior year because my junior year I started developing, um, not really issues, it was more technique related but I was having problems with intonation and, um, vibrato, and so I switched voice teachers and immediately, well, no, before I switched voice teachers at the beginning of my senior year I was recommended to see an otolaryngologist, um, in, in Newark, um, and I went to this guy, was scoped, because my professor thought that maybe I, maybe my vocal issues were related to some sort of vocal health concern, so I went to see this ENT and scoped me and all that jazz and determined I was fine. I have minor reflux, um, but nothing else was vocally wrong and was to blame for issues with my technique, so then when I switched voice teachers in the middle of my senior year, my new voice teacher who is not only a voice teacher, but also a voice/speech pathologist, he was like, "well, I think you have some neurological things going on as well" so I went back to the same doctor and

saw a neurologist and they hooked me up to a brain monitor as I was being scoped and singing and determined that I was basically thinking too much about music and singing and technique and it all gets confused, so that basically leads to my technical issues, which was never really clear to me, I never really understood it but whatever, I rolled with it, um, and just continued working towards bettering the technique because the technique that I was using with my previous teacher was antithetical to how my voice really works.

R: Wow, ok, so have you ever received vocal health training beyond that?

C: I took voice science at Westminster taught by dr. Scott McCoy who is now at Ohio state. Other than that, my voice teacher senior year is a voice speech pathologist and suffered from a paralyzed vocal told himself so he taught me a fair deal about vocal health.

R: Amazing. Are you a coffee drinker?

C: I was but I have not had coffee in a month. When I drank it, I had at least 24 ounces of regular a day.

R: Approximately how many ounces of water do you drink per day?

C: Um, usually around 60.

R: Do you have any after school activities that require vocal energy?

C: I do not do any after school things at the school, but I have a church choir.

R: How many hours a week do they meet?

C: Church choir is 3 hours once a week for rehearsal and two services on Sunday.

R: How long is your planning period each day? What are your normal daily activities during that time?

C: I do not have a planning period. I teach a full, seven period day including six choirs and one AP music theory class.

R: Wow! Ok, well, is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?

C: Not really as I try to be conscious of my vocal health every day.

R: Great, ok, is there anything that you do on a daily or weekly basis that you feel may be beneficial to your vocal health? If so, what?

C: I use my netipot every day, but other than drinking water regularly, I don't do anything out of the ordinary.

R: Is there anything else that you feel is worth mentioning concerning vocal health at this time?

C: Nope!

## APPENDIX H

### INTERVIEW: TEACHER X

R = Researcher X = Teacher X

R: Ok, so approximately how many hours of sleep do you get per night?

X: Probably about six and a half, on average.

R: Do you wake up feeling rested?

X: (Laughs) No.

R: (Laughs) Ok, do you currently smoke or have you ever been a smoker?

X: No. I have smoked, don't tell my mom, but I have never been a smoker.

R: (Laughs) Ok, um, have you ever seen a specialist regarding your vocal health?

X: (Laughs) yes, I was in 5<sup>th</sup> grade. I had vocal cord nodules and had to go to once or twice a week to a speech therapist. They actually pulled me out of class.

R: Do you remember why you first went and got checked for nodes? Was there a concern or something?

X: Yeah, I just asked my mom (laughs). My voice was hoarse on and off, and so we got it checked.

R: Wow! Have you been checked since then?

X: No, but I still remember every single exercise that they told me to do and it's basically a vocal warm-up.

R: Have you ever received vocal health training?

X: Not really, just what I received during those speech therapy sessions, I guess.

R: Ok, um, are you a coffee drinker?

X: (Laughs) Absolutely!

R: (Laughs) Ok, then, how many ounces do you drink per day on average?

X: Um, probably 16oz, that's probably a safe average.

R: Do you drink decaf or regular?

X: Regular!

R: Approximately how many ounces of water do you drink per day?

X: Oh gosh, um, oh gosh, um, not a lot. Maybe 16-20 is safe guess.

R: Is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?

X: Mmm, if anything, teaching, but usually it's ok since it is something I'm doing weekly, it's a concern. But the amount of times that my vocal cords are actually hurting or tired is probably once a month.

R: Ok, cool. Is there anything that you do on a daily or weekly basis that you feel may be beneficial to your vocal health? If so, what?

X: Not daily or weekly, no. But some days I don't talk to people. I try to use non-verbal actions to get my ensemble's attention when they are talking. I also wait until they are done talking before I speak. I try not to talk over them. Of course when I get carried away it'll happen, but I try to make a conscious effort to not yell over the kids as much as possible.

R: Is there anything else that you feel is worth mentioning concerning vocal health at this time?

X: I could probably do a better job of doing vocal warm-ups in the morning, which I actually sometimes do in the car on my way to work. But I really feel that directors have

control over how they choose to interact with the ensemble and that can make or break someone's voice at the end of the day.

## APPENDIX I

### INTERVIEW: TEACHER Y

R = Researcher Y = Teacher Y

R: Approximately how many hours of sleep do you get per night? Do you wake up feeling rested?

Y: Um, approximately five to six. I do not typically wake up feeling rested, no.

R: Do you currently smoke or have you ever been a smoker?

Y: No, I don't and have never.

R: Ok, have you ever seen a specialist regarding your vocal health?

Y: No, I have not.

R: Ok, have you ever received vocal health training?

Y: No, I haven't

R: Are you a coffee drinker? If so, how many ounces do you drink per day on average? Do you drink decaf or regular?

Y: I'm rarely a coffee drinker but it is regular when I do

R: Approximately how many ounces of water do you drink per day?

Y: Forty ounces

R: Cool, do you have any after school activities that require vocal energy? How many hours a week do they meet?

Y: Yea, marching band, sectionals etc. I typically spend twenty to twenty two hours per week doing extra rehearsals and performances per week

R: How long is your planning period each day? What are your normal daily activities during that time?



Y: Forty five minutes, um, paperwork or prepping for the day. I have first period planning so much of the business type work can't happen that early.

R: Is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?

Y: My classes are large and loud. I am yelling on an every day basis mostly because of size of ensemble. I also use a metronome and sometimes try to put my voice over it.

R: Is there anything that you do on a daily or weekly basis that you feel may be beneficial to your vocal health? If so, what?

Y: I feel like drinking as much water as I do helps. I also try to find some time to rest my voice on the weekends. Sometimes.

R: (Laughs) Is there anything else that you feel is worth mentioning concerning vocal health at this time.

Y: Our room and facilities does not support good acoustics so many times I am straining my voice because if I choose to speak over my ensemble, even at a soft dynamic I have to speak quite loudly.

## APPENDIX J

### INTERVIEW: TEACHER Z

R = Researcher Z = Teacher Z

R: Ok, so approximately how many hours of sleep do you get per night? Do you wake up feeling rested?

Z: I get about six and a half, rarely do I feel rested during the week. Weekend is more like seven and a half hours, and yes I often feel rested, assuming I don't have to work because of work obligations, like conventions, etc.

R: Right, ok do you currently smoke or have you ever been a smoker? If so, for how long?

Z: No

R: Have you ever seen a specialist regarding your vocal health?

Z: Yes

R: Would you be willing to elaborate on that?

Z: K, ya I saw an ENT a couple of times throughout the past couple of years. I went initially because I noticed something was up with my voice, and wanted to make sure I didn't have nodes...well, I did. I went on really strict voice rest for 3 weeks, and then they went away. The following year, I got them again. The ENT was not helpful, and the speech pathologist that they sent me to that was under my insurance told me to do things like liptrills....I was like um, thanks this is a waste of my time and money to come here.

R: (laughs) Right

Z: Anyways, long story short, this year I finally went to Dr. Lehman(ENT) who, Adam Loyd works with. Adam got his voice performance from FSU, and then a Masters in

voice Pathology I think? So I went to Dr. Lehman, who increased my acid reflux medication, and then met with Adam for some voice instruction on how to do low impact speaking. He also suggested getting the really nice mic that I now use in class every day.

R: Cool. Have you ever received vocal health training?

Z: Yes, I also have taken voice lessons on and off here and there, and plan to start them back up in the next couple of weeks.

R: Are you a coffee drinker? If so, how many ounces do you drink per day on average? Do you drink decaf or regular?

Z: I drink regular coffee, at least 12 ounces a day. Also, I drink hot tea throughout the day as well.

R: Approximately how many ounces of water do you drink per day?

Z: 66 ounces

R: Cool, do you have any after school activities that require vocal energy like extra curricular ensembles, or sports team coaching? How many hours a week do they meet?

Z: Yes, I teach private voice about and average of three and a half hours a week.

R: Cool, how long is your planning period each day? What are your normal daily activities during that time?

Z: On a 50 minute class period plan, I usually answer emails, or walk up to the main office. Sometime I talk to people, sometime not. When I have a 90 minute block day plan, I do some of the same above, but will also visit middle schools and teach there, or just talk to the kids about my program.

R: Is there anything that you do on a daily or weekly basis that you feel may harm your vocal health? If so, what?

Z: When I talk in class and don't use my microphone for the whole day, I notice that I instinctively "project" my voice more in order to be heard.

R: Is there anything that you do on a daily or weekly basis that you feel may be beneficial to your vocal health? If so, what?

Z: Yea, I do gentle vocal warm-ups in the morning before I speak to anyone. Fortunately, I can do this in the car on the way to work, or when I get into class before I open my door to students.

R: Cool, last one, is there anything else that you feel is worth mentioning concerning vocal health at this time?

Z: Yea, I have really bad acid reflux, and since this summer have increased my medication. I have noticed the medication working much better. When I feel the acid creeping up my throat, I can definitely tell the difference it makes to the way my voice feels.

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