PERFORMANCE EXCELLENCE: TOWARD A MODEL OF FACTORS SUSTAINING PROFESSIONAL VOICE PERFORMANCE IN OPERA

by

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A thesis submitted in conformity with the requirements for the degree of Doctorate of Musical Arts
Graduate Department of Music
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Abstract

While considerable research has explored the skills elite professionals use to sustain performance excellence in a multitude of disciplines, much less research has focused on professional musicians. Multi-faceted skills are needed to maintain performance excellence. This research investigates the deliberate skills and processes professional opera singers employ to preserve elite performance. Data drawn from individual semi-structured interviews with ten professional opera singers, with a minimum career length of ten to twenty years, were analyzed within the methodology of grounded theory. Results revealed a strong role for creation of a music "road-map" in the context of deliberate preparedness in both physical and mental skills, which contributed to high levels of learning self-efficacy. High-level skills cultivated in the preparation phase were applied directly within the context of live performance, facilitated "flow" experiences, involved energy exchanges with other performers and audiences, and resulted in higher levels of performing self-efficacy.
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CHAPTER ONE: INTRODUCTION

In the course of my career I have appeared in many different venues...whether I'm performing for a group of twelve or a group of twelve thousand, my goal is the same: communicating with the audience. When the evening is going well, I feel larger than myself. It's as if the boundaries of my body have dissolved and I can reach out through my voice and touch the audience in an almost physical way. For me, the singer's art is the art of expression - expressing the music, expressing the text, projecting my voice into a large space, and then using it to make that space between me and the audience grow smaller and smaller. My voice becomes a wide net, which I spread out across all of us to draw us all closer together (Fleming, 2005, p. 175).

The passage above is from the biography of opera singer, Renée Fleming’s, The Inner Voice: The Making of a Singer. Fleming here poignantly describes her experience of performance excellence, communicating as an artist through which the music and text take flight. Yet before such meaningful energy exchanges can occur between performers and audiences, complex combinations of deliberate physical and mental skills are prepared and set in motion. The successful execution of these deliberate skills provides the base from which consistent high-level performances can take place.

Rationale

There has been significant exploration into the skills professionals from other domains use to sustain performance excellence and into the discovery of new techniques to improve performance (Ericsson, 2006). Little research has been conducted examining the various skills
and processes working professional classical musicians use to maintain performance excellence. Sloboda (1985) noted literature on expert performance in music is sparse. Even less investigation has been done examining the specific sub-group of professional opera singers.

In her dissertation, Sandgren (2005) investigated the areas of health, personality, and skills of opera singers from a psychological framework and noted, “Less is known regarding how to maintain a high standard” (p. 20). Most research conducted in the larger arena of music performance has utilized student participants or solo professionals across varied disciplines and instruments, excluding the specific subset of professional opera singers (Ginsborg, Chaffin, & Nicholson, 2006; McPherson & McCormick, 2006; Ritchie & Williamson, 2011). The potential transferability of findings from studies of participants from other disciplines and of students or pre-professionals to professional opera singers is questionable.

Historically, the quest for the knowledge and training required to achieve performance excellence in opera has been garnered from the advice of expert teachers, coaches, performers, and from recordings. Definitive texts are often used as points of reference: on the art of singing (Brown, 1931; Miller, 1986) for issues regarding vocal pedagogy (Kleber, Veit, Birbaumer, Gruzelier, & Lotze, 2009; McCoy, 2004; Sataloff, 2006) instructing appropriate interpretations (Bernac, 1978; Cheek, 2001; Fischer-Dieskau, Bird, & Stokes, 1984), and in the consideration of various socio-psychological elements surrounding performance excellence (Emmons & Thomas, 1998; Green & Gallwey, 1986; Lehman, Sloboda, & Woody, 2007; Williamson, 2004). Although opera singers are respected for excellence in performance, no systematic research has been conducted investigating the inter-relations of high-level skills necessary to sustain long-term professional operatic careers.
Research Question

In the absence of any systematic research and upon reflection of my own professional performance experiences in opera over the last ten years, my quest for further knowledge led to the questions: Which skills and strategies are most important to sustain performance excellence in professional opera? How do they interrelate for the best results? Can these various techniques and strategies be further developed for greater efficacy? Are there strong similarities between professional opera singers in the areas of preparation and processes? Are there similarities and differences in the skills cultivated in preparation and applied to performance between nationally and internationally recognized opera singers?

With these key questions in mind, the first global research goal of this dissertation was to investigate the process of sustaining performance excellence in professional opera singers. More specifically, this research was directed by a two-pronged comprehensive research question: What deliberate skills do professional opera singers use in their preparation to sustain performance excellence? Second, what are the similarities and differences in the deliberate skills used between professional opera singers at the national and international level?

Definition of the Core Phenomenon: Performance Excellence

The core phenomenon being investigated in this dissertation is performance excellence. What is meant by the term "performance excellence" in an operatic context? Applying Dickie's (1974) "institutional" definition of art to performance, we can take excellence in opera to be continued employment in major opera houses. Continued employment may indicate persistent performance quality and raises the question of how professional opera singers maintain such a
demanding standard. Consistent with the quote by Fleming (2005) at the beginning of this chapter, Bernstein (1981) provides a working definition of the characteristics of performance excellence as "the pinnacle achievement in musical development… performing entails a synthesis of thought, feeling, and physical movements… it signifies a supreme act of artistic giving" (1981, p. 2). Emmons and Thomas (1998) further develop this definition by outlining features of performance excellence as "an outcome of physical, technical, and mental factors" (p. 12). International opera singer Renée Fleming (2005) affirms and extends the above characteristics necessary for performance excellence in opera, specifically addressing the area of career longevity, as the need for "paying attention to aspects of physical health, the environment, mental fortitude, and, above all, a solid technique" (p. 142).

With these defining principles, it is clear that complex combinations of skills and processes are needed to sustain performance excellence in opera. Therefore, for the purposes of this research, the term “performance excellence,” is defined as: the synthesis of thought, action, feeling, and physical movements, involving the sustaining of good physical and mental health, and an advanced vocal technique, that allows for the expression of music and text, resulting in a supreme act of artistic sharing, which supports continued professional employment at top opera houses.

Key Themes

**Vocal Production:** commonly referred to as “technique.” Aspects of advanced levels of operatic vocal production involve: optimized breathing patterns, well-developed muscle memory at the inspiration phase, increased cardiovascular fitness, and a concentration of the singer’s
formant (Kleber, Veil, Birbaumer, Gruzelier, & Lotze, 2009; Petterson & Westgard, 2004; Thomasson & Sundberg, 1999; Thorpe, Cala, Chapman, & Glugston, 2001).

**Deliberate Practice:** first conceived in the research of Ericsson et al. (1993), this term denotes a type of practice that is consciously intended to improve skills and reach high levels of expertise.

**Mental mapping:** refers to the development of a “mental map” of a music score. Ginsborg et al. (2006) further defines this term as a “series of landmarks, hierarchically organized within the sections and subsections of the music that constitute its formal structure” (p. 168). These landmarks, devised in a music score are termed “performance cues.”

**Performance cues (PC’S):** “landmarks of the piece that an experienced musician attends to in performance, carefully selected and rehearsed during practice so they come to the mind automatically and effortlessly as the piece unfolds” (Chaffin & Logan, 2006 , p. 115).

**Mental practice:** has been defined as the mental rehearsal of a specific task in the absence of physical movement (Richardson, 1967a, 1967b). In its’ application to music, Williamon (2004), adds mental rehearsal for musicians “should be used to create or recreate an experience that is similar to a physical event” (p. 224). An integral component of mental practice is mental imagery.

**Mental Imagery:** also referred to as visualization and mental rehearsal. In its application to music Conolly and Williamon (2004) defined it as the “cognitive or imaginary rehearsal of a physical skill without overt muscular movement… the senses – predominantly aural, visual, and
kinesthetic for the musician – should be used to create or recreate an experience that is similar to a given physical event” (p. 224).

**Flow:** optimal levels of performance are frequently referred to as “flow” experiences. This term was coined by Csikszentmihalyi (1990), as a description of an experience of full engagement of an activity, characterized by a cognitive state of total concentration and absorption.

**Self-Efficacy (SE):** the belief in one’s abilities to successfully execute task-specific skills to produce a specific outcome within a specific context (Bandura, 1977).

**Summary**

In the absence of systematic research investigating the skills and processes professional musicians use to sustain performance excellence, particularly the sub-group of opera singers, this thesis investigates what skills professional opera singers use to sustain performance excellence and explores the potential similarities and differences between national and international artists.

The profession of opera has a long history of performance excellence, generally passed down from expert teachers, coaches, and other performers. This dissertation aims to begin the groundwork for the systematic inquiry of the process of sustaining performance excellence for professional opera singers. Included in this inquiry is the examination of the advanced deliberate skills opera singers use in the areas of physical and mental preparation. These skills include: advanced levels of vocal production, aspects of health and wellness, mental mapping, and development of performance and imagery cues. Furthermore, this research will closely examine
how opera singers develop feelings of self-efficacy relating to high levels of preparation and performance, and how this translates into the context of live performances.

Although it is not possible to generalize the findings of this research to the larger population of opera singers, it provides a starting point for much needed research in this area. The main aim of this research is to provide an original contribution to the study of the interplay of skills that may expedite the music learning process and facilitate consistent performance levels for aspiring musicians and professional artists. This in turn can provide key lessons and ideas to aid in the development of curriculum for performance-based courses.

The next chapter will review aspects of advanced levels of vocal production, health and wellness for opera singers, and the extant literature in the areas of: deliberate physical and mental practice of musicians and research examining self-efficacy.
CHAPTER TWO: REVIEW OF LITERATURE

When researching the complex combinations of the deliberate skills employed in the sustaining of performance excellence for professional opera singers, highly developed skills within the context of preparation must be investigated. This chapter will first address aspects of vocal production and health and wellness considerations for classical singers. Technical acuity and the examination of research investigating lifestyle skills are paramount when acknowledging opera singers physically house their instruments. Second, a review of the literature in the areas of deliberate practice and mental preparation skills relating to music performance will be examined. Third, research investigating self-efficacy beliefs within music will be reviewed, all with the intended purpose of laying the foundation for the subsequent analysis chapters to follow.

The greater understanding of high-level vocal production and healthy lifestyle skills used by professional opera singers is imperative when considering how sounds are produced and amplified by classical singers. A requirement for this type of vocal production includes the Involvement of 100 muscles which are created entirely within the human body in the absence of visual control over the required movements (Kleber et al., 2009). Singers must train for many years to develop aspects of their vocal production in order to achieve the vocal control and aesthetic that is compulsory in opera singing (Sundberg, Thörnvik, & Söderström, 1988).

Although the crux of this research is not pedagogically driven, it is important to review information and research outlining what is meant by advanced levels of vocal production for singing. The honing of an advanced vocal technique and health and lifestyle considerations are essential in sustaining performance excellence in opera.
Vocal Production and Health

When exploring the deliberate skills professional opera singers use to ensure high levels of performance, a basic understanding of the physiology of advanced levels of vocal production is necessary. A concise and simplified description of vocal production will be provided. It will include three integral components as outlined by Welch and Sundberg (2002): the respiratory system, the vocal folds,¹ and the vocal tract.²

McCoy (2004) clearly outlined the physiological process of breathing as one of the most important elements involved in healthy and effective vocal production. Every physical activity produced by the human body begins in the brain. The brain emits neurological impulses through the nervous system to activate the muscles. Once a message is sent from the brain, the glottis opens to allow air to move into the lungs. When inhaling, the capacity of the thorax and lungs is increased, resulting in the decrease of air pressure in the lungs. Next the inspiratory muscles contract to induce inhalation. The diaphragm contracts, descends, and lowers, while the external intercostal muscles also contract simultaneously while the abdominal muscles relax allowing the air to fill the lungs. Expansion of the abdomen upon inhalation permits muscles to contract to expand thoracic capacity, which results in a partial vacuum and intake of breath. Next the glottis³

¹ “Housed within the protective cartilage of the larynx, vocal folds are folds of tissue running transversely in the anterior/posterior plane within the airway…during phonation only the anterior part is free to vibrate” (McCoy, 2004, p. 107).

² A tube of uniform diameter that is closed at one end and open at the other. It is the cavity from the larynx and mouth to the nasal sinus. As sound moves through the vocal tract, it encounters places where the size of the resonating chamber changes. Changes in size and shape of the vocal tract are under direct control of a singer. These changes allow singers to produce sounds with a uniform timbre and to create vowel sounds required for language (McCoy, 2004).

³ The space between the true vocal folds.
closes to allow the vocal folds to vibrate with the moving flow of exhaled breath. The soft palate  
lifts which in turn closes off the passageway to the nose. Tongue position will depend on  
whether the first word of text is a consonant or a vowel in the subsequent creation of the first  
audible sound. The glottis opens to end phonation while maintaining the flow of air. The  
pulsating air flow is filtered through the vocal tract and subsequently produces resonance and  
formants. Exhalation is controlled by the combined efforts of the external intercostals and the  
abdominal muscles. Both muscles operate to create muscular antagonism which serves to aid in  
the control of pressure in the air supply. Finally the flow of air stops while the tongue and jaw  
relax into their natural resting position.

In consideration of this concise description of vocal production, the training and  
maintenance of an advanced singing technique by professional opera singers must include the  
coordination of muscles, the respiratory system, and the vocal tract. It should be noted other  
integral elements contributing to advanced vocal production include: posture, easy onset,  
phonation, registration unification, and articulations of vowels and consonants that are then  
directly applied to text and repertory demands.

Research studies support the above description of the integral components involved in  
advanced levels of vocal production, specifically in the area of coordination of muscles for

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4 Sympathetic vibrations within cavities located in the body. More specifically: “Resonance is the intensification and enriching of a musical tone by supplementary vibration” (McCoy, 2004, p. 27).

5 “A formant is a resonance in the vocal tract” (McCoy, 2004, p.40). This term is typically described as the ringing quality of a singer’s voice. “The ringing sounds produced by classical singers results from a unique resonance called the singer’s formant, which is created by the clustering of the third, fourth, and fifth formants tightly together in a narrow frequency range” (McCoy, 2004, p. 47). This new combination of formants provides extra amplification to harmonics in the frequency range of 2400-3200Hz, allowing the singing voice to project over an orchestra without amplification.
singing. Petterson and Westgard (2004) found higher levels of muscle activity in classical singers when compared to student singers. Differences were found in the muscle activities in the shoulder, chest, and abdominal regions.

Higher levels of breathing capacity in professional opera singers were revealed in research conducted by Thomasson and Sundberg (1999). Breathing patterns were measured by lung volume behaviour and thorax control across three performances of the same aria. Highly skilled opera singers displayed more consistent breathing patterns when repeating the same music a number of times indicating professional singers engaged in optimized breathing patterns.

Similar findings were supported by Sandgren (2002) in one of her studies contributing to her dissertation. She examined professional and amateur singers during a singing lesson. Statistical analyses of ECG measurements showed professional singers were more in control of their singing in terms of controlling breathing and muscles compared to amateurs. Professionals also demonstrated evidence of more cardiovascular fitness. For a detailed review and critique of the four studies comprising Maria Sandgren’s dissertation please see Appendix A.

Earlier research has indicated no significant gender differences exist in the area of breath management of classical singers (Watson & Hixon, 1985, 1990). Yet more recent research conducted by McCoy (2005) contradicts these findings. He examined potential gender differences in the self-perceptions of singer’s physical actions associated with breathing. Fifty-five subjects (38 female, 17 male) were surveyed, and questioned regarding the extent and significance of thoracic and abdominal activation for inhalation and for the breath management required to sing long phrases. Both male and female subjects communicated the concentration of low thoracic movements to ensure adequate breath control for singing. Gender differences
emerged in the results with reports indicating female participants focussed breathing efforts lower in the body. It is possible men and women engage in breathing for singing in much the same way, but due to anatomical differences, the self-perceived sensations associated with breathing may be experienced differently.

Limitations of the research conducted by Sandgren (2002) and McCoy (2005) were found in the selection criteria of their participants. Both groups consisted of an amalgamation of professional singers, singing teachers, and singing students. The use of such a varied sample comprised of such varied levels of vocal proficiency and singing experience may have caused discrepancies in the results. In future studies it would prove useful to use a more homogeneous sample.

Professional singers speak frequently about having adequate breath support and control while singing. Soprano Renée Fleming (2005) addressed the necessity for an advanced vocal technique. She articulated that muscle isolation and coordination are critical in producing optimal sound and in sufficient projection to fill a large opera house. The findings of Sandgren (2005) confirm Fleming’s beliefs: “Vocal ability defines the skill level of an opera singer…the professional opera singer needs to have a voice that carries enough power to be audible in large opera houses” (p. 37). Respected tenor Luciano Pavarotti (1981) also credited the mastery of breath support and control as key factors in his professional performance success: “If you

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6 For singing, adequate breath support refers in part to the “…dynamic relationship between the muscles of inspiration and expiration to control pressure in the air supply to the larynx…The amount of air taken in during inhalation and its pressure during exhalation is support” (McCoy, 2004, p. 93).

7 In the interests of professional technical acuity in singing, this term refers to the rate at which air escapes the glottis and the maximum phase of duration that can be sung (McCoy, 2004, p. 93).
develop it correctly [breath support and control]...you can sing for far longer in one evening and in one’s life without signs of vocal strain” (p. 129).

Research examining the patterns of breath support of professional opera singers in relation to levels of projection was conducted by Thorpe, Cala, Chapman, and Davis (2001). Results confirmed factors of breath support provided the needed assistance in projecting the voice over an orchestra. Findings also concluded that well-developed muscle memory at the inspiration phase and a concentration of the singer’s formant are integral factors in the vocal production and projection required of professional opera singers.

Similar conclusions were reached in Sandgren’s (2005) research examining factors involved in becoming an opera singer indicated, “In order to meet the expectations and standards set by the opera world, opera singers need to excel in their singing technique...It enables singers to sing at a high level with expressiveness and precision, and to sing satisfactorily despite adversities such as colds or performance anxiety” (p. 65).

The necessity for singers to possess technical acuity involving vocal stamina and flexibility in response to performance demands is supported by the work of Vurma and Ross (2000). Findings indicated advanced levels of vocal production are essential in the successful delivery of the character of the music, the drama, and to remain audible in taxing performance conditions.

It is clear from review of the literature above professional opera singers require advanced technical skills in the areas of breathing and vocal production to maintain consistent performance levels. Research examining the potential benefits for singers to foster health and wellness practices contributing to optimal vocal and performance outcomes will now be presented.
Health

Little research in the area of health relating to performance excellence has been done involving the specific sub-group of professional opera singers. The few studies that have been done have focused on personality (Kemp, 1996; Sandgren, 2005), stress and personality (Marchant-Haycox & Wilson, 1992), and on medical problems (Phyland, Oates, & Greenwood, 1999; Sataloff, 2006).

More recent studies investigating health problems and behaviours of musicians have used student participants (Ginsborg, Kreutz, Thomas, & Williamon, 2009; Williamon & Thompson, 2006). The use of student subjects is often more convenient, easier to access, and provides a larger sample size, yet the transferability of findings to professional artists is questionable. Although the findings of the aforementioned studies are not necessarily applicable to professional opera singers, research into the health and wellness of musicians is warranted. I support the recommendations made by Chesky, Dawson, and Manchester (2006) that music schools should include occupational health courses in the standard curriculum providing potential benefits to both instructors and students. The introduction of education on health and wellness specifically targeting music students may allow for more positive and healthy approaches to music-making throughout a musician’s life time.

In the research of Ginsborg et al. (2009) results indicated music performance students scored significantly lower in the areas of health responsibility, physical activity, and spiritual growth in comparison to non-music performance students. Gender differences emerged that indicated female participants (both music and non-music students) scored significantly higher than male participants in areas dealing with interpersonal relations, health responsibility, and
nutrition, whereas male participants responded higher in the areas of self-efficacy. A potential weakness in this study is the choice of data collection methods. With the use of questionnaires the potential for participants to provide idealized accounts of their behaviours is an issue. Perhaps in the future a mixed-method study would prove more beneficial in the accruing of data sets indicating actual behaviours participants put into practice.

Due to the lack of research attention paid specifically to professional opera singers, Sandgren’s (2005) research proved particularly useful, specifically in her factor analysis on items pertaining to the health-promoting strategies professional opera singers implement to ensure performance consistency and excellence. In a portion of her study, Sandgren (2003) identified five factors including a) relaxation exercises, b) avoidance behaviours regarding alcohol, smoke, and loud noise, c) use of herbal medications, d) relaxation in reference to sleep behaviours, and e) avoidance behaviours where singers could be contaminated with illness as the main health-promoting strategies utilized by the 49 professional opera singers participants within her study (See Appendix A for a full review). These findings are contrary to the results of Ginsborg et al. (2009), and indicate at professional levels, opera singers do implement health and wellness strategies to ensure consistent performance outcomes. Sandgren’s results support my argument for the necessity to use professional singers who are actively performing as participants when investigating factors relating to performance excellence.

In her recent dissertation, Nichols (2010) sought to discover the impact of overall health in relation to perceived performance effectiveness of professionally managed classical singers. She collected data from an online survey sent randomly to 227 singers, which contained 30 questions investigating vocal hygiene habits of participants. Unfortunately the response rate was
so low (21.6%) no conclusive empirical evidence was obtained regarding specific dietary and exercise practices, or consistent health regimes to maintain perceived performance effectiveness. A flaw in this research inquiry was in the selection of the participant sample. The stated criteria of professional management as a determinant of performance levels of professional singers contained too wide a range. For example, out of the 49 participants who did respond, only 25 were full-time professional singers. Levels of experience ranged from 5 to 40 years, and the ratio of male to female respondents was not consistent. From a research methods perspective the desire to use a random sample is understandable, but perhaps not the best choice for eliciting the intended data. When attempting to ascertain personal health behaviours of a specific sub-group (professional opera singers), the use of an “insider” perspective may yield a much higher response rate. Greater specifications and parameters of participants should have been applied for a more consistent sample and reliability of findings.

Although little systematic research has been conducted investigating the skills necessary for professional opera singers to remain physically and mentally healthy, the rigorous demands of professional performance requires singers be healthy to (a) maintain their instruments, (b) ensure career longevity, and (c) consistently deliver high level of performances. The next section will review literature pertaining to health and wellness involving diet and exercise for singers.

**Diet and Exercise**

In reference to overall health considerations for singers, Sataloff (2006) articulated “laryngeal and vocal health cannot be separated from general health and longevity” (p. 99). Increasingly, health status and longevity have been linked to lifestyle choices involving diet, smoking, and exercise (Beasley & Swift, 1989; Shils & Shike, 2006).
The potential benefit of exercise in relation to the achievement of high levels of music performance was conducted by Wasley and Taylor (2002). They investigated the effects of regular and single sessions of exercise to determine the possible benefits for optimizing performance levels of conservatory music students. Findings indicated exercise training appeared to be valuable in the reduction of the physiological symptoms of stress experienced in performance. With increased fitness, both heart rate and blood pressure measurements were reduced during performance. Results also suggested when an active response to a stressor such as a live performance is required, higher levels of fitness resulted in a regulation of anxiety levels. Further findings indicated that after acute exercise participants preferred their performances, experienced less anxiety before performances, and measured lower blood pressure scores pre-performances.

Sataloff (2006) noted “Singing and acting are physically demanding activities” (p. 99). Considering singing involves engagement of the whole body, Saxon and Schneider (1995) argued the same principles used for the development of training in sports could also benefit the training required for high levels of vocal performance. They subsequently produced a book with the goal to enhance and maintain performance excellence in voice incorporating training principles of exercise physiology, while the writings of Henderson (1979) emphasized the importance of specific exercises that addressed the proper posture needed for the facilitation of advanced vocal production in classical singers. More recent research addressing postural issues was conducted by Williamon and Thompson (2006) who argued the need for training and knowledge in the area of good posture in practice and performance to avoid physiological discomforts associated with poor posture with the goal of improving health benefits and practices
for students starting at the undergraduate level. Postural alignment is imperative for singers to ensure optimal vocal production (Schneider, Dennehy, & Saxon, 1997).

Recommendations in the areas of health and good vocal hygiene for the professional voice Haas (1992) advised eating a balanced diet, including fruits and vegetables contributes to appropriate levels of fluid and fibre intake. In consideration of good vocal hygiene, Haas recommended: drinking water throughout the day, engaging in periods of vocal rest, avoiding alcohol, dairy products, carbonated beverages, caffeine, chocolate, high fat and spicy food, and ceasing to eat 4 hours before bed for the maintenance of good vocal production and in the avoidance of suffering from GERD.

Affirmation of the findings and recommendations above can be supported by reports made by professional opera singers themselves. In a recent interview, tenor Joseph Calleja articulated the importance of a healthy lifestyle as it relates to the maintenance of his performance excellence. The interviewer, Philips (2010), reported: “He never sings when his voice is sore or inflamed...he looks after himself physically...he does have to watch his weight...He also works out regularly with a professional trainer”(p. 8). In their biographies, both Fleming (2005), and Pavarotti (1981) confirmed adherence to the above health considerations as major contributing factors to their maintenance of performance excellence in opera.

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8 Vocal hygiene is the term used for the use and care of the human voice required to keep it healthy (www.lionsvoiceclinic.umn.edu).

9 Gastro Esophageal Reflux Disorder: Acid from the stomach refluxes back up through the esophagus and spills over onto the larynx. This can irritate the vocal folds and create inflammation, which causes the vocal folds to vibrate unevenly (McCoy, 2004).
In the recent research of Braun-Janzen and Zeine (2008) findings concluded professional singers exhibited high levels of interest in the area of vocal health and hygiene, while the earlier work of Lawrence (1982) reported the need for constant hydration for professional opera singers in the maintenance of good vocal production. “Singers need moist vocal folds and should develop the habit of high liquid consumption, partially because of the loss of liquid from perspiring in costume, under heavy lights, in demanding roles” (p. 25).

Supplementing the literature in this section, opera singer Christa Ludwig articulated the importance of maintaining overall health and wellness as it relates to optimal vocal and performance outcomes. “The singer is at the same time, both the instrument and the virtuoso. [For a singer] to take care of his voice is to take care of himself” (Domeraski & Ludwig, 1999, p. 222).

Systematic research is still limited in the area of health involving: diet, proper hydration, and exercise, as key skills necessary to sustain performance excellence in professional opera singing. The cultivation and regular application of these skills are essential for professional opera singers to maintain overall health and wellness contributing to optimal technical and performance outcomes. A well-developed singing technique is also necessary for both advanced levels of operatic vocal production and in projection levels required for unamplified performances. Although the brunt of this intended research is not pedagogically driven, it is important to define what is meant by advanced levels of vocal production, as professional singers commonly include technical aspects of their singing when referring to issues addressing performance excellence. For the purposes of this dissertation, the term “advanced levels of vocal
production,” commonly called “technique”, will include aspects of: advanced breathing patterns, muscle memory, increased cardiovascular fitness, and concentration of the singer’s formant.

**Deliberate Practice**

No research currently exists examining the deliberate practice strategies employed by the specific sub-group of professional opera singers. The following review of literature exploring deliberate practice behaviours in musicians has been largely conducted with student participants and to lesser extent professional instrumentalists (Chaffin et al., 2002; Chaffin et al., 2010). The exception can be found in the work of Ginsborg et al. (2006), a classically trained singer, primarily working as a professor and researcher in music.

Previous research on the achievement of music performance has revealed soloists differed from professors in their journey of music development on a multitude of factors including: amount of time spent daily with each instrument, deliberate practice, and in the organization of daily activities to accommodate for practice (Sloboda, Davidson, Howe & Moore, 1996). With these retrospective studies in mind it is clear that future research conducted by professional working singers is necessary for the greater understanding of the deliberate skills cultivated in the sustaining of performance excellence in opera.

**Deliberate Practice Research with Music Students**

The term “deliberate practice” was first conceived in the research of Ericsson et al. (1993), in the examination of the practice habits of violin students. The participants in this study varied in both degree programs and levels of proficiency. The inquiry focused on amounts of practice time accumulated up to the point of entry into a music academy. Findings revealed
amounts of practice time were related to the level of degrees attained. By the age of twenty, the most successful musicians had accumulated over 10,000 hours of practice; similar to that of current professionals employed in orchestras, and had averaged 2500-5000 more hours of practice than the other less accomplished students. This study laid the groundwork for important research in deliberate practice, although the use of student participants is questionable. Insight from student participants may not be transferrable to the practice habits and performance outcomes of professional artists, particularly in the case of singers, who are not able to physically practice comparable amounts. Support for this argument is provided by Lehmann and Gruber (2006) “...experts might be most competent in selecting proper practice. At younger age levels...practice may not be as efficient, and a smaller amount of practice is accumulated” (p. 459). Lehman and Gruber went on to argue that at the student level, general music ability may supersede deliberate practice strategies in the achievement of performance excellence.

By replicating the Ericsson et al. (1993) study, Sloboda et al., (1996), sought to address the potential explanation of talent versus amounts of practice times relating to performance levels. The participant group consisted of instrumental students ranging in ages from eight to eighteen. Teachers rated levels of music achievements in their students. Participants were then interviewed to examine their practice histories. Results indicated the greatest predictor of advancing levels of performance was amounts of practice time. Thus, supporting the previous results of Ericsson et al. (1993), indicating even in early music learning stages it appears amount of practice time is related to higher performance levels.

Similarly, Jørgensen (2002) examined the relationship between amount of practice and levels of achievement in vocal, instrumental, and church music conservatory students. Results
indicated practice appeared to improve music development overall and was positively related to high examination grades. It was also found singer participants practise significantly less than instrumental performers. This finding is most likely indicative of the limited amount of hours the human voice can be used to maintain healthy vocal function. It is not clear if mental practice was considered in the measurement of practice times recorded by students via the questionnaire. This is viewed as a serious limitation, specifically when examining the practice behaviours of singers. Therefore, the findings of Jørgensen may not accurately represent amounts of practise time singers reportedly engaged in.

The Ten-Year Rule

When addressing the amounts of practice necessary to achieve professional levels of music performance, it has been established a minimum of 10,000 hours of individual practice is necessary to accrue the necessary skills in the areas of: learning, refinement, and maintenance (Davidson, Howe, & Sloboda, 1997; Ericsson, 1997; Ericsson, Krampe, & Römer, 1993). The research of Sosniak (1985) has indicated an even longer period, on average 17 years, before reaching professional levels of performance acuity. When considering these results it is integral to determine what types of preparation skills are most effective when dealing with the technical and musical development of classical vocalists. Even after elite levels of skills have been established, continued honing of practice skills is needed to sustain performance excellence (Krampe & Ericsson, 1996).

Further support negating the original “ten year” rule, or the equivalent of ten thousand hours of practice, was noted by Ericsson (2006) regarding the number of years required to become an internationally acclaimed performer; “for example, elite musicians...need closer to
twenty to thirty years of training and often peak when they are around thirty to forty years old” (p. 689). This is most certainly the case for professional opera singers when considering, commencement of singing lessons on average starts much later and the extra time that is required for physical maturation of a singer’s instrument.

**Bloom’s Expertise Theory**

In the investigation of performers that reach international-levels of performance, Bloom (1985) demonstrated developing talent evolves through three distinct stages: the first involves the importance of play and a positive teacher in the specific music domain the child engages in: the second is “a long sequence of learning activities that involves high standards, much time, and a great deal of hard work [engagement of deliberate practice skills]” (p. 508): and the third comprises learning experiences that strengthen motivation and commitment that in turn sparks a dedication to a professional career in music. Although Bloom’s research samples did not represent singers, findings may prove valuable in their application to the positive development of classical singers from early stages of learning to elite levels of professional performance.

Building on Bloom’s stages of musical development, Krampe and Ericsson (1996) created a fourth stage, termed “eminent performance,” delineating the attainment of performance levels above expert levels by augmenting previous performance levels with the addition of interpretive, technical, and stylistic elements of the highest order. When considering amounts of deliberate practice necessary to maintain performance excellence, research conducted by Williamon and Valentine (2000) indicated a musician’s familiarity of a particular piece or musical style influences practice times. Over the course of a professional operatic career, most singers will specialize in a particular period or style. Examples of this include vocalists who are
known as “Verdi” or “Wagner” specialists. With this in mind, the necessity for a set number of practice hours may decrease as an operatic performer becomes more learned and experienced in a particular style of performance practice.

**Deliberate Practice Research with Professional Musicians: Memory, Mental Mapping, and Performance Cues**

Some of the most beneficial research regarding the practice strategies used by professional artists has been generated by Chaffin and colleagues (Chaffin & Imreh, 2001, 2002; Chaffin, Lemieux, & Chen, 2006; Chaffin et al., 2010; Ginsborg & Chaffin, 2011). Memory is an essential component of professional art music performance. A necessary component of deliberate preparation skills involves the development of a memory retrieval system (Chaffin, Logan & Begosh, 2009). Awareness of the structure of the music provides the base for an organized hierarchical retrieval system including the development of performance cues that can be applied during performances serving as reference points in the mental mapping of a score that can contribute to consistent performance levels (Chaffin & Imreh, 2002; Williamon & Valentine, 2002).

Specific types of performance cues have been determined by the above-mentioned researchers as follows: **Structural cues**: outlining the formal structure of a piece in terms of section boundaries. **Basic cues**: developed for technical mastery and identification of patterns. **Interpretive cues**: referring to phrasing, changes in tempo, and dynamic range requirements. **Expressive cues**: consisting of the musical feelings of the piece conveyed to the audience, and **Shared performance cues**: agreed upon cues between collaborating artists (Chaffin & Imreh 2002; Ginsborg et al., 2006). Recent research by Chaffin, Logan, and Begosh (2009), introduced
the terms “serial chaining,” as a type of memory retrieval system experienced music performers develop automatically during practice without concerted effort and “content-addressable access;” which describes the deliberate cultivation of memory cues from different starting points in the music to allow for a “safety net” (p. 5) if something goes awry in performance.

The groundwork for the longitudinal case study method was pioneered by Chaffin and colleagues in the areas of memory, identification of mental mapping, and performance cues, and began with his collaboration with concert pianist Gabriela Imreh in 1994. Support of the beginnings of this research continued in 2002 when Chaffin and Imreh employed a combination of verbal report and observation methodologies investigating the solitary practice of Imreh during her process of learning J.S Bach’s *Italian Concerto (Presto)* for performance.

Analysis of video and audio recordings of practice sessions in combination with Imreh’s reflections of her actions, thought processes, and subsequent appraisals of her progress suggested the process of learning a new piece at elite levels of performance could be divided into four distinct stages. In the first stage, Imreh sought to ascertain the “big picture” of the piece in its entirety to better determine practice strategies moving forward. The second stage of learning indicated primary focus on breaking down the piece into sections (structural performance cues) in order to attain mastery of technical demands and in security of memory. In the third stage, performance was prepared by putting together the sections and practising performances from start to finish. Memory is now deliberately enhanced by the implementation of a mental map of the piece, determining starts and ends of sections, and the building in of performance cues to establish retrieval points if memory slips did occur in performance (content-addressable access). At this stage, polishing of the piece and interpretive elements (interpretive and expressive PC’s)
were also attended to. The performer also simulated performance conditions, in concert attire and in varied locations. The fourth stage, usually between performances, consisted largely of performance level maintenance. Within the results of this study discrepancies were found in the comparison of the verbal reports identified in the various practice strategies communicated by Imreh and the analysis of practice. Observations indicated Imreh engaged in expressive and interpretive cues at earlier stages of practice than she reported.

Furthering the research above, Lisboa, Chaffin, Schiaroli, and Barrera (2004), examined the practice strategies of a high-level cellist (Lisboa). The researchers set out to determine the progressive strategies of practice and memorization through their observation of the preparation of a new piece of music for performance. Findings indicated Lisboa progressed through various stages of practice beginning with sight reading and attaining an overview of the piece, listening to the music, practising trial performances, and finally polishing the piece for performance. These findings support the previous findings of Chaffin and Imreh (2001) in the identification of various hierarchical learning stages and building in of performance cues. Results of both the research of Lisboa et al. (2004) and Chaffin and Imreh (2002) confirm the necessity to change practice strategies throughout the process of preparing for performance in order to progress to higher levels of performance most effectively.

The only known research involving the use of deliberate practice, memory, mental mapping, and performance cues with a former professional singer as a participant was conducted by Ginsborg et al. (2006). This study observed Ginsborg (singer) and a pianist-conductor (Nicholson) as they prepared for two performances of Ricerar 1 from Stravinsky’s Cantata (1952). The method of attaining data sets was secured through the video-taping of practice
sessions and performances and through content analysis of verbal reports made by the participants in their individual practice, joint rehearsals, and at the beginning and end of the rehearsal period. Building on the performance cues of basic, expressive, and interpretive cues delineated by Chaffin and Imreh (2002), Ginsborg analyzed transcripts generated from the practice sessions and grouped performance cues into five large categories (p. 177-178):

**Basic cues:** references to the score, dynamics, tempo, pauses, commas, breath markings, phrases and phrasing, rhythm, stresses, pronunciation, meaning, pitch and intonation.

**Structure cues:** notation of section boundaries, compositional structures, and repeat of similar phrases.

**Interpretation cues:** largely collaborative cues, discussions surrounding vocal quality choices and phrasing between the singer and conductor, syllables to be stressed, length of pauses and commas, and changes in tempo and dynamics.

**Meta-cognition cues:** evaluations of work and requests for evaluations, expressions of affect (character), and comments regarding the rehearsal and research process.

**Performance cues:** annotated copies of the score after performances to show all cue markings, and locations of comments made in practice and rehearsals.

**Memory cues:** notations referring to memory.

Results indicated there were more meta-cognitive comments than any other type. In the first individual practice sessions, basic, structural, and performance cues were most noted. The conductor made twice as many comments as the singer in this first session which is not
surprising considering the number of instruments a conductor must be cognizant of. For the singer, structural cues were most used in relation to issues involving memory, while the conductor was more focused on identifying similarities and differences between musical sections. Joint sessions served to develop shared cues and coordinate their performance actions as a cohesive unit. Findings also indicated identification and knowledge of the structure of the performance piece provided a “hierarchical organization to serve as a retrieval structure and performance cues provided the retrieval cues to activate the upcoming passage in long term memory” (p. 189). This research illustrated the singer attended to performance cues in practice which actively aided in memory retrieval in performance and when she engaged in memory retrieval in the task of writing out the piece notating all previously developed performance cues. Ginsborg wrote out the entire piece over a five year period to assess the effects of performance cues on long-term memory retention (Ginsborg & Chaffin, 2011).

The research findings in the above section are particularly applicable to the deliberate preparation skills necessary for sustaining performance excellence in opera. It is imperative professional opera singers develop performance cues for memory retrieval in performances and for the potential performance benefits of shared performance cues between artists.

A limitation of the Ginsborg et al. (2006) study is the long-time husband-wife performance partnership of both authors Ginsborg and Nicholson, who “...gave their first performance together in 1974 and have since been duo partners” (p. 171). Ginsborg argued their long-term partnership did not affect the outcomes of this study and results would have been the same if other professional musicians who had not worked together previously were used as participants. This argument is debatable. Certainly high-level professional performers may share
the same performance goal outcomes and/or may develop shared performance cues. However, more often than not in the demanding world of professional opera, singers may not get sufficient rehearsal time with colleagues and/or the conductor to do so. Environmental conditions surrounding international performance demands are rarely ideal, and singers need to develop deliberate skills in their preparation to allow for all possibilities of performance demands. This research is beneficial as it served to extend the previous work of Chaffin and Imreh (2001, 2002) to include a singer participant and is of great contribution to the further understanding of the development of deliberate performance cues used by a classical vocalist that directly translated into positive performance outcomes.

Building on the previous research of Chaffin and Imreh (2002), and in the interests of focussing on potential spontaneous variances in highly prepared musical performances, Chaffin and Logan (2006) investigated seven highly prepared performances of the Italian Concerto, third movement (Presto) by J.S Bach, performed by concert pianist (Imreh). The researchers were interested in differences that may naturally occur as a part of repeat performances of the same piece, not in the identification of deliberate interpretive choices a performer may intentionally make. The researchers hypothesized any spontaneous differences would be “...a product of the normal motor and cognitive processes responsible for performance” (p. 456). The seven performances took place at the pianist’s practice studio without an audience after the piece was learnt. Imreh appraised all seven performances as very much alike. Seeking to determine the degree of differences of various musical gestures in repeat performances, nine musical gestures were defined as: “deviations in tempo or mean dynamic level that were systematically related to musical features in the score” (p. 459). The musical features were determined by both researchers and from the previous analysis reports given by Imreh in 2002. Findings indicated
there were consistent differences in four of the nine identified musical gestures. Points at which
the pianist reported focussing on technique in performances resulted in slower tempi and lower
dynamic range, allowing for heightened control of the technical demands required.

This study is significant as it produced the first direct evidence that basic performance
cues were used by a professional musician to control aspects of technique in a performance.
Slowing at basic cue markings and decrease in dynamic variability suggested to researchers that
basic performance cues were a source of stability for Imreh. The purpose of this study was
strictly scientific, “to understand the motor and cognitive system that produces musical gestures”
(p. 469). The researchers sought to demonstrate variances of the musical performances as
indicative of the interplay between flexibility and stability on the part of an expert performer.
When Imreh required precise execution of technical demands, she implemented basic
performance cues “by training herself to monitor critical movements” (p. 470). In contrast Imreh
illustrated more flexibility when attending to various musical gestures. Researchers concluded
this high-level musician controlled variations of her performances both to achieve desired
aesthetic goals and accommodate for technical demands.

It is important to include quantitative methodologies when building a significant bed of
research in the area of highly skilled performance practices used by professional musicians. A
limitation of such research is the lack of transferability to live performance practice. The defined
“performance environment” was set in a rehearsal studio with no audience. The use of the
rehearsal studio allowed for the most consistent and similar conditions possible. In live
performances, musicians are required to mediate for environmental factors that may affect
performances that are not present in a controlled experimental setting. In the interests of
delivering consistent performances, six of the seven performances were recorded in one day. For other types of musicians this would be impossible to replicate, thus delimiting the findings to a specific sub-set of instrumentalist. Second, this was a single case study; therefore replications must be done with other high-level musicians to support these findings.

It was interesting the researchers argued the convergent findings of the basic cues practised by Imreh were implemented in the same way as other case studies and cited the work of Ginsborg et al. (2006), suggesting “other experienced musicians may use similar strategies to keep their performances accurate while maintaining freshness and spontaneity” (p. 470). This is highly questionable as the repertoire examined in these two separate studies exists in two very different musical periods and environments. The performance and stylistic demands of a solo work by Bach performed in a controlled rehearsal environment cannot be compared to a collaborative work of Stravinsky performed live with an audience, and it is unknown how comparisons of these two studies were made.

Continuing the development of the longitudinal case study research in this area, Chaffin et al. (2009) extended their case study to a cellist, co-author Lisboa, as she video recorded her practice of learning the Prelude from J.S Bach’s Suite No. 6, and subsequent ten public performances of the work over a period of three years. In her reports, she outlined the overall music structure of the piece and identified technical and interpretive decisions along with five types of performance cues. Results provided a comprehensive empirical account of the preparation of a new piece to be performed by a professional classical musician. Lisboa indicated five successive stages of learning (p. 14):

*Exploration:* initial ideas
**Smoothing out:** addressing any technical challenges, section by section work

**Listening to the music:** engagement of trial rehearsals in a top performance venue

**Re-work technique:** listening to other professional performances of the same work, and returned to practice with new technical ideas

**Preparing for performance:** the putting together of all previous practice elements to make a complete performance

Ten months after the eighth public performance, Lisboa wrote out the score from memory. Recall accuracy was recorded at 52%. Results indicated expressive and structural cues provided the most readily accessible landmarks in the cellist’s hierarchical memory retrieval organization. Supporting previous findings (Chaffin & Logan, 2006), Lisboa used performance cues in her extended practice as part of a hierarchical memory retrieval system. The performance cues developed in practice also served as landmarks for expressive goals which aided in the shaping of the aesthetic goals of public performances (Chaffin et al., 2007). Contrasting the previous findings of Chaffin and Imreh (2002), Lisboa left technical work of difficult sections to the end and focussed earlier on interpretive elements. Although this study served to bolster the preparation for memorized performance with the use of performance cues research, the question remains how a high-level musician can prepare new works for performance without the engagement of some form of mental practice.

Although no use of mental practice skills were reported by Lisboa throughout her learning process, it is difficult to imagine, as she did report listening to other performances to inspire her own expressive and interpretive ideas. The simple addition of an auditory component
to the learning of a new piece of music potentially activates visual recall of the music score and
an increased familiarity of the overall structure of the work serving to expedite and reinforce the
learning process.

Seeking to extend performance cues research in vocal performance, Ginsborg and
Chaffin (2011) questioned if performance cues can arise spontaneously in live performance. The
singer (Ginsborg) documented the practice features in her re-learning of Schoenberg’s two songs
Op. 14 (1907-1908), first performed twenty five years ago, to her previous findings in her re-
learning of Ricercar from Stravinsky’s Cantata (Ginsborg et al., 2006). The goal of this research
inquiry was to evaluate the consistency of performance cues used by a performer in two different
musical works. Comparisons of the two data sets illustrated many thoughts in performance were
of previously developed performance cues in practice. Ginsborg reported “sole analysis of the
Schoenberg songs indicated a significant number of spontaneous thoughts during performance
represented new musical insights” (p. 140). The spontaneous performance cues indicated were
largely expressive and interpretive in nature which the singer attributed to her intention of
conveying the musical feeling and interpretation in performance and in her personal connection
to the two songs. Indications of the presence of spontaneous expressive and interpretive
performance cues in live performances by the singer (Ginsborg) extend the previous findings of
Chaffin and Imreh (2002). The singer also reported the experience of a “flow” state
(Csikszentmihalyi, 1990) in performances derived from her levels of preparation which provided
a freedom of focus on the musical feelings conveyed in the Schoenberg pieces.

A limitation of this research is the lack of ability to generalize findings. Another question
exists in how influenced the researcher’s practice and documentation of self-reports are informed
by her familiarity with the intended research inquiry. Although being an expert in a domain-specific task (development of performance cues in the aid of memory retrieval in performance) can also be viewed as a positive characteristic from which other less experienced musicians can learn from.

Even though questions were raised regarding the studies conducted by Chaffin and colleagues, the research contributions that have led to the greater understanding of how professional musicians learn and retain new repertoire with the use of performance cues which aid in memory retrieval are undeniable. Chaffin’s collaborative research involving professional musicians is unparalleled and serves as an inspiration to future researchers aiming to best investigate the practice and performance strategies used by expert musicians utilizing both quantitative and qualitative methods of inquiry. These research findings may also contribute to new curriculum of music schools with the intent of accelerating and improving the practice and performance strategies of young musicians.

When contemplating use of the term deliberate practice for my research inquiry, I took into consideration vocalists are required to produce sound, practice, and perform, in the absence of visual control over their instruments. In the absence of visual control and in consideration of the limitations of the human voice in relation to practice time, the term "deliberate preparedness" was created specifically for the analysis of my findings. This new term will encompass the greater array of skills employed by opera singers outside of the traditional “practice” room environment.

When approaching the question of what deliberate preparedness strategies professional opera singers use to maintain performance levels, there is no doubt mental practice skills are
implemented. Due to vocal limitations in amounts of physical practice time, and in consideration of demanding performance schedules, innovative skills are required to expedite the learning and review of large amounts of repertoire. The next section will review existing literature in the areas of mental imagery and mental practice research in music.

**Mental Practice and Imagery**

By definition, mental practice refers to the mental rehearsal of a specific task in the absence of physical movement (Richardson, 1967a, 1967b). In its application to music, Williamon (2004) added mental rehearsal for musicians “should be used to create or recreate an experience that is similar to a physical event” (p. 224). Singers, either consciously or unconsciously, engage mental practice skills every time they mentally map out a score before singing a note, when they hear the melody of an aria before singing it, or when they imagine themselves at curtain call after a successful performance.

Part of deliberate preparedness for professional opera singers must encompass mental practice skills. In her dissertation, Sandgren (2005) reported it was necessary for opera singers to acquire mental practice strategies to prevent voice overuse, tension, and possible injury, and to accommodate for situations where physical practice is not possible.

Although mental practice research has been examined in an array of disciplines, for the purposes of this section, only mental skills research involving professionals and music students will be presented. First, a review of research that investigated mental imagery practices used by professional musicians will be examined. This will be followed by a review of mental practice research in music performance practices utilizing music student participants.
An integral element of mental practice is mental imagery. Defined specifically in its application to music by Clarke and Williamon (2012) as the: “cognitive or imaginary rehearsal of a physical skill without overt muscular movement.” The researchers recommended: “The basic idea is that the senses – predominantly aural, visual, and kinesthetic for the musician – should be used to create or recreate an experience that is similar to a given physical event” (p. 3).

Previous research has indicated mental imagery techniques are often used in rehearsal and performance by professional singers (Bowes, 2009; Patenaude-Yarnell, 2003; Vennard, 1968). For vocalists, the development of imagery cues may include mental representations of: metaphorical, poetic, feelings, or concepts derived from the music that contribute to heightened levels of preparedness and performances (Averino, 1989; Bowes, 2009; Miller, 1996).

Three international opera singers, Maureen Forrester (Forrester & McDonald, 1986), Christa Ludwig (Ludwig & Domeraski, 1999), and Pavarotti (Pavarotti & Wright, 1981) have all asserted the necessity to rest their voices in order to maintain performance excellence. Further support for the use of imagery applied to high-level vocal function was verbalized by Renée Fleming: “I was learning to think in imagery that would affect involuntary muscles and cause the body to produce a healthy, even sound” (2005, p. 19).

**Mental Imagery Research with Professional Musicians**

One of the first research studies investigating the use of imagery by professional musicians was conducted by Truscheim (1987). Twenty-six professional orchestral brass players from five major symphony orchestras were interviewed regarding their use of mental imagery in various aspects of training, rehearsal and performance. Findings revealed the majority of these professional musicians used auditory, visual, kinesthetic, and tactile imagery in their musical
experiences. Truscheim reported participants regularly employed mental practice skills to augment physical practice and secure technically difficult passages, and when physical practice was not possible. Results also indicated participants used motivational types of images to enhance energy levels required for optimal performance. Limitations of this research can be found in Truscheim’s method of revealing the identity of his participants. Not only does this go against the basic ethical practices of research methods, the naming of participants may have resulted in idealized responses.

The use of mental imagery by professional singers was supported in Carter’s (1993) dissertational research. Participants consisted of eleven professional singers currently or previously active in the fields of opera, oratorio, or recital work. Through the use of interviews, Carter investigated a wide array of topics including mental imagery in aspects of vocal production, mental rehearsal, career preparation, and performance anxiety issues. Participants reported the development of imagery skills from an early age which continued into their professional careers. Many employed the use of metaphorical images first introduced by their voice teachers, in application to the development and reminder of proper postural alignment, breath management required for singing, development of advanced levels of vocal production, diction, and various aspects of expressive performance.

The validity of findings of this study was compromised when Carter revealed the identities of her participants. Subject anonymity is an integral part of the sound practices and procedures of Ethics Review and Standards when conducting research. It cannot be determined if participants actively shaped their responses in order to appear in an idealized version of themselves due to this breech in ethical research practice. Another conflict of interest and
potential risk to the reliability of data presented was discovered when it became apparent one of the participants had previously taught two of the other participants. Again, when confidentiality and anonymity are not provided, all results are called into question.

Similar problems were discovered in the dissertational inquiry conducted by Dominique Bellon (2006). She examined the potential benefits of the application of sport psychology techniques to professional musicians. Interviews of six performers from different fields were conducted, one of whom was a professional opera singer. An intended goal of this investigation was to compare the mental practices of the participants with the main principles of sport psychology. Although Bellon’s interviews produced robust recounts of how participants used specific types of imagery as defined by sport psychology texts, no review of sport psychology research was ever presented. Another questionable practice in the execution of this study was the naming of participants. Another flaw was the presentation of large amounts of quoted texts provided by participants with little analysis and interpretations made on the part of the researcher. The brunt of the research introduced by Bellon dealt with mental aspects of practice, preparation, and performance. Yet in the conclusion chapter she reported all of the participants used imagery in much the same way dancers and athlete’s implemented imagery work with little to support these findings. Further limitations of this research were found in the use of a very broad participant sample. Discrepancies in terminology also appeared, as Bellon frequently referred to imagery and visualization interchangeably with no attempts to discern between the various sensory aspects of imagery, including visual, kinesthetic, auditory, and metaphorical images. Nevertheless, this research can be considered part of the growing body of inquiry into the use of mental practices of professional musicians in their application to optimal performance experiences.
Similar in the application of a sport psychology framework, Bowes (2009) sought to identify and describe the use of imagery by professional vocalists in their efforts to achieve optimal performance levels based on previous research informed by sport psychology. An exploratory method was used in the semi-structured interviews of fifteen professional classical vocalists: ten females and five males, ranging in voice type and ages from late twenties to early sixties. Findings revealed vocalists reported the use of imagery in a variety of settings including: practice, pre-performance, at home, and when traveling. Bowes divided the imagery data elicited into six different types: execution, metaphorical, context, body-related, musical sound, and character/role images. Bowes reported that participants applied imagery: to enhance technical aspects of singing, in the embodiment of the opera character’s qualities, to enhance emotional aspects of performance, and communicate with the audience. Analysis revealed singers used visual, auditory, and kinesthetic senses, in their mental imagery practice.

Overall the research findings of this investigation provided rich data and analysis to the reader and proved extremely informative for professional voice researchers interested in the area of mental imagery. Limitations of this study included issues of sample population. Participants ranged in ages from their late twenties to mid-sixties. A narrowing of the criteria set for age, levels of experience, and principle genre of performance may have yielded more accuracy in the findings. Curious was Bowes’s lack of claim to a specific research methodology. She stated: “a basic interpretive qualitative research design was chosen for this study since the use of imagery, as defined by sport psychology, in professional vocalists was a relatively new and understudied area of research” (p. 123). The use of qualitative research methodologies is certainly most appropriate when little is known about an area of research (Bartel, 2006). Yet the absence of
identification of qualitative method and analyses employed in this research is viewed as a serious threat to the validity of findings.

**Summary**

Previous research has indicated musicians commonly engage in imagery as part of their typical learning and performing routines (Lehmann, 1997). The review of literature in this section has indicated the use of imagery as a form of mental practice and in performance can beneficial in: the solidification of technical acuity (Carter, 1993), enhanced expressive and interpretive understanding (Bowes, 2009; Connolly & Williamon, 2004), and when physical practice is not possible (Truscheim, 1987). The use of imagery was also reported to strengthen communication of operatic characters and feelings to audiences (Bowes, 2009). Further research in this area is warranted to garner greater clarity and integrity in findings and in the development of testing procedures aimed at defining and eliciting representative data more easily.

**Mental Practice Research in Music**

The use of mental practice in music has been explored in a number of experimental investigations. Studies have examined mental practice in relation to memory (Rubin-Rabson, 1941a, 1941b, 1941c, 1941d), mental practice and removal of auditory and motor feedback in relation to memory retrieval of new pieces (Finney & Palmer, 2003; Highben & Palmer, 2004), with the addition of an auditory component (Lim & Lippman, 1991; Theiler & Lippman, 1995), and in the comparisons of various combinations of physical and mental practice (Geerlings, 1998; Ross, 1985). Although the majority of the subjects used in these studies are students,
exploration of the literature and research surrounding mental practice in the domain of music can only inform and enhance research moving forward.

**Mental Practice and Memory in Music**

Research clearly supports the use of mental practice related to aspects of memorization skills for musicians. Rubin-Rabson (1941a, 1941b) conducted research requiring subjects to precede physical practice with mental practice in order to enhance memorization skills. Nine participants studied nine samples of unfamiliar piano music for three-, six-, or nine-minute segments. Following mental practice sessions they attempted in as few trials as possible to play the piece from memory. At the end of each study period the participants also attempted to transcribe the piece from memory. Two weeks later the piece was re-examined to determine the relationship between their retention levels of their corresponding pre-study.

Overall results indicated the use of mental practice was superior to physical practice alone in the retention of memorization. These findings are directly relevant to the practice strategies necessary to ensure performance excellence in singing. Opera singers are required to perform large amounts of music from memory and they have limited amount of hours possible for physical practice.

**Mental Practice and Removal of Auditory and Motor Feedback in Relation to Memory Retrieval**

Research conducted by Finney and Palmer (2003) supported the previous findings of Ross (1985), indicating the addition of both auditory and kinesthetic feedback to normal practice allowed trombonists to correct and adjust their performance accordingly. Finney and Palmer
measured the amount of time piano performers took to play a familiar piece from memory removing auditory feedback. Findings indicated total performance durations with the absence of auditory feedback were within 5% of the durations when pianists played the same piece with normal auditory feedback. This finding was not exclusive to highly prepared music. Researchers discovered when pianists practised a new piece ten times the removal of auditory feedback did not affect overall duration. When the auditory feedback was removed in the early stages of practice, later performances with auditory feedback contained many errors and were played significantly slower (p. 45). This indicated the absence of auditory feedback during the practice of a new piece did not affect the accuracy of play when the music was present, but it did hinder memory retrieval in later performances. In both studies, results indicated musicians were able to replace mental feedback for auditory feedback once sufficient practice allowed for the establishment of a mental representation.

Similarly, Highben and Palmer (2004) examined the effects of two types of mental practice in learning to perform a new piece for performance while varying auditory and motor feedback with the use of four different practice conditions. The participant group consisted of sixteen adult pianists with a minimum of six years of individual training, half of which were music majors at a major university. They were presented with four musical pieces composed specifically for the experiment, based on the compositional style of early Baroque organ works. Each piece was two measures long, and in different key signatures. Subjects played from notations during ten practice trials, and were instructed to mentally practice the missing feedback by imagining how the piece sounds or how the finger movements feel during practice. Participants were exposed to four different practice conditions: Normal: pianists moved their fingers over the keyboard while listening with headsets. Motor only: pianists practised on the
keyboard without auditory feedback. *Auditory only*: pianists were instructed to hold their hands loosely in a fist position while listening to a computer-generated recording of the piece and were instructed to imagine what the finger movements would feel like. *Covert*: both auditory and motor feedback were absent: participants were instructed to imagine what the piece sounded like and how the finger movements would feel while they sat silently with their hands held loosely in a fist position. After the practice trials participants performed the pieces from memory under normal conditions.

Results indicated both auditory and motor forms of practice facilitated the pianists’ subsequent performance from memory of new music. Removal of auditory or motor feedback in practice conditions resulted in the occurrence of significant memory errors in performance. Not surprising, memory recall was the worst with the absence of both auditory and motor feedback. Participants identified with strong aural skills were the least affected by the absence of auditory feedback. This research suggests auditory forms of mental practice, “imaging how the piece sounds,” assisted the pianists in this study in the learning of new music.

Although these two studies involved instrumentalists, their findings are of interest in the support for the use of auditory and motor feedback in the reinforcement of the accurate and expedited learning of new repertoire and in their contribution to memory retention for opera singers. In the current international landscape of opera, it is not uncommon for singers to be involved in more than one opera production at a time in two different geographic locations. With these intense performance demands placed on opera singers, mental practice skills must be cultivated in the interests of preserving healthy vocal function and expediting the learning and recall of the music and stagings of multiple operatic scores.
Mental Practice with an Auditory Component in Music

A study conducted by Lim and Lippman (1991) employed mental practice with the addition of an auditory component to potentiate further enhancements to mental practice for musicians. In this study, seven piano majors at the university level, ranging from undergraduate to graduate level, were asked to use visual, auditory, and kinesthetic images in their practice sessions. Three practice conditions were compared: mental practice, mental practice with listening, and physical practice. Two independent judges rated the taped performances in areas of note and rhythmic accuracy, phrasing and dynamics. Similar to the findings of Chaffin et al. (2009), results indicated practice with a listening component contributed to the attainment of interpretive and expressive dimensions in performance. It should be noted in the study conducted by Lim and Lippman (1991) addition of an auditory component was applied at early stages of learning. It could be argued that listening to “ideal performances” may prove detrimental in later stages of practice in the individual interpretation of a piece of music in student participants who have not reached expert levels of deliberate practice skills.

Theiler and Lippman (1995) conducted research that examined combinations of physical practice, physical practice with mental practice, physical and mental practice with an auditory model, and a baseline group with seven guitar and seven voice majors in an undergraduate performance program at the University of Western Washington. Results indicated that the combination of physical and mental practice were superior to all other groups in the areas of pitch accuracy and memorization abilities in guitar performers. Voice findings illustrated the

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Kinesthetic imagery is a type of image in which the practitioner experiences the feelings and sensations of movement (Sisterhen, 2005, p. 43).
combination of physical and mental practice with the addition of a listening component increased the quality ratings in pitch accuracy, dynamics, tempo, tone quality, and memorization ability. Participants responded positively to mental rehearsal conditions and many reported their intention to use mental practice more often in future practice. These findings support the necessity of the application of mental practice in combination with physical practice and use of an auditory component in the achievement of higher levels of performance in student vocalists.

**Combinations of Mental and Physical Practice in Music**

Ross (1985) conducted a study to examine the effectiveness of mental practice in the improvement of trombone performance. In this research, thirty trombone players from three colleges were randomly assigned to five experimental practice conditions: (1) physical practice, (2) mental practice, (3) a combination of physical and mental practice, (4) mental practice with simulated body movement, and (5) no practice. Analysis of the data suggested the use of mental practice in combination with physical practice increased initial learning of a piece and reduced the number of errors made in subsequent performances of the piece in later trials. Although this study did not involve classical vocalists, one could argue the enormous benefits of the combination of mental and physical practice for opera singers, particularly in its application to the practice and review of music and stagings of operatic productions that need to be assimilated quickly.

Geerlings (1998) also examined the most productive combinations of mental practice skills. Twenty pianist and organists were studied and divided into groups using four different practice components: physical, mental, a combination of physical and mental, and no practice. The effectiveness of the different types of practice were determined by comparing pre- and post-
test scores in the areas of performance duration, rhythmic and pitch mistakes. The combination of mental and physical practice was proven most effective specifically in the area of pitch accuracy. This is an important finding relating to the performance practice of opera singers, considering pitch accuracy is a fundamental requirement for performance excellence in singing.

Although previous research has indicated physical practice is superior to mental practice when both are used exclusively, findings have also indicated mental practice alone is more effective when compared to no practice (Coffman, 1990; Geerlings, 1998; Ross, 1985; Wirt, 1992). These results are particularly important for musicians who are suffering from injuries or are unable to practice for other reasons such as vocal fatigue or environmental factors. These studies also indicated the alternation of mental practice with physical practice yields superior results when compared with mental practice alone. Additionally the groups of participants in the aforementioned studies who implemented mental and physical practice in combination achieved the most successful outcomes, proving them to be an effective tool in the overall improvement of performance levels in the areas of pitch accuracy, dynamics, tempo, tone quality, and aspects of memorization. As noted by Sisterhen (2005), the necessity to acquire mental practice strategies is twofold. “...first, too many hours spent practising at one’s instrument can lead to overuse, tension, and possibly injury. Secondly, musicians often find themselves in situations where they cannot practice their instrument” (p. 130). This assertion is especially true for professional opera singers who must mediate the amounts of voice use and who are often travelling and in situations where physical practice is not possible.

In consideration of the literature presented in this section, the definition of mental skills for this research inquiry will include aspects of mental skills and mental rehearsal strategies in
the absence of vocal production including the development of “mental mapping,” and performance and imagery cues.

In sum, the engagement of mental skills practice can only benefit musicians in learning new repertoire, expediting the learning process, enhancing aspects of memorization, and in the avoidance of practice- and performance-related injuries. To date, mental practice studies have been performed primarily in experimental conditions with music students. In these studies, participants, content, and removal of all relevant live performance conditions potentially modified the musician’s behaviours and subsequent results. The benefit of future investigative inquiries into the mental skills professional artists cultivate and implement in their natural practice and performance environment can only yield richer and more complex sets of data. This would provide a fuller picture of the extent to which mental skills enhance preparation and performance outcomes.

The final section of this literature review will establish an introductory explanation and definition of the construct self-efficacy, and will then present research investigating the relationship of self-efficacy beliefs and music performance outcomes.

**Self-Efficacy**

Professional opera singers are constantly making and executing deliberate practice and performance decisions based on previous experience, awareness of the situational environment, and the beliefs in their own capabilities to perform the required task at hand. The importance of an individual’s attitudes and beliefs as they relate to a given task compelled Bandura (1977,
1984, 1986) to introduce and define the term “self-efficacy” as “the conviction that one can successfully execute the behavior required to produce the outcome” (p. 193).

Self-efficacy is task specific even within the confines of a certain domain (Bandura, 2006; Pajares, 1996). For example, an opera singer may possess feelings of self-efficacy regarding his or her belief in the ability to execute floating high notes, but may not have the same beliefs regarding his or her ability to spontaneously ornament and execute advanced coloratura passages in performance. As Ritchie and Williamon (2011) point out “…a strong sense of self-efficacy enables a person to engage in more complex cognitive processes, set more hierarchical achievable goals, and exercise control over stress in difficult situations” (p. 2).

Two distinctions regarding self-efficacy in relation to learning and performing have been established. Self-efficacy for learning is defined by the belief of an individual to acquire the appropriate skills and knowledge base for a specific task (Ritchie & Williamon, 2011). Beliefs of self-efficacy related to performing a particular task are contingent upon previously acquired sets of skills (Schunk, 1996). These two different types of self-efficacy serve to support one another. More specifically, as an opera singer learns and acquires the specific skill of singing advanced coloratura passages in practice (learning self-efficacy), and then successfully executes this skill in performance, levels of performing self-efficacy are established, and the cycle continues.

An important distinction between high and low achievers in a domain-specific discipline is resilient self-efficacy. Bandura (1977) articulated when a person possesses a strong sense of self-efficacy based on personal mastery experiences they are more resilient to failures, able to rebound more quickly from difficulties, and assess how they might perform better in the future by changing strategies, altering environmental conditions, or seeking assistance.
Implications of Bandura's research and writings on self-efficacy are significant for musicians. His suggestion that successful task completion requires the belief that an individual is capable can be applied to the learning and performing of music performance tasks. Maintaining high levels of performance requires the belief that one can complete performances effectively through the execution of complex combinations of specific skills. Zimmerman (1995) proposed people with higher levels of self-efficacy will perform with greater motivation, effort, and persistence on harder tasks. The interrelation of self-efficacy beliefs, motivation, and persistence as they relate to maintaining performance excellence is further developed in the writings of Tripp (2001) who suggests efficacy beliefs influence goals, levels of effort, and resiliency to obstacles, disappointments and perceived failures.

In the early goings, researchers attempted to test predictors of academic success in student performance on math examinations (Pajares & Kranzler, 1995; Shunk & Pajares, 2001). One might expect superior mental ability in academic tasks to be the strongest factor in successful test results. Both of these studies revealed that self-efficacy beliefs were as powerful a predictor of academic performance in math as intellectual ability. The findings of this research are interesting in the potential transference to other domain specific tasks. For example in a hypothetical comparison of two highly skilled professional sopranos who both specialize in the same operatic roles. At a certain level of performance achievement, all professional opera singers exhibit high levels of skill specific proficiency. Yet if those two sopranos were competing for the same role in an upcoming production at a top opera house, previous self-efficacy research would indicate, the soprano with higher self-efficacy beliefs may have the upper hand in achieving a more positive audition outcome. This becomes relevant in the interests of creating strategies to enhance self-efficacy beliefs in singers at all stages of development.
The next section will present self-efficacy music research in its inquiries of the role of self-efficacy to music performance in the area of motivation (McCormick & McPherson, 2003; McPherson & McCormick, 2006), aspects of learning and use of practice strategies (Nielson, 2004), and in the interests of measuring distinct types of self-efficacy (Ritchie & Williamon, 2011).

**Self-Efficacy Music Research**

McCormick and McPherson (2003) conducted the first known study of the role of self-efficacy in a music performance setting utilizing 332 instrumentalists. Students ranged in age from nine to eighteen. The subjects were all completing graded performance examinations that were externally assessed. In the exams, subjects were required to perform technical exercises and studies from a graded syllabus in front of a trained professional examiner who provided marks ranging from unsatisfactory (below 65), a pass (65–74), a merit (75–84), or a distinction (85 or above). Self-efficacy levels were measured prior to the examination with one item: “I have fully mastered the requirements for today’s examination” (Ritchie & Williamon, 2011).

The expressed purpose of this research was to focus on aspects of musical learning for examinations. Results revealed self-efficacy was the best predictor of actual performance levels. Although findings in this study acknowledged music practice plays a role in the development of a music student’s abilities to perform well, the researcher concluded “music practice should not be considered in isolation from motivational and related variables [self-efficacy beliefs]” (p. 11). Results suggested that the relationship between self-efficacy and performance quality appeared to be consistent with previous research findings in other disciplines (Pajares, 1996; Pintrich & De Groot, 1990; Zimmerman, 2000).
The major research contribution of this study was the finding that high-levels of self-efficacy are the strongest predictor of graded performance examinations. Unfortunately during the time this study was conducted there was no research measurement in place to ascertain how these participants’ came to believe in their music performance abilities. The researcher’s decision to measure self-efficacy based on the student responses to one research question is seen as a serious weakness. Furthermore, the graded judgments of a sole adjudicator are subjective. With any large-scale exam, adjudicators are trained in assessing prescribed musical benchmarks of the student performers, although it is difficult to ascertain the sources of high levels of self-efficacy in relation to potentially subjective examination scores. Were levels of self-efficacy a product of previous positive examination outcomes? Was it the result of psycho-social environmental factors? How seriously did the students take the question? The facilitation of longitudinal research investigating the role of self-efficacy in predictions of music performance outcomes is warranted in the interests of garnering more reliable test measurements and data sets with which to draw more definitive conclusions.

In the extension of the 2003 study, McPherson & McCormick (2006) attempted to build on previous research findings and examine the role of motivation in music student’s abilities to prepare for and successfully complete prepared examinations. The research questionnaire was adapted to include five questions about specific areas of the graded examinations: technical work, sight-reading, performance pieces, aural ability, and general music knowledge. Although the researchers attempted to improve the method for assessing self-efficacy beliefs, each of the five separate tasks were still represented by one question. This is once again seen as a serious limitation in the accurate measure of the self-efficacy beliefs of the participants. The researchers used a larger sample group, preparing for a different exam, administered by a different
organization in the interests of enhancing the “robustness of findings” (p. 324). The participant sample consisted of 446 music students, ranging in ages from nine to nineteen. Females outnumbered males by almost half. Results reinforced the previous findings: self-efficacy was found to be the most important predictor of achievement in examinations.

Often, examinations are a source of stress for students therefore it is important to attain data eliciting the potential factors that contribute to high levels of success in these graded examinations. There was no mention of whether gender played a role in the levels of self-efficacy beliefs. This would have been a welcome addition to the reported findings. It was also not clear if the participants taking various levels of examinations were similar in age. If participants varied greatly in terms of age, it is difficult to ascertain if self-efficacy was the most predictive factor contributing to higher test scores. Another potential weakness in this research is the issue of subjectivity on the part of the examiner in the evaluations of art music performances. Different emphases of the skills assessed between the two studies were reported. The examination requirements in this round of data collection appeared to place a higher emphasis on technique (p.330). This may have favoured some subjects in the achievement of higher scores. In future research in this area it is necessary to define with greater specificity the types of self-beliefs which come into play before, during, and after a music performance. Further clarification of terms would contribute to the better understanding of how successful musicians develop the levels of self-efficacy needed to approach and manage challenging tasks and thereby actualizing all possibilities of performance achievements (Bandura, 1997).

The first research investigating 130 advanced students (instrumental and vocalist) in relation to learning and use of practice strategies was conducted by Nielson (2004). Participants
were first-year students in Norwegian higher music education aged 18 to 43 years. The intended purpose of this research was three-fold: (1) determine what extent first year students employ specific learning and study strategies, (2) determine the relationship between first year music students’ self-efficacy beliefs and strategies used, and (3) examine potential difference in the use of strategies and self-efficacy beliefs regarding main instrument, degree program, or gender. Participants consisted of music students specializing in church music, performance, or music education programs. All participants were asked to complete the Motivated Strategies for Practice Questionnaire (MSLQ; Pintrach, Smith, Garcia, & McKeachie, 1991) detailing their use of practice strategies.

Results revealed that, except in the case of effort regulation, self-efficacy was found to relate to all assessed areas: rehearsal, elaboration, organization, critical thinking, meta-cognition, time, and study environment. In general, all students applied cognitive, meta-cognitive, and resource management strategies during practice. Findings also indicated that music students high in self-efficacy were more likely to be cognitively and meta-cognitively involved in trying to learn the material compared with students low in self-efficacy. Further, while there were significant gender differences with regard to self-efficacy, no significant differences in self-efficacy emerged with regards to main instrument groups or degree program. However, the interaction effect between gender and degree program on self-efficacy was significant.

The researcher’s use of such a broad subject sample (in age and levels of music proficiency) in combination with the lack of research focus of participants’ intended area of study served to threaten the validity of findings. Another point of issue is the author’s delineation of first-year music students as “advanced” musicians. Too frequently music performance
research addresses question of “performance excellence” utilizing student participants. There is no doubt research into self-efficacy and music is sparse. Moving forward, it is essential systematic research inquiries involving performance excellence include participants who are professional musicians.

All of the studies presented above revealed the necessity to enhance the research tools used to measure levels of self-efficacy. As Ritchie and Williamon (2011) argued, “the questions [used to measure self-efficacy] themselves need further development and extension” (p. 3). With this necessity in mind, the developed, tested, and validated distinct measurement instruments for assessing musicians’ self-efficacy beliefs for learning and performing. These questionnaires were then applied to two groups of musicians consisting of a sample of 250 music students at the Royal College of Music (aged 18-51) specializing in a wide range of musical instruments including voice, piano, strings, woodwinds, brass, and percussion. The second group consisted of 173 music students (aged 18-67) from the University of Chichester, consisting of an equally diverse range of musical instruments including: voice, piano, strings, woodwinds, brass, and percussion. Participants completed both questionnaires and provided self-ratings of musical skills and attributes. In the interests of reliability of findings over time, a sub-sample of the respondents completed the questionnaires a second time after a time gap of two-four weeks.

Findings indicated that for the RCM students, the following skills correlated with learning: quality of practice, interpretive or expressive skills, and sense of stylistic appropriateness, motivation or drive to excel, and level of perseverance. Ritchie and Williamon interpreted these results to “reflect the processes of persistent and detailed refinement during learning” (p. 9). The skills that correlated with performance included: ability to manage everyday
stress, technical proficiency, ability to manage stage fright, and overall standard of performance.

Conservatory students’ self-efficacy for musical learning was higher than was found in university students. No differences were found in self-efficacy for performing between the two groups. Correlations between self-efficacy scores and various musical skills from conservatory students were interpreted to suggest they used different skills for learning and performing. Findings did not reveal any differences or interactions for gender, which supported the previous research findings of Welch, Papageori, Haddon, Creech, Morton, de Bézenac et al. (2008).

Past research has supported the power of self-efficacy in relation to achievement levels (Schunk, 1984; Zimmerman, Bandura, & Martinez-Pons, 1992). It is imperative that self-efficacy research extend to the areas of both practice and performance in the interests of developing specific techniques and strategies to expedite the learning process and enhance performance experiences for musicians at all levels and stages of development.

To date there are no known self-efficacy studies in music using professional musicians as participants. Once again, the use of student participants proved most convenient, readily available, and increased the likelihood of larger samples. At this juncture in music performance inquiry, research is conducted most often by researchers entrenched in other disciplines who exist in academic institutions and are not actively performing. Although, it is important to possess awareness of the present literature and research currently in existence to lay the groundwork for further research discoveries. It would be beneficial for professional artists to work in tandem with researchers to investigate the role self-efficacy plays in the sustaining of
professional music performance levels. Particularly absent is research involving professional singers.

Summary

As demonstrated in the literature provided throughout this chapter, the acquisition and maintenance of deliberate skills are key factors in the achieving and sustaining of music performance excellence in classical singing. Further systematic research is necessary in the exploration of the specialized, complex combinations of skills required to sustain professional opera performance in voice.

The next chapter will present an overview of qualitative research, identify the intended methodology for this research inquiry, and introduce the research design and data analysis procedures implemented in the subsequent analysis chapters to follow.
CHAPTER THREE: METHODOLOGY

An Overview of Qualitative Research

The first global research goal for this dissertation was to investigate the core phenomenon of performance excellence in professional opera singers. More specifically, the research question sought to answer: What deliberate skills do professional opera singers use in their preparation to sustain performance excellence? Second, what are the similarities and differences in the deliberate skills cultivated between professional opera singers at the national and international level? It was clear from the onset that this research question would involve examining multidisciplinary, multi-faceted, and complex combinations of skills that contribute to the sustaining of performance excellence in the participants. Therefore, a qualitative research method and design proved most suitable.

Qualitative research is typified by its exploration into a subject area where little is known. As established in the previous chapter, little to no research has been conducted in the area of sustaining performance excellence with the specific participant group of professional opera singers (Sandgren, 2005). Within the qualitative method, it is crucial that the researcher possess a detailed understanding of a central phenomenon (Creswell, 2008). This criterion is met by my experiences as a professional opera singer for over a decade at the national level.

Contrasting to quantitative research where the purpose is specific and narrow and consists of variables that are measurable with outcomes that are standard and fixed. Qualitative research involves exploring and developing a research question that is understanding oriented; seeking to define complex constructs; conducting of interviews and analyzing data for emergent thematic
development and patterns; and finally establishing meaning making (Bartel, 2006; Creswell, 2008, Glesne & Peshkin, 1992; Miles & Huberman, 1994; Tesch, 1990). In examining the evolutionary process of sustaining performance excellence in opera, “… no predetermined hypothesis exists; therefore, the researcher remains open to all possibilities expressed in the data” (Fishkin, Cramond, & Olszewski-Kubilius, 1999, p. 240). Without a predetermined hypothesis, outcomes of qualitative data are not fixed but rather flexible, emergent, and reflexive.

Grounded theory is a type of qualitative research methodology that examines a process (sustaining performance excellence) and allows a theory to emerge from the data that is collected. Grounded theory research follows a systematic yet flexible process to collect data, code the data, make connections, and see what theory is generated or are built from the data. A theory is a set of ideas that are integrated through a series of relational assertions (Hage, 1972). To best answer the intended research question, I determined the research method and design of grounded theory was the most appropriate and effective.

Grounded Theory Origins

Glaser and Strauss developed grounded theory procedures during their research into illness and dying. Written in their book The Discovery of Grounded Theory (1967), the method originated as an alternative to the traditional scientific method. This method outlined the gathering of data through systematic procedures and developing theories from the research "grounded" and emerging from the data. As Charmaz (2006) argued, "Glaser and Strauss aimed to move qualitative inquiry beyond descriptive studies into the realm of explanatory theoretical frameworks, thereby providing abstract, conceptual understandings of the studied phenomenon” (p. 7). In 1987, Strauss joined with Corbin (1990) to further develop grounded theory in a
direction that allowed for predetermined categories for data. In criticism of the procedures set out by Corbin and Strauss, Glasner (1992) contended the development of preconceived categories contradicts the basic and fundamental tenants of the original method and has highly criticized the new Corbin and Strauss approach in its overemphasis on procedures, development of a preconceived framework for the development of themes, and theory generation. Contrary to Glasner's criticism, the argument can be made for the impossibility on the part of the researcher to possess no preconception of the development of thematic data sets, particularly when one of the criteria for qualitative research is that the researcher possesses a detailed understanding of a central phenomenon with an insider perspective (Creswell 2008). In accordance with Strauss and Corbin (1990) methods and procedures, the core phenomenon for this research was predetermined as performance excellence which allowed for greater specificity and understanding in the development of a theoretical framework emerging from the data.

By the early 21st century, grounded theory became known and criticized for its positivistic assumptions (Charmaz, 2006). In response to these growing perceptions, scholars (Bryant, 2002; Charmaz, 2000, 2006) developed a grounded theory method and design to include a more interpretivist approach, coined by Charmaz as the "constructivist" model of research. The constructivist method attempts to employ a more flexible structure emphasizing the meaning and understanding that participants apply to events rather than providing an explanation, with an aim to offer an "interpretive portrayal of the studied world, not an exact picture of it" (Charmaz, 2006, p. 10). Other differences within the constructivist approach involve an emphasis on the recognition of the roles of both the researcher and participants and the development of a philosophical approach to the research. I recognize the benefit of Charmaz's constructivist approach (1990), particularly in her assertion that the researcher makes decisions about emergent
themes throughout the process and brings certain questions to the data along with certain experiences and priorities (p. 1165). Thus the decision was made to construct a theoretical model in the spirit of Charmaz's "process" and "experiential" lens to best represent the complex, multidimensional, and reflexive process of the sustaining of performance excellence in opera for these participants.

**Why Grounded Theory?**

Grounded theory methods use systematic yet flexible guidelines for collecting and analyzing qualitative data to construct theories that are "grounded" in the data itself (Atkinson, Coffey, & Delamont, 2003). Support for the use of this qualitative method for this dissertation is provided by Creswell (2008). He outlined the appropriateness of using this methodology when examining a number of individuals (professional opera singers) who all experienced the same action, interaction, or process (sustaining performance excellence), that researchers then use to generate an explanation that describes that action, interaction or process amongst those people. This research methodology is also most suitable when the goal is to elicit rich, in-depth data while protecting the privacy of participants (Morrow & Smith, 1995). This “qualitative research allows researchers to get at the most inner experience of participants, to discover how meanings are formed through and in culture, and to discover rather than test variables” (Corbin & Strauss, 2008, p. 12). Rich data are detailed, focused and full, representing participants’ views, feelings, intentions, and actions. Collecting rich data means pursuing robust descriptions exemplified in the collection of detailed interviews and compiling detailed narratives (Charmaz, 2006). This data collection process is imperative in the exploration of what complex and multi-faceted skills are necessary to sustain a professional career in opera. Glesne (1999) outlined the suitability of
this methodology when considering the participants’ active role with the researcher in the shaping and interpreting of themselves and the subsequent data. The possibility for researcher and participants to actively work together to shape the emerging themes allowed for the most accurate, rich, and in-depth knowledge of the skills and processes professional opera singers use to sustain performance excellence.

The Researcher as an "Insider"

As stated earlier, qualitative research is used to examine multidisciplinary, complex, and multifaceted questions. As the chosen methodology, grounded theory enabled me to examine the process: sustaining performance excellence in opera, by generating an understanding of a sequence of actions, interactions, and events (Creswell, 2008). All data sets were collected from participants and were then filtered through me. Thus, it is critical to understand my background to the area of study being presented. Glesne (1999) outlined the role of qualitative researchers as both interpreters who draw on their understanding of the participant's world and as meaning makers who make sense out of their own lives with those of research participants. Thus it is necessary to be firmly entrenched in the area of study, not merely an authority figure recording facts on a specific topic but rather as a "meaning maker" situated among the participants as "one of them." It was through my experiences as a professional opera singer that allowed for both access to the participant groups and the attainment of in-depth rich data. When presented with a qualitative research study, a question that may arise on the part of the reader is what sparked my interest in the inquiry or subject matter? My curiosity was sparked by my unorthodox foray into the profession of opera, a world in which I have made a living for many years.
Connecting the Researcher to the Inquiry: Trial by Fire Learning

I trained privately in piano and voice, but had no formal university study in music. After a series of coincidences I found myself accepted to an opera performance program. After fast-tracking through a Masters in Voice due to my acceptance into the Canadian Opera Company’s Ensemble Studio, I was quickly introduced to the responsibilities of singing for a living; namely showing up every day with music learnt and in good voice. I discovered that music must be more than surface prepared and learned how to sing for many hours in full-voice every day. For me and many others in my position, the adjustment to these expectations proved to be a process of “trial by fire” learning experiences. During my time in the ensemble, it became clear, opera performance is a business, and as such, artists are often viewed as a commodity. Necessary skills required for professional success include the ability to conduct oneself professionally at all times and in the art of negotiation and self-promotion even in the most difficult environmental circumstances. These learning experiences reinforced for me what skills an artist must possess to excel. However, some of my gifted colleagues found themselves in a learning and professional environment they could not survive in. This made me seriously question the traditional ways in which classical vocal artists learn.

“The Voice”

During my time as a young artist and early in my professional work, I perceived my voice as a separate entity from my body. This view often meant I did not perform to my full potential. Much later I realized I am in control. If I can speak, I can sing. If I am properly prepared, I enter into rehearsals and performances with confidence. This understanding was a serious break-through for me as an artist and a teacher.
When I began teaching, I noticed many of my students derived their self-worth from their perceptions of how they were singing. At this juncture I began breaking down the practice skills I had acquired into sequential steps for my students as part of their voice lessons. Skills such as: mentally mapping out a piece of music, marking in beats, tempo, and key changes, indentifying recurrent patterns, rhyming schemes in text, and engaging in mental practice. In turn I taught my students what I had learned the hard way: how to break down the learning of new music effectively, access their best voice every day, and perform as artists with something to say.

When I started to realize the impact of teaching these skills to my students, I began contemplating doing a doctorate. I wanted to conduct a systematic research investigation into what skills professional opera singers employ to sustain performance excellence, in the hopes of garnering further knowledge and insight into what skills may contribute to the best learning and performing experiences for singers.

As a professional performer, I made my debut in 2001 with the Canadian Opera Company and have since made regular appearances with numerous opera companies and orchestras across Canada. My professional performance and teaching experiences have allowed for greater insight into the skills necessary for sustaining performance excellence. Possessing an insider's perspective resulted in a greater understanding of what the participants in this research were trying to convey throughout both the interview and analysis process. Yet in the role of researcher the obligation to elicit the reflections, thoughts, and perspectives of the participants accurately was of the highest order. My decade of professional performance experience was an advantage to the scholarly work presented. The combination of personal experience of the subject matter and a commitment to the scholarly perspective challenged me to probe more
deeply into the questions and analysis of my research in an attempt to discover what was unexpected, and not simply to be satisfied with what was most readily revealed.

**Research Design**

**Participant Group**

In accordance with the methodological practices of grounded theory, theoretical sampling was applied in the selection of participants. Theoretical sampling procedures in grounded theory involve choosing forms of data collection “…that will yield text and images useful in generating a theory” (Creswell, 2008, p. 442). Therefore, when I decided to investigate the deliberate skills professional opera singers use to maintain performance levels, I purposefully selected and interviewed participants based on their active involvement in the process of sustaining performance excellence who could speak from personal firsthand experience. Creswell (2008) outlined theoretical sampling as a key requirement in developing data and generating a theory in grounded theory method. Two sub-groups were developed in the interests of exploring the potential similarities and differences between national-and international-level opera singers in their use of skills to sustain performance excellence. The two groups were created based on these specific characteristics: level of performance achievement (national vs. international), and career length (separated by minimum of a decade). To ensure both genders of varied voice-types were represented, equal numbers of male and female participants of all major voice categorizations were sampled within each group. All participants were within age ranges of prime vocal function based on their voice types and repertoire specializations. These specific characteristics were established in the interests of greater consistency and integrity of the research findings.
Participant Recruitment

All participants were sent a preliminary e-mail outlining the specific details of the intended research study including a formal invitation to participate. All participants are professional colleagues with whom I have worked. With this in mind, participants were also approached in person or by telephone. Upon acceptance of participation, participants were then provided with a consent letter in accordance with Ethics Review standards with an option to exit the study at any time (see Appendix B). After participant recruitment began initial interviews (see Appendix C) commenced with the first group.

The first participant group consisted of five participants: three female (one soprano, and two mezzo sopranos) and two males (one tenor and one bass baritone) within the age range of 35 to 43, who have successfully sustained a national performing career for a minimum of ten years. After secondary interviews and initial analysis with the first group was completed, interviews with the second sub-group commenced. The second group of participants comprised of five professional opera singers: two female (two sopranos) and three males (one tenor, one bass baritone, and one bass) within the age range of 45 to 57, who have maintained a successful international performance career for a minimum of twenty years.

Data Collection

Interviews

Data was acquired through two separate in-depth interviews with each participant that were audio-recorded in a place of the participants choosing. Due to performance schedule demands, one interview was conducted and recorded via Skype. Consent forms were distributed
Considerations involving the small community of opera and in accordance with Ethics Review and procedures, measures were taken to ensure anonymity of participants to protect their identity and confidentiality. Within the analysis section of this dissertation, blinding techniques were applied to the quotes presented. For example, names and gender identifications have been changed or removed.

Two interviews of ten participants were conducted. At the start of each interview, a review of the consent form was addressed and both researcher and interviewee retained a copy. Explanation of the use of two recording devices was then explained. At the onset of initial interviews all participants were engaged in brief small talk, catching up on personal and professional developments, and some "shop talk" to facilitate greater ease and comfort for the individuals. Ice-breaker questions were used to facilitate further ease and focus on the topic of interest. Examples of the first questions asked included "What brought you to the study of opera?" followed by "Tell me about your preparation for an upcoming performance.” As participants began to engage in the conversation, I employed the use of semi-structured, open-ended interview questions to elicit general information and knowledge exploring the skills and processes engaged by each participant. Questions addressed vocal technique and health maintenance, practice, and performance considerations. The appropriateness and efficacy of the interview questions were vetted by two graduate faculty members with professional voice performance experience.

During the interviews, I took notes on phrases of interest, topics to potentially return to, and any relevant facts pertaining to the questions asked so further follow-up could be employed with ease. Notes taken during the interviews allowed for summary questions that enabled me to
repeat key phrases and words participants expressed which allowed for further reflection, detail, and expansion of the participant’s original answers. Text recorded in the initial interviews was then transcribed and reviewed. After preliminary analysis of the data from the first interviews was complete and emerging concepts began to develop, subsequent interviews were arranged. The intended goal of conducting these second interviews was to elicit more in-depth information relating to the emerging of key concepts, categories, relationships, and variations associated with developing categories. After each interview post-interview notes were taken and detailed memos written.

**Data Analysis**

The detailed and rigorous analysis procedures outlined by Corbin & Strauss (1990) within the systematic design of grounded theory were implemented in the analysis of the emerging data. After the initial interviews, the text was transcribed and analyzed using open coding procedures in the identification of emerging concepts from the data. In the open coding phase, codes were identified; looking for every possible meaning and all events, actions, and interactions were compared to find similarities and differences (Corbin & Strauss, 1990). During the open coding process, questions were generated that guided further data collection. Both groups were coded separately. Categories were allowed to emerge in the absence of an expectation of what "should" be present. In the initial phase of open coding, line-by-line analysis and memo writing was applied and reviewed for meaning. During this phase, "The data is not being forced, the data is allowed to speak" (Corbin & Strauss, 1998, p. 65). Therefore questions of each line were asked, "What is being conveyed here? What is the participant's perspective?
What do these word usages mean?” At this stage I was cognizant every word, phrase, and physical representations of participants’ communications had meaning.

**How Grounded Theory was applied**

I applied the systematic approach of Corbin and Strauss (1998) in the application of the analysis procedures of coding the data. In the interests of fully realizing the complexity of data and meaning the participants attributed to their words and in the creation of a substantive theory, small departures were taken from the systematic design in the identification of some of the prescribed categories in the axial coding phase. Support for my decision to slightly deviate from the axial coding categories was provided by Charmaz (2006) who stated that grounded theory methods consist of “systematic yet flexible guidelines for collecting and analyzing qualitative data to construct theories ‘grounded’ in the data themselves” (p. 2). Thus, I applied some flexibility within the guidelines of category construction so that the data analysis was allowed to evolve to its fullest potential. Furthermore, the guidelines offered within grounded theory method and procedures are more akin to a set of common criteria and analytic instruments rather than a set of steadfast rules (Atkinson, Coffey, & Delamont, 2003).

*Coding of Categories in the Analysis Phase for Groups One and Two*

In accordance with Corbin and Strauss (2008), in the open coding stages of analysis, I formed initial category headings (themes) of the information provided by participants as they related to the predetermined core phenomenon (performance excellence). The initial major
category headings emerged as three major themes: physical skills, mental skills, and skills execution. Sub-themes were also fleshed out as they related to all major category headings and their continual interaction with each other.

In the next phase of analysis, axial coding, the further sorting and organizing of the data under each major category in relation to the core phenomenon was established (Creswell, 2008). Corbin and Strauss (1998) contend the axial coding phase is intended to provide insight and answers to specific questions applied to the data such as “when, where, who, how, and with what consequences (p. 125)”? This stage of analysis entails linking together the relationships among the categories and specifying the various dimensions of those sub-categories (themes) that contribute to each major category heading. The answers to these questions I posed resulted in an organized conceptual framework also referred to as the axial coding paradigm (see Figs. 1 and 4 for visualizations of the axial coding paradigms developed for each sub-group).

The axial coding paradigm contains a set of scientific terms espoused by Corbin and Strauss (2008). These terms encompass the following: causal condition, context, core phenomenon, strategies, intervening conditions and consequences.

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11 “Categories or themes are units of information comprised of higher-level and lower-level concepts that are grouped according to shared properties, representing relevant phenomena allowing the researcher to reduce and combine data” (Corbin & Strauss, 2008, p. 159).

12 An axial coding paradigm is “a diagram that portrays the interrelationships of causal conditions, strategies, contexts, intervening conditions, and consequences in grounded theory research” (Creswell, 2006, p. 637).

13 In grounded theory, causal conditions refer to the conditions that influence the core phenomenon to occur (Creswell, 2008).

14 “In grounded theory research, the context identifies the sets of conditions within which persons respond through actions/interactions, and in doing so bring about consequences that in turn might go back and impact on conditions” (Corbin & Strauss, 2008, p. 88).
Small deviations from the coding categories advocated by Corbin and Strauss (2008) within the axial coding paradigm were taken in four of the categories: *causal conditions*, *strategies*, *intervening conditions*, and *consequences*. The term *causal* was avoided due to its positivistic implications. In no way are the findings of this research intended to indicate a cause and effect process with a definitive arrival point that can be generalized to all professional opera singers. I made use of the axial coding paradigm in the analysis of the data sets of both groups as a tool to best represent the evolving reflexive process between the themes and sub-themes continually feeding the process of sustaining performance excellence.

The prescribed category, *strategies*, generally refers to the actions/interactions in which participants engage in response to the core phenomenon. In the process of sustaining performance excellence (core phenomenon), the strategies are reflected in the deliberate skills cultivated and employed within the two contexts (deliberate preparedness and performance environments) for both groups. Therefore the deliberate skills (strategies/interactions) feed the heart of the process of sustaining performance excellence and are reflective of the interrelations of skills that are continuously evolving, combined, and applied based on needs of the participants. The applications of these deliberate skills are not simply a reaction to the core

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15 In grounded theory, the core phenomenon is the core process being examined. In this research the core phenomenon is sustaining performance excellence in professional opera.

16 Strategies are the actions and interactions that occur in response to the phenomenon (Corbin & Strauss, 1990).

17 Intervening conditions are identification of broader conditions (social, political, or economical) that influence the strategies participants employ in response to the core phenomenon.

18 In grounded theory research, the consequences are the outcomes of the strategies employed (Corbin & Strauss, 1990).
phenomenon; rather, they serve as catalysts for the sustaining of performance excellence to occur.

The category of intervening conditions was not applied to the analysis and findings of this research as it was not an intended area of investigation (social, political, and economical conditions that influence the strategies taken by participants). The narrow focus of this study resulted in limited discussions during the interviews in these areas. Nor did these conditions ever reveal themselves as relevant in the dialogue with the participants. The focus of the research question was narrowed for the purposes of yielding the richest and most detailed data within the parameters of the complex combinations of skills these national and international artists use in their preparation and performances.

I chose to use the term outcomes rather than the category consequences to avoid the inherent positivistic implications associated with this term. Furthermore, the scientific term consequences did not serve to best represent the continual and reflexive process of sustaining performance excellence for these participants. In the case of this research the core phenomenon: sustaining performance excellence is also the outcome.

In-vivo coding19 was used in the analysis and presentation of research findings for both groups. The use of in-vivo codes proved useful in the further integration of the development of two substantive theories for each sub-group in two ways: 1) use of “insider” shorthand specific

19 Codes derived from the actual words of the research participants. According to Charmaz (2008), three kinds of in-vivo codes can be useful: “1) general terms everyone knows that indicate a condensed meaning, 2) a participant’s innovative term that captures the meaning or experience and 3) insider shorthand terms specific to a particular group that reflect their perspective” (p. 55).
to these opera singers and 2) in the innovative terminology provided by one participant that captured the meaning of the collective experience for the international group.

In the next phase, comparative analysis\textsuperscript{20} techniques were applied and the initial codes were reviewed, subcategories among codes were compared, and their relationships were tested against the data. In the final stages, I further refined and integrated the analyses of results for the two sub-groups into a set of theoretical propositions\textsuperscript{21} – a proposed explanation of the substantive theories\textsuperscript{22} that emerged from the data provided by the participants.

**Interpretation**

Although interpretation is central to any research, this is the area that is most subjective. In an attempt to achieve interpretivist integrity, participants had a large participatory role in the shaping of interpretations of themselves. After each interview, all participants were provided with full transcripts and narrative drafts. The participants had an active role in the development and approval of the concepts, categories, their interrelation, and the subsequent theory generation as they emerged. Overall participants affirmed my interpretations and findings during the member checking process. The findings of this research were further strengthened due to the fact that the response rate for participation and subsequent member-checking was 100%. All

\begin{itemize}
\item \textsuperscript{20}Constant comparison is a grounded theory data analysis procedure of generating and connecting categories by comparing data with data, data with category, category with category, and category with concept (Charmaz, 2006).
\item \textsuperscript{21}In grounded theory research, theoretical propositions are statements that indicate the relationships among categories determined within the axial coding paradigm.
\item \textsuperscript{22}A substantive theory is an explanation of a process about a substantive topic (performance excellence) “grounded” in the data. The theory is drawn from multiple individuals that provide an explanation of a substantive topic (Creswell, 2006).
\end{itemize}
participants were willing and able to participate and were available throughout the process for further discussion and verification of findings.

Summary

With the examination of the multidisciplinary, multi-faceted, and complex combinations of skills that contribute to the sustaining of performance excellence in professional opera performance, it was determined grounded theory was the most appropriate qualitative research methodology. As a nationally recognized opera singer, I had the advantage of “insider” access and in depth knowledge of the research topic. Participants consisted of two groups of professional opera singers. The first: five nationally recognized opera singers (three females and two males) representing five different voice types, with a minimum career length of ten years. The second: five international opera singers (two females and three males), representing five voice types, with a minimum of twenty years of experience. Data was obtained from two separate in-depth interviews with each participant. Full transcriptions and narratives were then created. The participants had an active and participatory role of the analysis and interpretation of findings. I drew most closely on the systematic approach of the grounded theory design and method of Corbin and Strauss (2008), as its application of outlined procedures is most appropriate when seeking to generate a complex substantive theory (Charmaz, 2006). Although the spirit of Charmaz’s constructivist approach to grounded theory was also drawn upon during analysis of this research in the interests of fully realizing the complexity of data and meaning the participants attributed to their words and the interpretations of themselves.

The next two chapters will present the analyses section of this thesis. Chapter Four will present results for the ten year, nationally recognized opera singers. Chapter Five reflects the findings for
group two, international opera singers. Chapter Six will provide comparisons of the findings between the two groups.
CHAPTER FOUR: ANALYSIS OF GROUP ONE PARTICIPANTS

This chapter will present the findings of the first sub-group: consisting of five opera singers that met the following criteria:

- Nationally recognized opera singers
- Minimum professional career length of ten years
- Active performance in top opera houses
- 70% of income from performance activities
- Ages 35 to 43

From the detailed analysis inherent in the grounded theory method, summative visual models will be presented at the beginning of the chapter as an organizer for the reader providing quick points of reference and for greater clarity of the analysis of findings. The first diagram reflects the determined contexts, main categories, themes, strategies, and outcomes within the axial coding paradigm. Next, a visual representation illustrating the emerging theoretical model of the process of sustaining performance excellence serves to clarify the interrelations of skills cultivated by Group One singers. This is followed by a brief explanation and outline of the theoretical propositions making up the substantive theory developed for these participants. Evidence for the summative visual models and sets of propositions will then be substantiated through the presentation of participants’ quotes – the data from which my analysis was drawn. I have inserted some of my analysis directly into the quotes in the interests of further clarification of the arrival of findings.
Axial Coding Paradigm for Group One

Context One: **Deliberate Preparation:**
Main Categories (conditions): **Physical and Mental Skills**

Strategies: **Sub- Themes of Physical Skills:**
Health and Wellness
Breathing
Technique
Reinforce Road-Map (in-vivo code) and Performance Cues
Simulated Performance

**Sub- Themes of Mental Skills**
Road-Mapping (in-vivo code)
Performance Cues
Imagery: Visual/Auditory/Kinesthetic
Rehearsal

**Overlapping condition:** Expert sessions with voice teacher and/or coach

**Outcomes:**
High levels of Learning Self-efficacy
Sustaining of Performance Excellence

Context Two: **Performance Environment**
Main Category: **Skills Execution**

Strategies: **Sub- Themes of Skills Execution**
Pre-Performance Routine
Skills Selection
Turning the Mind (in-vivo code)

**Outcomes:** Flow experiences

**Further outcomes:** Higher levels of performing self-efficacy contribute to the sustaining of performance excellence.

**SUBSTANTIVE THEORY**
Constant interrelation and cultivation of the strategies engaged in the deliberate preparedness phase are directly applied within the context of the performance environment. This facilitates: action-based skills execution contributing to “flow” experiences, heightened energy exchanges with other colleagues and audiences, and feelings of performing self-efficacy, all feeding the process of sustaining performance excellence in opera at the national level.

*Figure 1 Axial Coding Paradigm for Group One*
Figure 2 Visual Representation Reflecting the Emerging Theoretical Model for Group One
Propositions for the Process of Sustaining National Performance Excellence in Opera

Deliberate Preparedness: Propositions for Physical and Mental Skills

1. National opera singers engage in deliberate skills that contribute to optimal health and wellness of their instruments.
2. National opera singers possess skills associated with breathing to ensure advanced levels of vocal production.
3. Professional opera singers engage deliberate technical skills to sustain advanced levels of vocal production.
4. National opera singers develop high-level skills in road-map construction and in the cultivation of deliberate practice skills involving performance cues.
5. National opera singers employ deliberate skills in mental rehearsal through the use of visual, auditory and kinesthetic imagery.
6. National opera singers enhance levels of preparedness through the use of simulated practice, and in expert sessions with a voice teacher and/or master coach.

Outcomes: Combinations of these physical and mental skills contribute to enhanced feelings of learning self-efficacy and aid in the process of sustaining of performance excellence at the national level in opera.

Performance Environment (live performances): Propositions in Skills Execution:


Outcomes: Complex combinations of all deliberate skills cultivated in the preparation and performance phase contribute to “flow” experiences including energy exchanges with colleagues and audiences resulting in feelings of performing self-efficacy. These all feed the process of sustaining of performance excellence.

Figure 3 Substantive Theory: Set of Propositions for Group One
Support for the Propositions: Group One Participants

Deliberate Preparedness Context

Proposition One: National opera singers engage in deliberate skills that contribute to optimal health and wellness of their instruments.

Inquiry into strategies involving health and wellness yielded similar responses from all participants. Three out of five participants articulated the importance of a regular exercise routine in the facilitation of high performance levels and to combat feelings of stress. Support for the necessity to engage in a regular cardiovascular fitness routine to maintain performance levels was reported:

*I find breathing is one thing when I am running, I really have to focus on my breathing because I tend to do a lot of shallow breathing when I run...so I always think about trying to stand up straight, taking full breaths, and it is really amazing how that affects my singing and how I am able to carry that into my performances as well.*

This quote supports the previous findings of Schneider et al. (1997) and Williamon and Thompson (2006), purporting the importance of cardiovascular fitness and proper postural alignment to ensure optimal singing levels and in the improvement of health benefits. The words of another participant further support this proposition, “I exercise every other day, because if I don’t, I really struggle physically in operas. I take my little workout DVD on my computer when I am travelling and on the road...my routine doesn’t change.” The remaining two singers reported walking everywhere and expressed interest in meditative practices as strategies to stay physically active and in the reduction of stress levels.
I walk everywhere and that is my physical routine...I have a meditation CD downloaded on my computer to take with me when I am away because I have to take it down to zero sometimes and focus...there is so much competing for my attention.

Supplementing the findings of Sandgren (2005), in her factor analysis on items pertaining to health-promoting strategies professional opera singers use to ensure high performance levels, analysis indicated all participants engage in high levels of hydration, avoidance behaviours related to alcohol intake, smoke, and loud noise, foods associated with GERD, use of herbal medications, and an adherence to sleep promoting behaviours. One singer expressed an adherence to numerous diet and health considerations, “I do my best not to eat after 7 p.m. I avoid drinking alcohol because I get a lot of reflux, and I avoid dairy.” Further support for the importance of implementing health and wellness skills relating to performance levels was found in the words of another participant: “I will avoid loud places the day before I perform because I will lose my pianissimos; if I have a glass of wine in a loud place, like a restaurant, that isn’t good.” In the area of the necessity to remain hydrated, results support the early research of Lawrence (1982). All participants reported drinking water throughout the day, “I always have a bottle of water with me and am always drinking like crazy.”

Further substantiation for proposition one was reflected in the participant’s expressed beliefs that taking vitamins and herbal supplements aids in the maintenance of overall wellness leading to consistent vocal production. “I rely on vitamins and herbal supplements, like vitamin B’s and D’s. It keeps me from worrying about my health and if my voice will hold out.” Other singers reported a myriad of health and voice conscious tactics such as regular intake of vitamin C: “If I feel like I am coming down with something, I drink ginger tea, use a Nettie pot, and take
a multivitamin.” Both male and female participants described in detail an awareness and adherence to health promoting skills. These results are contradictory to the previous findings of Ginsborg et al. (2009) that indicated females are more conscious of health promoting behaviours than males, and that all music performance students scored lower in responses to health promoting behaviours than non-music students. The present findings are also contrary to the work of Nichols (2010), in which no conclusive evidence was found to support specific dietary, exercise practices, or consistent health regimes of the 227 professional opera singers surveyed.

The need for consistent and adequate amounts of sleep to remain in good health and vocal form was also expressed by all five participants. When discussing factors necessary to execute high-level performances one participant expressed, “I need at least nine hours’ sleep. When I am performing in two different shows at the same time I have to plan in strategic naps.”

Systematic research is limited in the areas of health and wellness which include exercise, hydration, diet, and adequate amounts of sleep, as key strategies contributing to the sustaining of performance excellence for professional opera singers. The above findings reinforce the proposition that these singers engage in skills that contribute to optimal health and wellness of their instruments.

**Proposition Two: National opera singers possess skills associated with breathing to ensure advanced levels of vocal production.**

In the area of fundamentals of vocal production, analysis revealed all participants engage in the practice and application of advanced breathing skills as the basis from which all professional operatic vocal production occurs. These findings add qualitative support to the previous research of Petterson and Westgard, (2004), Thomasson and Sundberg (1999), and
Sandgren (2005), all of whom contended professional singers possess increased levels of breathing capacity and control of breathing and muscles used for singing. All participants articulated the importance of breathing and a sense of connectedness to the body as necessary skills for successful vocal production and performances. Proposition two was supported in the words of a participant when asked about technical considerations: “I start with getting the breath going...I find it is my clutch now. If I go into an audition and I am nervous, if I don’t breathe I am sunk.” Analysis of this quote indicates advanced levels of breathing aid in the calming of pre-audition nerves, contributing to the execution of consistent performances. When discussing the practice and preparation for an operatic role, another singer communicated breathing and breath support must be worked out before singing the role in full voice can take place.

*I always figure out my breath support an octave lower, “what is my support doing? I need to do even more up there [reference to high notes]. I make it a habit now to never attempt another difficult note or phrase until my body says yes you can do that!”*

This quote further supports the proposition that breathing is the foundation from which all advanced vocal production occurs. Here the singer outlines the process of deliberately rehearsing breathing skills which in turn facilitates the successful release of high notes and execution of difficult notes or phrases. As a result of these preparation strategies, the singer conveys the necessary reinforcement of muscle memory in the areas of breathing and technique to ensure advanced levels of vocal production required for consistent performance outcomes.

All singers discussed the implementation of deliberate breathing exercises as necessary to high levels of vocal production. Two such exercises were outlined by one participant in relation to accessing sensations of ideal vocal production: “I do some panting, and this nostril exercise...I
breathe in one nostril then out the other. I feel this really channels my breath energy, opens up the nasal cavity, and gets me in the right place.” The results in this section support and extend the findings of previous studies (Petterson & Westgard, 2004; Thomasson & Sundberg, 1999; Sandgren, 2005) that argued the need for professional opera singers to possess high-level skills associated with breathing to ensure advanced levels of vocal production.

**Proposition Three: National opera singers engage deliberate technical skills to sustain advanced levels of vocal production.**

Synonymous with previous reports by international opera artists (Flemming, 2005; Ludwig & Domeraski, 1999; Pavarotti, 1981), all participants stated the importance of developing deliberate skills in aspects relating to vocal technique. Support for Saxon and Schneider’s (1995) argument that opera singers could benefit from the same training principles applied to high-level sports practice was grounded in the words of one participant, “I always think of myself as an athlete and train like one. It is a muscle memory thing. The more I practice, the better I get.”

Illustrated in the words of another participant was the reported necessity for the development of a daily practice regimen in the maintenance of prime vocal function: “I have to sing every day. If I stop working my technique it is harder to get that placement: that spot where it rings.” Reference to the right “placement” by this singer was interpreted as support for the previous findings of Thorpe et al. (2001), that indicated well-developed muscle memory and a concentration of the singer’s formant (the spot where the voice rings) are integral technical skills in professional operatic vocal production and projection levels required to sing over an orchestra.
Further support for proposition three is expressed by another participant: “Preparation is number one. Practicing every day, knowing your score, working out your technique beforehand is all paramount. If it is not in your muscle memory, it is not going to happen in performance.” Although all group one participants emphasized the importance of technical practice, two singers in the upper age range of the group did not report the need to practice vocally every day. A multitude of factors may account for this discrepancy. This could be interpreted as an indication that with more professional performing experience daily technical work is not necessary. However, when compared to another singer of the same age and comparable stage experience, these results were not consistent. The two singers who reported not engaging in daily vocal practice cited various environmental circumstances:

*I do not sing every day. My preparation has changed with the start of my family...I have to get things done within a specific time. I can’t be lolling around with my voice, and issues relating to how I am sounding. There is no time for that.*

Further research of the technical practice habits of professional opera singers is warranted in the interests of greater clarity and understanding. Evidence for the proposition professional opera singers engage deliberate technical skills to sustain levels of vocal production was found in the analysis of the data. Findings indicated all participants engage in the regular practice and cultivation of skills contributing to a solid singing technique as part of the strategies contributing to the process of sustaining performance excellence. These results enhance previous research findings that demonstrated music soloists actively engage in deliberate practice and in the organization of daily activities to accommodate for amounts of practice time required to facilitate levels of achievement in performances (Gembris, 2006; Sloboda et al., 1996).
Proposition Four: National opera singers develop high-level skills in road-map construction and in the cultivation of deliberate practice skills involving performance cues.

Building on research findings indicating that high-level musicians use deliberate practice skills in the facilitation of performance excellence (Chaffin & Imre, 2001; 2002; Ericsson, 1996; 1997; Ericsson et al., 1993; Ginsborg et al., 2002; Ginsborg et al., 2006; Sandgren, 2005), greater specificity of the types of deliberate skills cultivated by professional opera singers in the process of learning an operatic role were established.

When discussing preparation strategies for an upcoming operatic role, analysis revealed all participants create a deliberate road-map in their scores to ensure high levels of technical and musical accuracy. All singers outlined the deliberate learning process of first assessing the overall structure (structural cues) of the piece, translating the text, adding basic musical and technical notations (basic cues), and adding further interpretive and collaborative cues (shared cues) once coaching and/or rehearsals have commenced. One participant recounts this deliberate method:

*I always translate first [basic cues], know what I am saying, and then print out a practice sheet. It is a big check list, and I tape it in the front of my score. There are sections [structural cues] for aria, and scene title, text memorized, notes learnt, coached, and performed. So I see the ticks and I know “okay I have done this five times, I have to work on this now, skip this and come back to this later,” then I always coach it.*

The words above are representative of an organized learning strategy reported by all group one singers. This highly structured system of skills acquisition aids in successful memory
retrieval and heightens a singers’ ability to start and stop at any point in the rehearsal and performance environment which is a requirement for all professional musicians.

I am speaking of a higher level of preparation...what is the dynamic there [basic cue]?

Where are we right now in the music [road-mapping]? What beat do I come in on [basic cue]? That is just mindful repetition. With that comes a safety net. I know I am safe, I know what I am doing [learning and performing self-efficacy]. I am able to focus because I know what I am doing and am able to do this in a precise way.

This singer used the same terminology presented by Chaffin et al. (2009) which indicated the use of serial chaining by expert musicians as: a type of memory retrieval system developed automatically by an experienced musician that allows them to start at any point in the piece as a “safety net” in performances (p. 5). The words of this participant reflect the cultivation and execution of task-specific skills including the establishment of a memory retrieval system built on the earlier implementation of structural and basic music cues. This fosters an awareness of where in the music the singer is situated, which in turn contributes to feelings of learning and performing competency. Once an operatic score has been analyzed and marked for structural and basic cues, the deliberate process of preparedness is reinforced through a myriad of rehearsal strategies.

Proposition Five: National opera singers employ deliberate skills in mental rehearsal through the use of visual, auditory and kinesthetic imagery.

Once I know all of the pitches and dialogue, and am singing all of the right vowels [structural and music cues], there are things to find without singing it [engagement of mental rehearsal]. “Oh! This is how I feel in that moment” [kinesthetic imagery]...I can
discover all of those things while sitting in an armchair...I will mute the commercials on the TV or pick up my score whenever I am sitting around, and will look at the score before bed. I will imagine singing it through [use of imagery involving visual, auditory, and kinesthetic imagery]. I discover a lot this way.

The data elicited from this description provides evidence for proposition five. Results extend previous findings (Bowes, 2009; Patenaude-Yarnell, 2003) that indicated professional singers often use mental imagery techniques, and that mental rehearsal strategies are necessary (Sandgren, 2005) in the avoidance of vocal indispositions and as enhancement for higher levels of preparation.

Synonymous with the words of Flemming (2005), all participants reported the use of kinesthetic images to achieve desired levels of vocal execution. The most frequently used imagery cues applied to enhance adequate breath support and consistent levels of vocal production were images evoking physiological responses to the kinesthetic cues “support,” “ground,” and “space.” Only one participant spoke negatively regarding the kinesthetic image “support,” considering it nebulous. This participant preferred the use of the kinesthetic cue “drop,” as a more effective cue in securing lower breaths associated with optimal vocal production.

Analysis also indicated singers engage in imagery relating to character development which was perceived to heighten communication with audiences. “I do mental prep work. I hear the music before my entrance [auditory imagery], I visualize myself in the moment, what I am feeling as my character, ‘restless,’ ‘angst,’ and who I am talking to [visual and kinesthetic imagery].” Once levels of technical and music mastery have been established, all participants
reported the use of mental rehearsal skills to contribute to elevated levels of preparation and performance outcomes. These findings extend earlier research that cited performance benefits from the use of physical and mental practice strategies in combination (Geerlings, 1998; Ross, 1985).

Results did not support the results of Chaffin et al. (2009) that indicated practice with a listening component in later stages of preparation contributed to interpretive and expressive dimensions in performance. On the contrary, all singers expressed avoidance to the listening of recorded performances in later stages of preparation to prevent modeling the interpretations and vocal styles of others. “In the early goings I will listen to a bunch of recordings so I can hear the orchestra and then I start working. I do not want to be affected by what other performers do later on.”

All participants reported the application of mental rehearsal skills in combination with the reinforcement of performance cues involving imagery as key factors contributing to better practice and performance outcomes.

*I am seeing the music happening [visual imagery of road-map], I see those moments coming and not being fearful in those moments. I hear myself doing the music [auditory imagery], and going “this is what I am going to do with the line [reinforcement of structural and basic cues in combination with auditory and kinesthetic imagery],” more than actually hearing the music, I have a sense of the visualization that I am safe, confident and joyful [visualization of positive performance outcomes].*

The sentiments above support findings indicating activation of deliberate skills serve to facilitate heightened feelings of learning self-efficacy contributing to a sense of security relating
to consistent performances. The use of mental rehearsal strategies as part of deliberate pre-performance routines was described by one participant as another important component to sustaining professional performance levels:

I visualize the stage. I visualize who I am singing to and who I am with; you know, any business that has to be done that doesn’t feel completely natural I have to go through in my head.

Evidence for proposition five is found in the words of all group one participants. This further supports the substantive theory developed in this research suggesting professional opera singers engage complex combinations of deliberate skills that work in a reflexive process contributing to feelings of greater learning self-efficacy.

**Proposition Six: National opera singers enhance levels of preparedness through the use of simulated practice, and in expert sessions with a voice teacher and/or master coach.**

I contend that singers engage in a deliberate preparedness process tailored to meet the needs of musicians that physically house their own instruments. Evidence for this was provided in the data of this research. Analysis revealed singers learn and prepare in non-traditional rehearsal environments. One singer described the practice of simulated conversational libretto exchanges with another opera character (recitative) in a foreign language while driving in the car with their spouse.

After ten years of performing I am still discovering how fun it is to learn this Italian [reference to an upcoming role] and speak through my dialogue in a realistic way. When ‘Alex’ [spouse] asks what I am learning I will spew out all of this Italian stuff, and
‘Alex’ will say “cool”! It is cool to speak in another language in another character and to take on the emotions of that character. It needs to be believable in an everyday context.

Further analysis of the above quote brings to light an important mitigating factor in the preparation process for singers. The introduction and delivery of text in a variety of languages set to music requires different physical and mental skills when compared to instrumentalists and warrants further investigation. Another singer described the importance of simulated performance practice as a key factor contributing to higher levels of operatic performance:

*I find in things that require stamina, I have to be able to do it in the practice room before I go out there and do it. I have to practice standing there, re-creating the actual, how it feels to stand up there [application of auditory, visual, and kinesthetic imagery]. Whether they make you stand on a pew, one foot behind your head, whatever it is, you have to be able to do it when you’re practicing; you can’t just put the music on a stand and do it because when you are up there it is completely different. I am starting to put the same principles necessary in my performance into my practice.*

Reinforcing the necessity for the use of simulated practice as a tool for maintaining performance excellence was expressed by another participant after rehearsals and stagings for a production have begun:

*If I am worrying [whether] I step with my left foot or my right foot or [whether that] will look awkward, then I am screwed because my vocal technique goes. So I like to walk through things beforehand...it is almost like when you see those ski jumpers and beforehand they are [mimes the hand motions and the simulated body movements as physical reminders of the timing of movements] before they even jump.*
Results derived from the data provided in this section support and extend the findings of Chaffin and Imreh (2002) to include professional opera singers in the use of simulated performance conditions as an essential part of the deliberate preparedness process towards sustaining performance excellence.

*Expert Sessions*

All participants articulated the importance of engaging in expert sessions with a coach as an integral step in the process of learning and performing at professional levels in opera. Singers also expressed the importance of checking in with their vocal teacher for specific technical work:

> Anything coloratura I take to my teacher; I always seem to end up there and organizing that with him. It depends on his availability because he is all over the world. I would never go to a job without coaching it first. Never, too scary, wouldn’t do it. I will also coach languages with someone who is a native speaker.

Lack of lesson time availability with their respective voice teachers was a reported factor in the preparedness process. Two of the five participants were adamant in the necessity to review various language demands with a native speaker to ensure levels of language accuracy and subsequent text delivery. Four out of five participants reported working with the same master coach, although at varied stages in the preparedness process. One singer expressed the necessity to first secure a certain level of music mastery of an operatic score before working with this coach:

> With the opera I am coaching now, I will probably coach it five or six times...singers have the responsibility to learn our music and get it to a certain level before coaching it or else it is a waste of our time and money...we work on things like “You are not coming
in sounding enough like a diva here [reference to coaching character development in the form of interpretive and expressive cues with master coach],” or “That needs to be more resonant, that sound doesn’t have enough pang in it [coaching specific aspects of vocal production to meet live performance demands such as cutting over an orchestra]”...that is what my coachings address.

This participant expressed the need to collaborate with a master coach to further facilitate the development of interpretive and stylistic elements to meet various demands of lead operatic roles. In addition, this singer noted the need for trusted feedback addressing technical aspects of vocal production to ensure consistent professional performance levels. Similarly, another singer reported engaging in short intensive sessions (three to four times) with the same master coach in preparation for an upcoming performance. Analysis indicated this participant utilized coachings as structured rehearsal sessions in which the master coach set weekly memory and artistic goals:

*Coachings gives me the chance to sing full out...’Jaimie’ [master coach] sets the structure of learning and weekly goals for me, which is good because I have a family now and cannot practice at home.*

Conversely, the need to be memorized as soon as possible, without full knowledge of the word-for-word translations of the text was expressed by another participant in the interests of first addressing all technical and music skills acquisition before “getting all wrapped up in the drama of it.” This singer goes on to describe this process with the master coach in various stages:

*When coaching I will first crash through it to get a general idea of things [facilitation of structural cues], then memorize right away...we will figure out the problems and sections that don’t work or aren’t working vocally and organize those [basic cues]. Then it all*
starts to come together and we can really get into the text because now you have access to it and it is yours, and you can say “oh, at this point I want to express this [interpretive and expressive cues].” Things will pop out to me and this process really interests me.

The words above extend previous research that reported professional musicians engage in a deliberate process of learning that is highly organized (Chaffin & Imreh, 2001; Ginsborg et al., 2006). At first appearance the above data may be interpreted as a singer engaging in collaborative sessions with a master coach to facilitate the learning of an entire role. On the contrary, all participants reported role mastery within four to six sessions. This finding indicates all participants engage in deliberate preparedness strategies that expedite the learning process. Based on the analysis, I contend implementation of a highly organized process of preparation requires the constant interrelations of high-level skills.

Results in this section extend the work of Chaffin and Imreh (2002), which reported discrepancies between the verbal reports indentifying the various practice strategies communicated by Imreh (professional pianist subject) and the analysis of the practice sessions on the part of Chaffin. Observations indicated Imreh engaged in higher order practice strategies (expressive and interpretive cues) at earlier stages of practice than reported. In the analysis of the data provided by group one participants, it became evident all participants engage in complex interrelations of higher order deliberate skills without conscious awareness. This observation is supported by the number of coaching sessions participants engage in. It is unlikely a singer could master a major operatic role without the activation of higher order deliberate skills in such a limited number of coachings. With this in mind, further research in the area of the process of learning an operatic role by professional singers with the addition of practice observations and
review of the markings in the participant’s scores would prove beneficial in garnering more detailed data moving forward.

**Outcomes in Deliberate Preparedness Context**

Analysis revealed group one participants develop deliberate skills based on an awareness of what task-specific skills are required to facilitate levels of preparedness contributing to beliefs in their own capabilities. Bandura (1977) defined self-efficacy as “the conviction that one can successfully execute the behaviours required to produce an outcome (p. 193).” Furthering Bandura’s (1977) definition, Ritchie and Williamon (2010) argued “...a strong sense of self-efficacy enables a person [musician] to engage in more complex processes, [and] set more hierarchical achievable goals…” (p. 2). They went further by differentiating two types of self-efficacy: learning and performing. Within the analysis of this research, the necessity for the distinction between learning and performing self-efficacy was founded. Through the words of the participants, evidence was provided indicating enhanced feelings of learning self-efficacy contributed to heightened experiences of performing self-efficacy.

*I have to learn my music [basic cues], I have to learn my words [basic cues], I have to understand what they mean and find some way to communicate that [application of deliberate preparedness skills applied to performance environment]. Being a performer is the same as any skill you cultivate out there. You learn a skill and then perform that skill [evidence of learning and performing self-efficacy based on the successful execution of task specific skills]. After years of refining my practice, I am always confident my levels of preparation [learning self-efficacy] allow me to take what’s on the page and*
bring it to life [evidence of performing self-efficacy and the sustaining of performance excellence]. I am so glad the thing that I love, those skills I work on also feeds me.

This quote represents the views expressed by all group one participants who conveyed the belief in their abilities to acquire the necessary technical and music preparedness skills. The interrelations of these deliberate strategies catalyze levels of learning self-efficacy which contribute to consistent professional performance outcomes and reinforce elevated levels of performing self-efficacy.

Currently no known research has been conducted in the area of self-efficacy relating to professional music performance by opera singers. Results derived from the data extend the work of Ritchie and Williamon (2010) which noted that the factors associated with music learning self-efficacy included quality of preparation, engagement of interpretive and expressive skills, stylistic appropriateness, and levels of perseverance. All participants in this research actively develop and refine deliberate preparedness strategies involving health and wellness, advanced breathing and technical skills, road-mapping, and the use of performance cues and imagery. In addition, participants noted engagement of physical and mental rehearsal strategies including working with experts to ensure the highest levels of musical preparedness.

Based on the analysis of the data, within the context of deliberate preparedness, I conclude that with deliberate strategies in place, group one participants develop increased feelings of learning self-efficacy which contribute to the successful execution of task-specific skills in the performance environment. I support Ritchie and Williamon’s (2010) construct distinction between learning and performing self-efficacy. Findings within this dissertation support the need for the differentiation of these two terminologies. Subsequent research in this
area is crucial to further understanding of the role self-efficacy plays in the preparation and performance outcomes of professional musicians. Next, the results relating to the deliberate skills selected and executed by participants within the context of the performance environment will be presented.

**Performance Environment Context**

**Proposition Seven: National Opera Singers engage in deliberate pre-performance routines.**

Once participants have utilized deliberate preparedness strategies, analysis revealed the importance of deliberate pre-performance routines to increase focus and concentration levels necessary for consistent performance levels:

*I don’t like singing a note the day of a performance. I like to be on my own, doing my own thing until two hours before curtain. I start doing scales, getting into character, reviewing my staging. I will sit in my dressing room with my score and visualize the stage, [thinking] “what am I doing here?” and “okay, this is what I do here.*

The words of this participant express the necessity to focus before performances through actively engaging in a deliberate pre-performance routine consisting of vocal warm-ups, and the review of the operatic score for the reinforcement of all structural, basic, interpretive, and stylistic cues. Next, visualizing the specific tasks required while on stage ensures successful execution of performances. Further evidence indicating engagement of a deliberate pre-performance routine is supported in the words of another singer:

*I always arrive early, if the performance is at 7:30, I don’t eat after four because I will burp like crazy in the performance. I always have the score with me in my dressing room.*
I take time going over the score [engagement of mental rehearsal strategies], “okay this is what I do here; this is the new direction we are taking here.” I warm up an hour before for 20 minutes [deliberate application of technical skills facilitating advanced levels of vocal production] and then stop and don’t sing until 2 minutes before I go on. I started doing this a couple of years ago, having a little dance party in my room [deliberate cardiovascular engagement to ensure energy levels for performing]; it gets me going, a little Justin Timberlake...

Important in this description is to arrive early, engage in dietary concerns to ensure high levels of vocal production, and engage in technical warm-ups. An essential component within this singers’ pre-performance routine is the mental review of the score to ensure music and performance readiness. This singer also reported the need to engage in cardiovascular exercise to facilitate adequate levels of energy in performance. All participants reported the regular use of a pre-performance routine and the requirement to review the score during the show, if a particular roles demands it, to ensure successful delivery of performance skills.

I go through the first scene before I go out. I come back and go through the second scene before I go out...just to refresh because I have a lot of text...and I have long arias that are repetitious but are slightly different. I have to focus and I can only have the music with me in the dressing room. I have to review and repeat it.

Analysis of this quote indicates review of the opera singer’s score during performances serves to activate successful memory retrieval which ensures musically accurate performances. In this section, it is clear group one singers implement the use of a deliberate pre-performance routine to ensure the sustaining of performance excellence.
Proposition Eight: National opera singers apply skills cultivated in the deliberate preparedness phase in live performance based on “in the moment” performance demands.

All singers reported the application of deliberate skills directly into live performances based on “in the moment” demands, in particular the execution of action-based mental imagery cues and “turning the mind” strategies. An instance of this was provided by one participant who reported implementing these strategies to combat counter-productive thoughts that occur while performing. This singer gave examples of such thoughts: “Oh my God, I am nervous” or “That person in the audience doesn’t like me because they are staring at me funny.” To counter these negative thoughts and regain performance focus, all participants recount the use of active mental cues like “relax” and “breathe.”

Another participant articulated the use of action-based questions relating to successful character portrayal to regain focus and composure and to get back into “the moment” of performing. Examples of the use of questions relating to specific character intentions included: “What is my job?” “Where am I coming from?” “Where am I going?” and “What do I want?” Analysis revealed these action-based questions allow for the participant to reconnect to the performance. Further evidence for proposition eight is substantiated in the words of another singer: “I literally tell them [inner voices] to shut up. I re-focus my breathing with thoughts like ‘ground’ [participant demonstrates slow deep inhalation], because if I am anxious I am probably not breathing properly.” Analysis also revealed the use of action-based cues aid in enhanced feelings of focus of and in heightened engagement with colleagues and the audience:
I find using active phrases like “watch this!” and “are you listening?” [Pre-planned, action-based orders and questions directed at colleagues and/or audience] are good. I always direct my thoughts to someone I am talking to because I can always win that one. The voice that says you are going to screw up and I respond with “No I am not!” You can’t win with that voice so why engage? But if we go: “Hey, Here it is!” for me that is a place of release because I am not fighting something I am actively giving. You are not pushing against a force.

The sentiments expressed in this section provide a specific picture of the pre-planned, action-based mental cues that assists these national opera singers to focus and to communicate with colleagues and connect with audiences. These actions result in subsequent feelings of “release” and “freedom” during live performances.

Turning the Mind

The in-vivo code “turning the mind” appeared repeatedly in the data relating to the deliberate mental skills singers engage in “real-time” performances to re-focus and aid in successful outcomes when unexpected events occur. One participant provided a detailed account of the strategies employed in “turning the mind” when singing the wrong pitch at a crucial moment in a national live performance recorded by CBC:

At that moment I felt as though I had no ground underneath me, I thought to myself, “What the fuck did you just sing?”...Thank God I had a few measures to compose myself. My mind immediately goes to what is going to happen backstage when the conductor comes up to me “What the hell? We paid you how much? You consider yourself a professional?”...These are the things I am imagining in a split second...So I am
desperately trying to turn my mind from a sea of negative thoughts to something positive. My first thought was to make a positive apology to Beethoven...I said “Beethoven, I am so sorry about what I just did but I have to focus about getting out of this now or else I am going to shit all over the rest of it. So, I apologize.”....At that moment I realized I have a choice. It is all just thoughts. It is all just illusion, so why not think the good illusion? Well didn’t the thought come to me after I apologized, Beethoven says to me, “Thank God someone sang the right pitch there! I wrote the wrong notes!” I almost laughed. So, not only are the negative thoughts gone, I look up at the conductor and think “Oh, poor guy, he doesn’t know that Beethoven didn’t want that.” Then I was able to let go, focus, and return to the moment.

At first read, one might interpret the mental strategy employed by this singer after failure to deliver an integral note on pitch as overly dramatic silliness. Yet analysis uncovered the use of the active mental strategy of “turning the mind” in what was deemed by the singer as a disastrous moment. This led to the successful execution of the remainder of the performance and subsequent performances at the same venue. This participant engaged in a creative mental strategy that led to the forgiveness of a mistake made and aided in the re-focus necessary to continue in live performance successfully. If used as an isolated skill, a positive performance outcome is unlikely to occur. It was the interrelations of deliberate physical and mental skills developed in the preparedness phase that when applied into the context of live performance ensured consistent performance levels even in the face of uncharacteristic errors.

Further analysis of the above quote also reveals the presence of what Bandura (1977) termed resilient self-efficacy. When an individual (national-level opera singer) possesses a strong
sense of self-efficacy based on personal mastery experiences (high-level skills in preparedness and performance), he or she is more resilient to failures (miss-execution of a high note at appropriate pitch), able to rebound more quickly from difficulties and assess how he or she might perform better in the future by changing strategies (implementation of “turning the mind” strategies).

**Outcomes in Performance Environment Context**

Complex combinations of all deliberate skills cultivated in the preparation and performance phase were reported to contribute to “flow” experiences, including energy exchanges with colleagues and audiences. This resulted in higher level feelings of performing self-efficacy, which feeds the process of sustaining of performance excellence for these participants.

**Flow**

In the discussion of the feelings associated with performance excellence, the sub-theme “flow” was used as a description of the experiences described by group one participants as peak performances. This is consistent with the term coined by Csikszentmihalyi (1990; 1993) where flow is an experience of full engagement of an activity. Analysis revealed that a flow state occurs when development of deliberate task-specific skills (physical and mental) have been developed and executed in order to complete a challenging activity (maintaining performance excellence). Feelings associated with engagement in a flow state include increased intrinsic motivation, pleasure, and exhilaration.
Two participants expressed the thrill of experiencing flow performances, which served to reinforce levels of motivation and confirm their purpose in life as artists. Findings revealed flow experiences only occur after adequate physical and mental skills preparation have taken place. In a description of a flow experience, one participant recounted the necessity for a supportive collaboration with other performers. “If you have a good working environment with good colleagues and a good conductor you can achieve it pretty easily.” This participant also iterated the need for high level feelings of learning self-efficacy in the facilitation of flow experiences. “You need to be confident that you know the role inside out.” As illustrated here, prior levels of preparation, feelings of self-efficacy, and a supportive collaborative process, all work together in the process of sustaining performance excellence for this singer.

Another participant described the experience of flow in detail: “All of a sudden everything came together. I was reacting to things on stage I hadn’t seen before; my gestures were more natural. It was magical. I was able to just be the character.” This singers’ flow performance was derived from the integration of a multitude of factors including: the power of the music and libretto in combination with high levels of preparedness, and the energy received from other musicians and audience members. Another singer recounted a similar experience:

*It was a beautiful story and a beautiful character. Most everyone who came really wanted to hear it and I felt the energy coming from the audience. All I had to do was learn it [high levels of deliberate preparedness]. Technically it was fine [technical preparedness security]. It was the discovery of a really important piece of music and I experienced the thrill of being the singer it came through in that moment.*
The words above support the substantive theory that flow experiences occur when previous levels of deliberate preparedness have been actuated which, in turn, contribute to heightened energy exchanges between colleagues and the audience. Further support for proposition eight was expressed by another participant:

When my line is coming up, my words are coming up, I come in on three [structural cue], I start singing the pitch, this is what I do with my voice, this is what I have to do with my space [basic cues], that is what my mind is thinking. It starts and I am secure there [learning and performing self-efficacy]. My mind knows, “yeah, this is where it is supposed to be [kinesthetic imagery].” Then something happens to the musical line and it is gorgeous, and it happens with the conductor, and I can see him carrying the line, and it finishes and he is like “Oh yeah.” So he had a part in it and I had a part in it [collaborative cue and energy exchange], but the energy and beauty of that line was a collaborative process. It was a collaborative process of the energies of the singers who were standing beside me, and breathed with me, because they always do! We all breathe with each other and for each other. All of the instrumentalists are involved in it too, and the audience who are also producing an energy, who are breathing, and know it, and love it.

It should be noted, within this section of analysis, one negative case emerged supporting the previous findings of Sinden (1999) in the area of perfectionism. One singer reported never having experienced a “peak performance” due to this participant’s self-description as a perfectionist, which has resulted in “having never been 100% content with a performance.” However, this singer did state a level of contentment with assessing performances in terms of “good enough.”
Performing Self-Efficacy

Research in the area of self-efficacy relating to performing has established feelings of competence are contingent upon previously acquired sets of skills (deliberate preparedness strategies). Evidence for the existence of performing self-efficacy derived from task-specific preparation is provided in the words of a participant:

Well, this is the moment you have prepared for. You have done your technique [task-specific skill], that is out of the way, you don't have to worry about that, that is what you do in the practice room right [learning-self-efficacy feeding performing self-efficacy]? Everything is in your muscle memory. You know it is going to kick in at that moment. You don't have to worry about it. I just have to go out there and just be. Just perform and tell the story [interpretive skills execution]. If I just tell the story, all the stuff that I have worked on before kicks in and I can go out there every night and rock it [flow experiences contributing to performing self-efficacy and consistent performance outcomes].

Summary of Group One

Analysis of the data provided in the interviews of group one facilitated the development of my substantive theory proposing that the constant interrelation and cultivation of deliberate skills in preparation (road-mapping, structural, basic, interpretive and stylistic cues in combination with the use of imagery) contribute to the development of learning self-efficacy. These deliberate skills are then directly applied into live performances contributing to flow experiences, including energy exchanges between colleagues and audiences, and the emergence of heightened levels of performing self-efficacy. The synergy of these deliberate skills and
outcomes serves to feed the process of sustaining professional voice performance in opera at the national level for these participants. The next chapter will present the analysis and findings of group two participants.
CHAPTER FIVE: ANALYSIS OF GROUP TWO PARTICIPANTS

This chapter will present the analysis of group two participants, with the intended goal of developing a second substantive theory addressing what deliberate skill professional international opera singers use towards the process of sustaining performance excellence. Group two consists of five professional opera singers who met the following criteria:

- Internationally recognized opera singers
- Minimum professional career length of twenty years
- Active performance in top opera houses
- 70% of income from performance activities
- Ages: 45 to 57

Utilizing the same presentational format as in Chapter Four, summative visual models of the axial coding paradigm (Figure 4), the emerging theoretical framework (Figure 5), and an outline of the series of propositions making up the substantive theory (Figure 6) for this sub-group will first be presented. Evidence to support the propositions provided by the words of the participants will subsequently follow in combination with comparisons to relevant literature and the insert of analyses directly into the singer’s quotes for greater clarity of findings. Although the categories and themes are similar between the two sub-groups marked differences do exist and will be further examined in Chapter Six.
Axial Coding Paradigm for International Opera Singers

Context One: **Deliberate Preparation:**
Main Categories (conditions): **Physical and Mental Skills**

**Strategies: Sub-Themes of Physical Skills:**
Health and Wellness
Breathing and Technique
Road-mapping

**Sub-Themes of Mental Skills**
Road-mapping (in-vivo code)
Performance Cues
Imagery: Visual/Auditory/Kinesthetic
Rehearsal

**Overlapping condition:** Expert sessions with voice teacher and/or coach

**Outcomes:** High Levels of Learning Self-Efficacy.

Context Two: **Performance Environment:**
Main Category: **Skills Execution**

**Strategies: Sub-Themes of Skills Execution in Live Performance:**
Deliberate Pre-performance Routines
Action
Flow

**Outcomes:** High-Level feelings of performing self-efficacy and the development of a “Global Artist” perspective.

**SUBSTANTIVITE THEORY**
Results in Group two revealed levels of learning self-efficacy are so high that physical and mental skills are combined from the outset and are executed efficiently within the context of deliberate preparedness. When directly applied to the performance environment, action-based skills are executed resulting in “performing off interest vs. capitol” strategies, serving to enhance flow experiences, including heightened energy exchanges with other colleagues and audiences. Reinforcement of high-level feelings of performing self-efficacy contributes to the development of a “global artist” consisting of a perspective termed “law of averages” which aids in feelings of well-being. All conditions and strategies contribute to the outcome of sustaining professional performance excellence for these participants.

**Figure 4 Axial Coding Paradigm for Group Two**
Figure 5 Visual Model Reflecting the Emerging Theoretical Model for Group Two.
Propositions for the Process of Sustaining International Performance Excellence in Opera

Deliberate Preparedness: Propositions for Physical and Mental Skills

1. International opera singers engage in deliberate skills that contribute to optimal health and wellness of their instruments.
2. International opera singers reinforce high-level skills associated with breathing as it relates to advanced levels of vocal production necessary to communicate as artists.
3. International opera singers engage high-level skills in road-map construction and in the cultivation of deliberate practice skills involving basic performance cues.
4. International opera singers cultivate deliberate skills involving mental rehearsal through the use of visual, auditory and kinesthetic imagery.
5. International opera singers enhance preparation levels with expert sessions.

Outcomes: Combinations of physical and mental skills reinforce high-level feelings of learning self-efficacy that contribute to the process of sustaining performance excellence at the international level.

Performance Environment (live performances): Propositions for Skills Execution

7. International opera singers execute high-level skills in live performance that are “action” driven to remain “in the moment” in live performances.

Outcomes: Complex combinations of deliberate skills executed in live performances contribute to flow experiences including energy exchanges with other colleagues and audiences and heightened feelings of performing self-efficacy. This allows for the development of a “global artist” perspective to emerge, consisting of a “law of averages,” all contributing to the process of sustaining performance excellence at the international level.

Figure 6 Substantive Theory: Set of Propositions for Group Two Participants.
Support for the Propositions: Group Two Participants

Deliberate Preparedness Context

Proposition One: International opera singers engage in deliberate skills that contribute to optimal health and wellness of their instruments.

Similar to the findings of group one in this area, analysis of group two singers revealed active adherence to deliberate health and wellness strategies relating to the maintenance of their instruments and the stamina required to counter demanding travel schedules required for international level performances. Supporting Sandgren’s (2002) results, all participants reported the use of herbal medications and avoidance behaviours involving alcohol, smoke and loud noise. One participant said: “I don’t drink alcohol a minimum of four days before a performance.” Four out of five participants indicated the intake of vitamins on a regular basis to remain healthy and ensure advanced levels of vocal production: “I take vitamin D, I swear by it.” Only one participant expressed the necessity to adhere to dietary restrictions including wheat and dairy products. This singer indicated engaging in a gluten-free diet resulted in the lessening of excessive mucous on the vocal cords while performing and in countering feelings of lethargy.

Extending the research of Braun-Janzen and Zeine (2008), all singers exhibited interest and knowledge in health-promoting behaviours associated with vocal health and hygiene. Participants also stressed the importance of consistent water intake: “Hydration is the key. I am always drinking water like crazy.” Dietary restrictions included avoidance of alcohol, spicy foods and caffeine to counter experiences of reflux: “I try not to do too much caffeine...lots of water...I can’t eat anything spicy, I get reflux.” These findings provide support for Sataloff’s
earlier assertion of the importance of overall health and longevity as it relates to high levels of vocal function (2006) for professional opera singers.

With overall health and wellness considerations, group two participants actively engage in cardiovascular fitness to relieve stress and to sustain performance excellence. Data revealed all singers actively walk everywhere, particularly when abroad: “Power walks are good. They help me clear my mind.” This finding furthers the work of Wasley and Taylor (2002), indicating higher levels of fitness resulted in regulation of anxiety levels and in the reduction of stress during performances. One participant expressed the view that regularly practicing yoga allows for high levels of cardiovascular physical fitness and easier access to advanced breathing skills necessary for sustaining high-level international performances.

When faced with illness or the possibility of vocal indisposition, three out of five participant reported the regular use of a Nettie pot, and all participants expressed similar health and wellness strategies, with comments such as, “I steam, gargle with salt...I drink honey and lemon tea and ginger tea. I will use saline solution to clear out any mucous if I have a cold.”

Results revealed both national and international opera singers engage in the regular application of deliberate strategies involving diet considerations, high levels of hydration, and consistent exercise to aid in the sustaining of performance excellence. Findings indicated these deliberate strategies also contribute to advanced levels of vocal production necessary to actuate international levels of performing.
Proposition Two: International opera singers reinforce high-level skills associated with breathing as it relates to aspects of advanced levels of vocal production necessary to communicate as artists.

Due to the qualitative nature of this research inquiry, quantifiable measurements of breath capacity and coordination of muscle activities relating to advanced vocal production were not conducted. Through the rigorous analysis of the data provided by group two participants, I argue these high-level skills are present as indicated by the demanding repertoire successfully performed by these opera singers spanning two to three decades on the most prestigious international opera stages.

Analysis revealed all participants engage in the cultivation of advanced levels of breathing strategies as the foundation from which all high level vocal performances are based. “Breathing is the source of it all; energy is all about breath, grounding ourselves in a productive way, opening the body. With shallow breaths we can get nothing done in singing.” Contrary to the findings of McCoy (2005), gender differences relating to the self-perceptions of singer’s physical actions required for adequate breath control for singing were not found in the analysis of the data for this sub-group.

All singers expressed the implementation of kinesthetic cues involving images of inflation, expansion, and buzzing in the facilitation of access to advanced breathing strategies and the muscle coordination required to sustain difficult and demanding vocal phrases: “I like to think inflation rather than breathe. Trying to lean into the universe, so in a way you are resisting, and the muscles are expanding rather than contracting, or else you are collapsing.”
Implementation of deliberate skills engaging yogic breathing involving exhalation on a slow sustained “S” appeared on numerous occasions within the data sets provided by participants as an active strategy to facilitate the breath control required for advanced levels of vocal production. “The ‘S’ exhalation is a great exercise because you feel exactly what muscles are engaged and being used to sing at your optimum all the time.” Another group two singer reported checking for a steady stream of warm air under the nose with a finger as a strategy to achieve advanced vocal production. This participant reported this strategy assures the passageway between the nose and soft palate is not cut off, thus avoiding an unwanted nasal vocal quality.

From the information elicited from group two participants, the facilitation of deliberate skills involving high levels of breath support and control are key factors in the successful execution of international vocal performance outcomes. Once again these findings are consistent with the results derived from the data of group one.

*Technique*

Support for proposition two emerged within data sets provided in the words of all group two singers: “...for singing it is the day in, day out of breathing, it supports projecting the voice with more energy to produce a more focused, resonant sound.” This quote supports the previous findings of Thorpe et al. (2001), linking breath support to the required levels of projection required by professional opera singers to carry over an orchestra. I interpreted the singer’s description of the necessity of producing a focused resonant sound as indicative of the engagement of well-developed muscle memory associated with breathing in combination with a
concentration of the singer’s formant. These skills are required to project unamplified in large international operatic venues.

Further support for the necessity to possess well-developed muscle memory was provided in the words of another participant: “By the time you are singing the big roles, you are singing them everywhere, a lot. It is like being an athlete; you have to build up the muscles....” The words of this participant provides qualitative support to the findings of Petterson and Westgard (2004) that indicated high levels of muscle activity associated with breathing were present in classical singers. The data provided by this singer also reflects the thoughts expressed by the collective whole, that regular engagement of deliberate skills involving coordination of muscles associated with advanced levels of vocal production are required for consistent performance outcomes.

Analysis indicated that all group two participants rely on the physical sensations experienced when producing sound as opposed to listening for “ideal” sounds when singing. One singer described this process as “feeling the voice floating from top to bottom.” Similarly, another singer reported a “housing” checklist: “…to make sure my body is relaxed and aligned, my shoulders are down…and I check for any tension in the body and consciously release.” Results revealed international opera singers are highly in tune with their bodies as the physical entities that “house” their instruments, and consciously engage in deliberate strategies to consistently access advanced levels of breathing and vocal production.

The deliberate skills developed in the areas of breathing and technique for group two participants supports evidence of high-level feelings of learning self-efficacy that translate into the performance environment, “…breathing, housing, vowels, vowels spinning in the column. I
trust my body knows how to sing so I don’t have to.” Upon first read, the findings between the two groups in the area of deliberate breathing strategies contributing to advanced levels of vocal production may appear synonymous. In the interview process with the two groups, international artists reported the importance of a mind-body-spirit connection as an imperative element to the facilitation of advanced breathing skills and also stressed the integration of these skills as a necessary component in their ability to communicate with colleagues and the audience. This mind-body-spirit connection was not present in the first group.

Contrary to the findings in Chapter Four in the areas of technical preparedness and rehearsal of deliberate skills, group two artists engage in very little technical practice due to constant rehearsal and performance demands:

*When you are singing and working all of the time, everything is in good working order. You have to have a technique that works for you day in and day out, whether you are singing with a monumental cold or dealing with fatigue. I practice very little outside of my busy performing schedule.*

Findings in this area extend the results of Vurma and Ross (2000) and Sandgren (2005), who argued excellent vocal production skills were necessary for stamina and development of character expression for professional opera singers especially during taxing performance conditions including illness. One participant refuted the purpose of the separation of technical practice from artistic intention:

*People always break it down [advanced levels of vocal production in opera singing] to a physiological negotiation of consonants, vowels, scales, and packages of music, but it is
not just that. A great technique is being able to switch into artist mode and communicate well with your voice. That is good technique.

The words of this singer reinforce Sandgren’s assertion that professional opera singers need to excel in a solid singing technique to not only meet the expectations and demands set by the opera world but to also allow artists to “…sing at a high level with expressiveness” (2005, p.65). All group two participants emphasized the importance of the reinforcement of high-level deliberate skills associated with breathing for advanced levels of vocal production necessary to communicate as artists. The deliberate skills maintained by international artists are implemented with the specific intent to actively communicate with other colleagues and the audience. They do not appear in analysis of the data to be seen as separate entities that must be worked on exclusive of other skills but as part of a larger whole. This led to the findings extending the earlier work of Chaffin and Imreh (2002) indicating a professional-level musician combines all elements of deliberate preparedness at the earliest stages of music learning.

**Proposition Three: International opera singers engage in high-level skills in road-map construction and in the cultivation of deliberate preparedness skills involving basic performance cues.**

There is no known research investigating the deliberate skills international professional opera singers employ in the process of preparing for upcoming performances. Analysis uncovered the combined use of many deliberate skills that interact with high degrees of fluidity. Extending the work of Chaffin et al. (2009) to include professional singers, results indicated group two participants presented a similar approach to the five successive learning stages identified and applied by co-author and cellist Lisboa. Although successive, these stages of
learning are less rigid and start with the exploration of initial ideas, smoothing out of technical issues section by section, listening to the music, re-working technique, and preparing for performances.

Although all participants reported the use of road-mapping their scores for structural and basic cues at the beginning of the process, analysis indicated different approaches to the deliberate process of learning new roles within the group. Words expressed by one singer articulate the deliberate skill of road-mapping as a necessary first-line strategy to deconstructing the music into manageable sections including the use of structural and basic cues:

*My score is a road-map, I write in the translation for every character, commas for breaths, how I want to organize my phrases, double consonants, vowel modifications in order to make the line easier to sing at the top.*

Although the above quote indicates the marking of cues, for three out of five participants analysis reflected an amalgamation of deliberate skills from the outset to accommodate for learning roles while on the road and in a conscious avoidance of overusing the voice:

*I don’t have time to dissect the score as much as I would like. It has to all be done at once. I recently had six weeks to learn a major role; I like to see it live to see how a singer negotiates it. It is important to hear it live, most recordings are doctored [learning self- efficacy is so high, amalgamation of all deliberate preparedness strategies are combined early on].*

Analysis indicated group two engage in higher order deliberate skills from the beginning of the learning process to a greater extent than group one. Indicative of this finding is data illustrating the importance of understanding character intent as it is developed and facilitated
through the music from the outset. “Everything is in the music. As artists we must pay attention, all answers are on the page from the very beginning.”

Contrary to Lisboa’s (2009) reports of listening to performances of the music being prepared mid-process, all participants expressed an avoidance of such behaviours. As previously indicated, singers reported listening to a new work in its entirety (if a recording is available) at the start of approaching a new role to get a sense of the overall structure and then move on to the cultivation of deliberate preparedness strategies that encompass their own artistic interpretations. This finding is consistent with group one findings although interestingly, several group two singers discussed the desire to hear the role in preparation performed live, as a process of analysis revealing how other international level artists negotiate full performances. The desire to watch live performances of colleagues who perform roles of the same voice type was not present in the findings of the first group.

It should be noted three out of five group two singers are fluent in at least one language other than English, and specialize in operatic repertoire written in that language. These advanced language skills greatly expedite the learning process for these artists. Four out of five international singers in group two are at a point in their careers and vocal development where they are specialized in advanced repertoire. With regular performances of repertoire of a certain style and period, I found the amalgamation of deliberate skills at the onset of the preparedness process possible due in part to high levels of skills acquisition and familiarity with the music and performance styles associated with the singer’s areas of specialization. This finding supports and extends the previous work of Williamon and Valentine (2002) to include professional opera singers as their research indicated a musician’s previous knowledge of a piece influenced
practice times. In the case of group two participants, I inferred that advanced knowledge of
music performance of a specific period, style and language greatly expedites the learning
preparedness process for these artists. Contrary to the results of the international participants, no
group one singers are fluent in another language other than English in which they regularly
perform. Thus, preparation for group one requires sessions with language coaches.

Results for group two also indicated that familiarity of specific repertoire allows
participants to learn their scores largely on their own. “I play decently, so I learn the role myself.
Playing it, getting it in the cords, I tend to do most prep by myself in my home.” Analysis
indicated four out of five international singers learn the brunt of new major leading roles
themselves within limited time constraints. In consideration of the findings indicating group two
singers possess advanced language skills and perform with high degrees of frequency in
specialized repertoire, I further interpreted these specific skills as significant contributing factors
to high-level feelings of learning self-efficacy.

One negative case emerged regarding the finding that group two participants learn opera
roles with complex combinations of deliberate skills from the outset. Analysis revealed the
process of learning a new role was similar to that of group one, national artists. In this case the
singer approached the deliberate preparedness process in hierarchical steps as recounted here:

I start with creating a road-map of my score, mark in the beats, meter changes, vowel
modifications, accent word stresses if it is in a different language [basic cues]....I will
play through the score and get it in my ear....I make a little chart in front of my score,
with scenes I am in, what is happening in the scene [expressive and interpretive cues]. I
break it down in my mind and keep a running tally of what I have looked at.
This artist provided data that exhibited evidence of a much more structured deliberate process of learning, including the notation of all distances between pitches within the vocal line of the character. The participant reported this strategy leads to higher levels of melodic and musical understanding and accuracy. The approach of implementing the use of solfège in the learning of melodic structure was not evident in the preparedness process of any other singer in this research.

I attributed evidence of this negative case to several mitigating factors. This participant is in the lower age range of international artists and has significantly less international experience. Second, this singer is in the process of moving into the specialization of a different operatic repertoire period. These factors present possible explanations for this negative case occurrence. Although this singer’s process is hierarchical and can be interpreted as highly structured, the artist also self-reported as a fast visceral learner, emphasizing the need to get away from the score as soon as possible, “the sooner I am not thinking of the page, the better.” Analysis of the data drawn from this quote illustrates high degrees of learning self-efficacy. It would not be possible to be “off book” with a new operatic role if the deliberate preparedness process was not highly developed and efficient.

Although great efforts were taken in the cultivation of the two participant groups in the areas of performance experience and age range, differences in the deliberate skills used by group two in the learning process did reveal themselves in two cases and need to be documented in the interests of research integrity. First, one participant indicated the reliance of learning new roles largely with the use of an expert conductor/coach. Second, analysis revealed another participant,
with less international experience, engages in a hierarchical learning process similar to that of group one singers.

Contrary to the results presented in Chapter Four, all group two participants engage in very little vocal practice and prepare most roles while travelling or within limited time constraints. The cultivation of mental rehearsal practice involving the use of visual, auditory, and kinesthetic cues revealed itself to be a crucial part of the deliberate skills employed by international-level opera singers in their preparation.

**Proposition Four: International opera singers cultivate deliberate skills involving mental rehearsal through the use of visual, auditory, and kinesthetic imagery.**

All group two participants stressed the importance of mental rehearsal as part of their deliberate preparedness process. Support for the previous findings of both Sandren (2005), and Clarke and Williamon (2012), were found in the data indicating international artists engage in mental practice to prevent voice overuse, in the enhancement of physical preparation, and when physical practice is not possible. Illustrating the use of mental rehearsal while rehearsing another opera and in the interests of time management, support for proposition four is provided:

*First I will listen to some recordings, if one is available. I keep the libretto with me and read the text a thousand times. When I am in rehearsal and they are working with another singer, I can pull it out, or I have typed out sheets and look at it as I am walking from place to place. Time management becomes a big issue. I work a lot from text. I run the text in my head so that is fluid and conversational [mental practice strategy aiding in memorization]. I will then sing it into the voice as time permits.*
The above quote exhibits the use of mental rehearsal in the expediting of the learning of new music within limited time constraints and in the furtherance of memorization. These findings extend the results of Theiler and Lippman (1995) to include professional opera singers, reporting the benefits of the combinations of physical and mental practice with the addition of an auditory component.

Similar to the findings of national artists, group two singers also reported the use of mental rehearsal involving imagery in the final stages of music preparation:

*I like to go for long walks and run the whole performance in my head. I am hearing it in my head at pitch in tempo [aural cues]....I will move my body in a way I would do for singing [kinesthetic cues].*

The words of this participant provide evidence of the use of mental rehearsal strategies combined with aural and kinesthetic cues in the preparedness phase that then facilitate memory retrieval in performances. This finding lends qualitative support to the results of Highben and Palmer (2004), which indicated that an auditory form of mental practice, “imagining how a piece sounds,” assists musicians in the learning of new works. Another participant detailed the use of aural, visual, kinesthetic, and expressive cues relating to character intent in the later stages of preparation:

*When I am preparing a performance, I imagine myself on stage [visual cues], how does it sound [aural imagery cues]? What does it feel like to produce that sound [kinesthetic imagery cues]? I am visualizing my character’s intention. This solidifies everything I want to do onstage and saves my voice.*
The words expressed by this singer represent similar responses collected from all group two artists, indicating the benefits of mental rehearsal strategies in the form of imagery cues contributes to the solidification of advanced levels of vocal production. All group two participants spoke negatively about the monotonous practice of technique and repetition of the score from start to finish. One singer strongly emphasized the importance of “…mentally putting yourself in the place of performing and practicing performing in the moment” as the most important preparation strategy contributing to consistent performance levels. This finding supports the previous findings of Bowes (2009) and Connolly and Williamon (2004) in the reported use of imagery strategies contributing to higher levels of expressive and interpretive understanding, such as “visualizing my character’s intention.”

Results indicated an integral part of the deliberate preparedness process involves the engagement of mental practice, encompassing: aural, visual, and kinesthetic components with an awareness of the prevailing overall structure (road-mapping) in the learning of new roles. This prevents vocal overuse, and expedites learning. Part of the deliberate preparedness process for international artists also includes collaborating with expert conductor/coaches and/or voice teachers as deemed necessary.

**Proposition Five: International opera singers enhance preparation levels with expert sessions.**

All group two artists reported the importance of engaging in expert sessions with a trusted conductor/coach and/or voice teacher as an integral strategy in the learning of a new operatic role or in the re-visiting of a signature role. The two female participants expressed the importance of checking in with a trusted voice teacher for specific technical work: “If I am
having a vocal qualm I will take it to ‘Lee’ [expert teacher], I need those ears.” Both female artists expressed similar beliefs: “for vocal guidance, one is never done.” These two participants also expressed enjoyment in the process of figuring out technical issues on their own:

*I like to tinker vocally even with just myself. I do go to my teacher, but even just sitting at the piano, self-examining, working with a mirror, tinkering in my warm-up, trying to be more corrective, I notice when things creep in, now let me try and get rid of those [unwanted vocal production habits]. I mean, men, they come to the theatre, finish a cigarette and on they go. It is like, ‘what?’*

Male participants in group two indicated that checking in with a trusted conductor/coach was adequate in the facilitation of desired vocal production outcomes.

*I coach with a guy in New York; he has been the guy that has helped me most over the years. I still learn roles in hotel rooms and when you do that and push comes to shove bad habits can creep in. With him, we have changed my approach to everything being more healthful.*

When referring to a more “healthful” approach, this participant articulated that sessions with this expert coach reinforced breathing strategies and sensations of “my breath hitting the floor,” providing access to ideal vocal production and “feeling like I can do anything with my voice.” The words of this male participant are representative of all group two singers in the seeking out of expert coaches in different major cities. Three out of five international artists indicated travelling to New York to work with a trusted coach for intensive one-on-one sessions. These sessions involved the review of upcoming roles in the interests of furthering the development of interpretive and stylistic elements in conjunction with specific feedback.
addressing technical aspects of vocal production to ensure consistent levels of performing. These sessions typically span less than a week, except when artists are performing at the Metropolitan Opera at the time, and then the coaching sessions can take place throughout the run of shows.

Contrary to the findings of group one participants, at the international level, three out of five participants work with expert coaches who are also well-known conductors. The ability for international opera singers to coach roles with an experienced international conductor increases skills acquisition to elite levels in the areas of preparedness and subsequent performances. Higher degrees of preparation are facilitated by increased knowledge and awareness of the orchestration and melodic framework of operas and in the traditional performance practice expectations garnered from the knowledge of these coaches who have worked with the most revered opera singers. Access to coachings with internationally recognized conductors is unique to international opera singers providing greater insights into the preparedness process and desired performance outcomes for these participants.

Four out of five group two artists engage in coachings in the later stages of their preparation, with the expressed goal of running the entire role in the interest of memory work. As one singer stated, “I tend to do most initial prep by myself in my home. I will take it to a coach to get it off book.” Analysis indicated only one group two participant reported learning the brunt of new roles from the outset with an expert coach. It is evident from the analysis of the data in this area group two singers engage in sessions with expert conductor/coaches and/or voice teachers to enhance preparation and performance consistency.

Similar to group one results, four out of five international opera singers expressed role mastery within four to six sessions with experts. Findings indicate both groups engage in
deliberate preparedness strategies that expedite the learning process and further support the substantive theory that the process of sustaining performance excellence in professional opera requires the constant interrelations of deliberate physical and mental skills including session with expert coach/conductors and/or voice teachers.

Outcomes in Deliberate Preparedness Context

Learning Self-Efficacy

Analysis revealed group two artists possess the belief in their abilities to execute the deliberate skills required to sustain performance excellence at international levels. One participant gave the analogy of building a house in reference to the process of reinforcing high levels feelings of learning self-efficacy:

*It is like you are consistently building towards a house, you are developing the structure and the architecture [reference to breathing and technical strategies in combination with road-mapping], you are placing bricks in the wall [supporting the successive structure of learning], how one builds upon things [indication of complex combinations of deliberate skills provides the basis from which consistent performance outcomes can occur]. For instance building a piece of music from beginning to end, one can only be confident and optimistic after you know the music inside out [high degrees of performing self-efficacy are secured through high degrees of preparation and the execution of these deliberate preparedness strategies into live performances].* 

Data indicated group two singers possess high degrees of learning self-efficacy that have evolved from the implementation of complex combinations of deliberate preparedness strategies
that in turn allows for the sustaining of international levels of performance excellence in opera. “Sustaining peak performances comes from high levels of preparation. You can’t peak if you are still worried about words and notes.” The words expressed by this participant embodies the data provided by all of group two, articulating the belief in their abilities to engage the necessary technical and musical preparedness strategies allowing for consistent performance outcomes: “There is no bigger weapon than knowing a piece inside out.”

This is the first research initiative conducted relating learning self-efficacy beliefs to professional performance outcomes with the use of international opera singers. Although no self-efficacy measures were taken within the confines of this research, results derived from the qualitative data elicited from group two singers extends the findings of Ritchie and Williamon (2011) in the factors correlating with music learning self-efficacy. Namely in: the quality of preparation levels, the development and engagement of interpretive and expressive skills, determinations of stylistic appropriateness, and in levels of perseverance.

Findings in this area for both sub-groups reinforces the necessity for greater clarity in both self-efficacy terms and measurements in the interests of building a bed of research involving professional performing artists. Further research in these areas would contribute to new and important discoveries in the potential relationship between levels of self-efficacy and the cultivation and facilitation of consistent performance levels and in potential curriculum development for aspiring opera singers.

All participants in this research actively develop and refine deliberate preparedness strategies involving: aspects of health and wellness related to their instruments, advanced breathing and technical skills required for the various demands of lead operatic roles, high-levels
of physical and mental preparation strategies including road-mapping, and use of performance cues and imagery, including work with experts to ensure the highest levels of musical preparation. With these high levels of preparedness strategies in place, both groups reported feelings of competency contributing to high levels of learning self-efficacy. These deliberate learning strategies are then directly applied into live performances ensuring the sustaining of performance excellence for these participants.

Performance Environment Context

Proposition Six: International opera singers engage in deliberate pre-performance routines to ensure high level performance outcomes

Similar to the findings of group one, once participants have engaged in deliberate preparedness strategies, the application of their preparation to the performance environment allows for consistent performance outcomes. Analysis of group two exemplified the importance for international artists to engage in a pre-performance routine for consistent levels of performance excellence to occur. Evidence of this proposition is provided by one singer:

*I do warm-ups, relaxation, visualization...if I am performing in the evening I will do vocal warm ups around 3 p.m. for half an hour, and I can tell what state I am in, and then I warm up again for 10 minutes usually an hour or half hour before curtain. I go through my score and visualize where I am onstage.*

Expressed in the words provided above is the necessity to focus before performances through actively engaging in a deliberate pre-performance routine consisting of vocal warm-ups, review of the road-map of the operatic score, and visualizing the specific tasks required while on
stage to ensure high levels of performing. Similarly, another group two participant expressed the following:

*I go into the theatre around noon and have a half hour gentle warm up. I do the “floaty” bits to ensure the voice is fine and then half an hour before I go on I will warm up again.
*You have to save it for the show.*

Important in both participants’ descriptions of their deliberate pre-performance routines is the necessity to check in earlier in the day to ensure advanced levels of vocal production are secure, and then engage in a short pre-performance routine tailored to the specific vocal needs determined earlier. All participants stressed avoidance behaviours of warming up “too much” and subsequently “leaving the voice in the dressing room.” Participants cited regular performing schedules resulted in shorter vocal warm-ups:

*I do scales, check my voice from top to bottom make sure everything is working properly in full voice. I don’t warm up for more than 15 minutes, if I am singing frequently. I just check the top, I always try and get a half tone higher, I know everything is there and I don’t have to worry.*

Four out of five group two participants reported the regular use of a deliberate pre-performance routine and the necessity to review the score before and during the show to ensure consistent performance levels: “I go through the score during the show...I try and make sure I am breathing and resonating.” The remaining singer articulated “the voice is never the same every day,” therefore the use of a regular vocal warm-up routine pre-performance was deemed inefficient. This participant expressed the use of a multitude of practice and warm-up strategies depending on “where the voice is [on any given day].” Various warm-up strategies include
reports of light humming, to ensure the singer feels their body is open. This singer equated the kinesthetic sensation of “openness” to feelings of “hollowness”. This particular participant also indicated engaging in a vigorous vocal warm-up if necessary.

Although four out of five singers expressed the necessity to engage deliberate pre-performance strategies to ensure high levels of performing, it was evident all participants possess a plethora of deliberate warm-up tools to “get the voice going” and for the activation of “in the moment” performances. Indicative of the numerous warm-up tools at the singers’ disposal is the finding that two female participants used specific sections of arias to check vocal production function. One participant refers to this warm-up strategy as a “toothbrush aria” citing Leopold Simoneau for this term. Use of these “toothbrush arias” is reportedly used as an indicator of: “where you are vocally that day.” Both female singers reported using sections of arias that required “controlled pianissimo bits” in the higher register rather than “the super dramatic bits” as a gauge for assessing ideal vocal function. This specific warm-up technique for checking vocal function was not reported in group one.

Contrary to the results in Chapter Four, gender differences were present in the deliberate pre-performance routines used by group two international singers. Male participants reported warming up less, saying “with more experience, warming up is much less…,” and one of the lower voices reported sometimes not warming up at all: “there have been nights when I have gone out without singing a note, knowing I have a small window of opportunity, so I had better save it for the high G’s.”

Within the analysis of the data, gender and voice type differences did present themselves in the deliberate pre-performance routines employed by group two. Similar findings were found
between the two sub-groups in the necessity to employ deliberate strategies pre-performance to ensure successful skills execution in performances.

**Proposition Seven:** International opera singers execute deliberate high-level skills reinforced in preparation into live performances through action-based initiatives to be “in the moment” while performing.

Analysis clarified group two singers apply advanced deliberate strategies directly into live performances contributing to action-driven communications between other performers and the audience that serve to sustain performance levels. One participant described the relationship between high levels of preparedness leading to active communication:

*You have to be in a space where you are not in your own way. You have done your homework [advanced levels of preparation] and then you get out on stage and just engage in being an artist and say what has to be said with your voice, body, and soul.*

These words represent the thoughts expressed by the collective whole indicating high levels of deliberate preparedness ensure the ability to actively engage and drop into “the moment” of performing and communicate as lead roles demand. Another participant articulated the necessity to develop and apply visual and kinesthetic cues to ensure active communication in performances:

*Onstage, visualization is a big part of it all for me. Constantly trying to feel the sensation of length in the body, shoulders down [kinesthetic cues], re-gathering yourself between lines, consciously visualizing the score where you have everything notated [visual imagery cues accessing deliberate road-mapping of score], this allows me to drop into my character and express what needs to be expressed.*
The above quote supports and extends the previous research results of Truscheim (1987) and Bowes (2009) reporting benefits of the use of imagery cues in performances including: engagement of necessary energy levels, enhancement of advanced levels of vocal production, and in the strengthening of the portrayal of operatic characters and expressive feelings with audiences. Further support for proposition seven is illustrated below:

*I start by breathing really low, really low and slow, feeling my weight, feeling the floor [kinesthetic cues] then I have to speak [action]. Listen [action] to the music before my entrance [aural cues], feeling the energy from the music, feeling the vibrations [kinesthetic cues], and then I vibrate with it [action]. You should vibrate from beginning to end, through all of the pauses and breaks. Soon everyone is vibrating together, me, other performers, and the audience.*

The thoughts shared by this singer provides the reader with a vivid picture of an international opera singer engaging action-based physical and mental cues involving “breathing,” “listening,” “speaking,” and “vibrating.” These action-based strategies contribute to heightened communications with colleagues and audiences. All group two participants emphasized the importance of a mind-body connection in performances and complete integration of the libretto to ensure consistent levels of performing: “I have to constantly stay connected to the text and then I am able to be there in the moment communicating: that is the best place to be in.”

In sum, group two singers engage in action-based initiatives including the use of cues to remain “in the moment,” while communicating through words and music to allow for stable performance outcomes. “I think [about] going that extra mile, sneering more as an evil character, activating a reaction in someone else because of my action.” This in turn allows for flow experiences including increased energy exchanges with colleagues and audiences.
Outcomes in Performance Environment Context

Complex combinations of deliberate skills executed in live performances contribute to flow experiences including energy exchanges with other colleagues and audiences and further solidifies feelings of performing self-efficacy. This allows for the development of a “global artist” perspective to emerge, consisting of a “law of averages,” all contributing to the process of sustaining performance excellence at the international level.

Flow

When group two participants were asked to describe what they considered optimal performance experiences, as in group one, it became apparent all singers were familiar with term coined by Csikszentmihalyi (1990) as “flow” and used it to describe optimal performances when “everything comes together.” Derived from the analysis, international opera artists described experiencing full engagement in performances only after deliberate physical and mental skills are reinforced. This argument is further supported in the words of this participant: “Beginners practice so they get it right, professionals practice so they never get it wrong.” Integral factors contributing to performance excellence in opera include flow experiences involving heightened energy exchanges with other performers and audiences for these participants:

Sustaining peak performances comes from high levels of preparation. You can’t peak if you are still worried about words and notes. When you are with a conductor and you are breathing in tandem [heightened energy exchanges among colleagues], that is just awesome. The conductor is there with you, and everyone is there to make music and you are on top of it. We can all be at peak performance. It is like being an athlete. Some
performances are higher than others but if you are in good shape and thinking straight, it isn’t rocket science.

The words expressed above provide evidence for the substantive theory indicating high degrees of preparedness are necessary before the sustaining of performance excellence can translate into live performances. The importance this performer puts on breathing as part of a collective whole (including the conductor, and other performers, and chorus) provides evidence that shared collaborative cues are a factor in optimal performance experiences for international opera singers. This finding differs from the previous research of Ginsborg et al. (2006) which indicated shared collaborative cues were highly organized and pre-planned. Surely, some shared collaborative cues are articulated between the conductors and opera singers in the rehearsal process, although in analysis of the data provided in this research, the regular occurrence of shared breathing cues appeared as part of an unspoken, organic process with the evolution of high-level performances in real time. It would be interesting to pursue this required facet of flow experiences with other types of musicians in varied disciplines.

Contrary to the results of the first group, gender differences did emerge in the analysis of data involving flow experiences. The two female singers cited flow experiences did involve energy exchanges with colleagues and audiences but reported them as rare occurrences. Whereas the male participants in this group expressed flow experiences are achievable regularly. One female artist reported experience of flow performances as “a completely integrated experience, the acting and singing together…one really feeding the other,” yet noted not being “easily satisfied with what I do.” The other female international artist cited environmental considerations as factors in the lessening of flow experiences:
Perhaps singers who are never satisfied with their performances are terrible perfectionists, or have cruel expectations of themselves. It is true, if I ask myself how many performances a year I am feeling the “flow,” or I will call it [being] “in the zone,” maybe [counted] on one hand. The rest, you have your period, you have just gotten off a long flight, you are getting over something, so you might be at 82% sometimes 72%, the point is that is when good technique kicks in and you have developed all of these ways to get through. “Good enough” is my catch phrase for life in general. In singing, me [being] at 80% is good enough.

This participant provides further evidence for the important role deliberate skills play in the maintenance of performing levels. An interesting finding that emerged from the data of group two is the notion of being “good enough” and speaking of the assessment of personal performances in terms of averages. This theme will be further developed later in this section.

First, another participant provides a description of an experience of flow in detail:

*It was one of those nights; you warm up during the day and feel great. You go into the dressing room and warm up before and you feel fine, the voice is high. There is a real buzz in the air and everyone onstage is clicking. There is an absolute silence in the house and you know you are in complete control of those 4,000 people in that moment and it is electrifying. In those moments you can do anything you want in terms of shading, dynamics, you are just working and everything is falling into line. You look around at your colleagues and you inspire each other, the chorus is breathing with you and the whole performance goes up. It is thrilling.*
Expressed above are feelings of “flow” resulting from the interrelations of multiple factors including aspects of vocal health and wellness in combination with high levels of preparation, and the subsequent energy exchanges between other musicians and the audience, all resulting in a satisfying performance experience. Further support for the proposition international opera singers experiences of “flow” include energy exchanges between other colleagues and the audience was substantiated in the description provided by another singer:

*Feeling the physical sensations and energies from within and from other colleagues…with an open body and heart allows for parts of the self and life experiences to become one with the character you are portraying which heightens levels of energy and everything starts to flow.*

Both quotes reinforce the substantive theory that the constant interrelations and reinforcements of deliberate preparedness strategies contribute to feelings of both learning and performing self-efficacy that are then directly applied into live performances. These complex combinations of factors facilitate flow experiences involving energy exchanges between colleagues and the audience and ultimately results in the sustaining of performance excellence in opera for these participants.

A unique finding exclusive to group two was the inclusion of “life experiences” as a contributing factor to performance levels. I interpreted this as evidence that previous levels of excellence in professional operatic performing serves to feed future performance outcomes, resulting in the presence of high degrees of performing self-efficacy for the international participants.
Performing Self-Efficacy

Analysis of the data provided in the interviews of group two participants indicated deliberate skills engaged in the preparedness phase serve to reinforce learning self-efficacy. These developments contribute to successful skills execution in live performances and serve to reinforce performing self-efficacy levels. As one participant stated, “you trust you have done the work and you have the goods. Then you have to start to speak and be a medium and vessel of expression.” The words of this singer provide evidence that the reinforcement of deliberate skills in preparation provide the solid base from which freedom of artistic expression can take place. Another singer referred to the reinforcement and application of deliberate skills in preparation and performances as formidable weapons: “We have many weapons in our arsenal, one of which is high degrees of preparation which allows us to live in the character and in the moment on stage night after night.” This quote further supports the substantive theory developed for group two participants indicating high degrees of preparation, or rather, having an arsenal of tools in their deliberate skills tool kit, allows for consistent levels of performing. Implementation of these deliberate strategies provides international artists with feelings of freedom in their performances, and shared energy exchanges with other artists and audience members. It is clear the volume of work and performance experiences accumulated over decades by group two singers contributes to increased feelings of performing self-efficacy which feeds all aspects of the process of sustaining performance excellence:

...as you have a longer career you simply trust it more [evidence of high degrees of learning and performing self-efficacy]. As I have continued in my career I have a higher level of trust and belief in my abilities because you have a history you can draw upon.
All group two participants expressed the major factor contributing to their regular re-engagements at international opera venues stemmed from their abilities to consistently perform well. “I am very good at quality and being consistent. I am known for and am hired for that reason.” Once consistent levels of performance excellence at the international level are actuated, further analysis revealed the emergence of the presence of a “global artist”. Group two participants possess a global perspective of the “self” as an artist consisting of the philosophy of “thriving not striving” and implementing a “law of averages” providing ways in which to assess their performing levels accurately.

Global Artist

Unique to group two, are results indicating international-level opera singers possess a perspective regarding the nature of performing at elite levels as an extension of themselves and their cumulative life experiences, and as a source of vitality, yet this does not wholly define who they are.

What does it mean to be an opera singer? Each person has to figure that out for themselves, but the artists that have inspired me and informed my own performing are well-rounded, who have a curiosity, and are interested in so many different elements of art, and they bring that along with their life experiences into their performances. We are artistic performers and I think you have to have an understanding of life. We all respond to what is happening around us and that is applied to what a singer must do onstage also. That is what makes a singer alive and interesting with something to say.

All group two participants expressed a global perspective on performing derived from decades of singing, stressing the importance of being an artist with something to say as an
extension of themselves and their experiences. The importance of the interrelations of deliberate skills relating to heightened communication levels in performances was articulated by one singer:

*Good technique involves the ability to get onstage even when you are struggling [vocally] and still communicate. It is the package of the emotional, physical, and spiritual, and when all three coordinate enough then you perform on a level that makes the public want to hear you and people want to hire you. Then you have a technique and that is good singing. You must sing because you have to. You can’t imagine not singing.*

Illustrated in the quote above is the importance for group two artists to re-acquaint themselves with the passion and joy that led them to their singing endeavors and that now serve as a source of motivation for continued work at the international level. This finding extends the previous results of Vallerand et al. (2008), identifying passion as an important motivational source contributing to the achievement of elite performance levels.

*For me the need to be vital involves singing and continuing to love the work in the practice and rehearsal room. I discover so much about myself, my process, and ultimately what I want to say as an artist.*

Supporting the sentiments provided by a group two singer above, another participant expressed, “You need to constantly tap into the joy of singing and the act of performing.” For group two, getting down to the fundamentals of why they sing provides continued motivation to perform at elite levels. Based on the analysis of the data provided in the interviews of international opera singers, part of being a global artist encompasses the ability to communicate and interpret music uniquely:
When I am singing and can feel my breath hitting the floor and the voice is ringing and easy, the voice spills forth and the character sings. It becomes a live thing. No one has ever made that statement like that in the world before in the same way and never will [global artist philosophy].

This quote illustrates the importance of opera as a live art form experienced by all group two singers, within a space and time that cannot be replicated. The continuous reinforcement of deliberate skills in preparation in combination with decades of performance experiences results in a global perspective on performing. This perspective is illustrated in the words of this participant: “I am very fortunate I have fulfilled my dream; I have sung at every major house that I have ever wanted. You have to keep finding the enjoyment in it. That is all that truly matters.” With this emphasis on connecting to the basic joy of singing and performing comes the implementation of a philosophy consisting of “a law of averages,” providing the ability to assess performances and negate overly critical thinking.

“Law of Averages”

Analysis revealed group two singers implement a “law of averages” philosophy regarding personal assessments of their performances. This philosophy provides a perspective with which to assess levels of performances allowing these singers to thrive in performance as opposed to striving for unattainable levels of perfection and the over-taxing of the voice and energy levels. One participant articulated this as the skill of “singing on the interest, never the capital, never on your substance.” Further evidence of the substantive theory that international opera singers engage “thriving not striving” strategies is reflected in the words of another singer:
Early on I think young singers think they need to go all the way and spend everything in performances. When you give to your audience it has to be from your excess and overflow, you shouldn’t be depleting everything. You get yourself to a place where you have an overflow of emotion and that is what you are giving to people so you aren’t living what your character is every night. How on earth could you function? Perhaps it is not politically correct to say “don’t give it your all in performances.” Of course I give it my all, but I am doing a job and my job is to express the emotions of the character and the music, not live it. That is indulgent and vocally you will suffer long term.

I propose that the implementation of the strategy “performing off of excess” strategies can only occur after years of executing professional performances. This deliberate performance skill is essential to the sustaining of performance excellence at the international level long term. Arising from the analysis of the data came the finding that all group two singers actively apply a “law of averages” when self-assessing their performances:

*I believe in the batting average. I want every performance to be better, but thinking “I want this performance to be perfect,” [it’s] not going to happen. After thirty years, thinking of all of the runs, some nights are better than others...but consistency is the ticket.*

Application of this law of averages allows for the release from expectations of perfection:

*I don’t go for perfection. One is different every night. I like the term “good enough.” Flow performances are rare. You might get four a year, when you are at peak and everything is at your fingertips. Other nights, you have had a fight with your partner,*
you’re coming off a cold, and you manage. Perhaps my 79% is good enough. Managing is the beauty of it because we are humans not robots.

For all group two singers, the application of the “law of averages” philosophy provides the ability to let go of unrealistic expectations of themselves and their performances and allows for a global perspective of self-acceptance that who and what they are as artists on any given day of performing is simply “good enough.”

I have learned over the years, me at 70% and me at 90% is not necessarily apparent to everyone. I have a greater sense of “this is what I have got today and this is where I am at today and that is enough.” Remembering I am singing great music and this is what people came to hear. Trying to get perspective and engaging in perspective talk. I know my standard and how I rank my performances but that doesn’t lessen the fact that someone liked it. Somebody got taken away from their daily grind by something that I did. Who am I to downplay that based on what I think I did or didn’t do when performing? At a certain point you have to let it be.

After analyzing the data provided by group two participants, I argue the development of a global artist perspective and the subsequent application of a law of averages in the self-assessment of performances is unique to this elite sub-group and can only occur after years of honing deliberate skills in preparation in combination with successful skills execution in performances.
Summary of Group Two

The results derived for the data provided by group two singers exemplifies the complexity of the inter-relationships of the deliberate skills contributing to the sustaining of performance excellence in opera at the international level. Results revealed complex combinations of physical and mental skills reinforced within the context of deliberate preparedness facilitated high degrees of learning self-efficacy. These complex combinations of deliberate skills executed in live performances contributes to flow experiences including energy exchanges with other colleagues and audiences and serves to further solidify feelings of performing self-efficacy. The synergy of all of these factors over an extended period of time contributes to the emergence of a “global artist” perspective and a “law of averages” philosophy leading to sustained performance excellence at the international level. The next chapter will briefly address the similarities and differences between the findings of group one and two opera singers.
CHAPTER SIX: SIMILARITIES AND DIFFERENCES IN THE FINDINGS OF NATIONAL AND INTERNATIONAL OPERA SINGERS

Due to the nature of the research question, I expected similarities to exist in the main categories and themes, due in part, to the determination of the two contexts: deliberate preparedness and the performance environment. Although addressed briefly in Chapter Five, the second part of this investigative initiative will present the similarities and differences that emerged in the deliberate skills used by national and international opera singers.

Deliberate Preparedness Context

Health and Wellness

Contrary to the findings of Nichols (2010) and Ginsborg et al. (2009), both national and international opera singers engage in deliberate skills that contribute to the health and wellness of their instruments. Similarly, both groups conveyed high-levels of interest in the areas of overall health and in the maintenance of good vocal hygiene. Analysis indicated both groups engage in behaviours to stay physically fit, avoid eating late at night and foods associated with the development of symptoms related to acid reflux, and limit alcohol consumption. These findings support and extend the previous findings of Braun-Janzen and Zeine (2008) and Sandgren (2005), yet subtle differences did present themselves between the two groups.

Group one singers expressed rigorous adherence to skills relating to health and wellness strategies to ensure optimal health and vocal function. International opera singers also reported
engaging in similar skills but analysis of the data revealed these singers are less stringent in their application. These singers, expressed avoidance of alcohol a few days before performances yet all five prefaced indulging in a glass of wine the night before a performance now and again. Group two participants reported fewer adherences to avoidance of alcohol due in part to decades of performing experiences. “I worry less about avoiding wine now that I am older and have sung for so long….” Another international participant expressed similar feelings:

\textit{It depends on the role. Recently when I was doing a long run of shows I would have a half pint of Guinness at lunch for energy…I don’t often drink the day of a show, but I found a half glass of Guinness was good for that little bit of energy I needed.}

It should be noted one of the international singers is a long-time smoker indicating less diligence to healthy behaviours contributing to good vocal hygiene.

Another subtle difference in skills associated with the maintenance of optimal health and wellness emerged between female and male participants across both groups relating to amounts of talking and voice use leading up to performances. Three female participants reported adhering less to strategies involving limited voice use pre-performances in interests of preserving prime vocal function. All three women indicated with the start of their families, it is not possible to stop talking to family while in rehearsals and during performance days when away from home.

\textit{If I am coming down with something I am definitely a lot more quiet [reference to limited voice-use]. It is more difficult with a child now. How do you not respond to “Mommy why are you being quiet?” or “Mommy, can you be louder now?” It is hard to explain things like that to a little child. I just can’t always be silent for the whole day anymore.}
Here the words of this participant articulate adherence to limited voice use when possible, although with the start of a family, employment of this strategy is less possible. Contrarily, one of the male artists expressed life on the road is easier due to the ability to engage in limited voice use when away from family members. Findings in this area revealed all participants engage in limited voice use, particularly on the day of performances. Differences did exist between national and international singers in the reported avoidance of alcohol intake and in the limiting voice use between male and female participants when away performing due to familial considerations.

**Breathing and Technique**

Both national and international singers expressed the application of advanced breathing skills for optimal singing and perceived these skills as the cornerstone from which all high-level vocal production is based. Although no quantitative measures were taken measuring the breathing capacity of these singers, there was qualitative evidence to support the existence of high-level skills associated with advanced breathing patterns. These skills include coordination of muscle activities, and concentration of singer’s formant due to the regular professional engagements sustained by all participants in this study. Further investigation into this area with the addition of quantitative measurements would prove beneficial in the garnering of new knowledge moving forward.

It should be noted, one participant in this research investigation was also a subject in the study conducted by Kleber et al. (2009), who found professional singers with extensive performance experience develop neural processing associated with increased awareness of where the vocal muscles are positioned, exaggerated brain activity in sending commands to the muscles.
associated with vocal production, increased activations in areas involving working memory, and in neural functions associated with a greater capacity to monitor performing activities. Although no direct comparisons can be made between this research and the quantitative work conducted by Kleber and colleagues, it is worthy to acknowledge the scientific evidence that one of my participants has been found to possess increased neural processing skills in areas relating to advanced vocal production, working memory, and the capacity to monitor performance behaviours in professional opera singing.

In the area of self-perceptions of singer’s physical actions associated with breathing, results of my research did not support the findings of McCoy (2005) that indicated female singers reported focusing breathing efforts lower in the body. In this study, no gender differences revealed themselves in the self-perceptions of the breathing skills associated with positive singing outcomes.

One of the key differences between the national and international groups was the reported amounts of physical practice time. Results revealed international singers engage in very little vocal practice due to rigorous performance schedules and the various demands of challenging repertoire. In contrast, three out of five national participants indicated the necessity to engage in deliberate technical practice skills for several hours each day. The remaining two national participants cited changing family dynamics as the primary reason vocal practice was not employed daily in the home. As previously noted both of these singers are in the upper age range of group one and appear to straddle the two groups in terms of findings in this area.
Road-Mapping

Results of this study extend the previous findings of Chaffin et al. (2002) to include professional opera singers. Analysis showed both national and international participants engage in deliberate skills involving road-mapping of their scores and the development of performance cues to enhance levels of preparedness. All participants reported use of the first-line strategy of mapping out their opera scores by making note of the division of sections, marking in basic technical and music cues, translating the text, and developing interpretive and stylistic cues in the interests of expediting the in-depth learning of their music. The term all participants attributed to this skill was subsequently used as the in-vivo code: “road-mapping.”

Contrary to the previous findings of Chaffin and Lisboa (2009), results indicated all participants listened to audio recordings of performances in preparation at the outset of the learning process, as opposed to later on, in concerted efforts to avoid replications of stylistic interpretations of other professional artists. Although all singers reported the necessity to deliberately road-map their music, group one participants engage in a process of preparedness within a highly organized hierarchical structure. Group two singers engage in the same process with greater fluidity, implementing complex interrelations of skills from the outset. International singers reported learning most music on the road while performing other operas, thus relying on mental practice skills at earlier stages in the learning process.

Another difference between the two groups was first reported in Chapter Five. Three out of five international artists are fluent in a language other than English, and perform most often in that language. Group two singers have also accumulated more performance experiences of repertoire of a specific period requiring a specific voice type. With these considerations in mind,
analysis of the data provided by the international participants revealed these singers learn new roles largely independently. This finding extends the results of Williamon and Valentine (2002) who reported a decrease in the amounts of practice time required when musicians are familiar with a specific music style or performance period.

**Mental Practice involving Imagery**

Analysis indicated both national and international opera singers employ the use of mental rehearsal strategies through the use deliberate visual, auditory, and kinesthetic imagery cues within the preparedness phase. Similarly, all participants reported the use of deliberate skills involving the use of imagery cues as a necessary component for the prevention of vocal overuse, the enhancement of physical preparation, and when physical practice is not possible. All singers reported the perceived benefits of the use of imagery skills in the greater facilitation of advanced breathing skills leading to the access of optimal vocal function.

No differences were found in the use of deliberate skills involving the use of visual, auditory, and kinesthetic cues in the preparedness phase, although significant differences were found in the use of imagery cues when applied to the performance context between the two groups. This will be addressed in the performance environment context later in this chapter.

**Expert Sessions**

All artists reported the necessity to engage in expert sessions with master coaches as part of the deliberate preparedness process. Four out of five national singers engage in sessions with the same local master coach, although at different stages in the learning process. Three group one participants engage in expert sessions at later stages of preparation, when the music is
memorized. Differences among group one singers are attributed to the preferred learning styles reported and in the interests of accommodating lifestyle considerations involving family. The two remaining singers work with a coach earlier in the learning process. All national-level artists express the importance of checking in with a voice teacher, although limited access to master voice teachers due to scheduling issues was indicated.

International-level opera singers expressed the need to travel to major centers to work with expert coaches and voice teachers. Gender differences did present themselves within this group. Female singers reported the necessity to engage in sessions with voice teachers, whereas male participants revealed work with trusted conductor/coaches facilitated desired technical and music outcomes. At the international level, these artists have access to international conductors with whom they work and coach music. This special access is believed to be a key factor in the facilitation of expert levels of preparedness and subsequent performance levels. Collaborations with these master conductor/coaches enrich knowledge and skills acquisition for these select singers in the areas of: stylistic expectations, historical performance practices, and greater intimacy with all aspects of their music scores and various vocal approaches to some of the most difficult lead roles in the operatic repertoire.

**Outcomes**

Results revealed both groups engage in complex combinations of deliberate physical and mental skills that contribute to the development and reinforcement of feelings of learning self-efficacy which contributes to the in-depth learning of music and advanced levels of preparedness. Subtle differences did exist between the two sub-groups indicating international artists combine all deliberate skills strategies in the preparedness phase at earlier stages and are
less hierarchical in their approach to learning. Exceptions were noted in Chapter Five, with the presence of two negative cases. One participant at the lower end of the age range reportedly engages in a deliberate process of preparedness that is highly organized and hierarchical, similar to the process of group one singers. The second negative case, involved the use of a master conductor/coach throughout the entire process of learning a new role. All other participants in both groups engaged in expert sessions later in the learning process. When collaborating with expert voice teachers and master coaches all participants reported music mastery within four to six sessions. Results revealed another subtle difference between the two groups. In the area of self-efficacy, national-level artists engage in the interrelations of deliberate physical and mental skills that contribute to the development of high level feeling of learning self-efficacy, whereas international artists are at a stage where complex combinations of deliberate skills serve to reinforce high levels of learning self-efficacy that are already present.

Performance Environment Context

Deliberate Pre-Performance Routines

With the exception of one participant, all singers reported the necessity to engage in deliberate pre-performance routines to ensure activation of advanced breathing strategies and secure levels of vocal production in performances. Strategies include a short vocal warm-up and the review of their scores to ensure the memory retrieval of all basic performance cues. A subtle difference in the warm-up strategies employed by the participants was illustrated in the use of checking vocal function through the review of specific arias where pianissimo singing is required for two of the female international singers. In this area gender differences did present themselves within group two participants. One male singer reported warming up much less or, at times, not
at all. No such differences emerged in group one singers. All participants stressed the importance of not over-singing before performances to ensure optimal singing throughout the duration of shows.

**Action-Based Skills Selection in Performances**

Both groups reported engaging in the application of deliberate preparedness skills directly into live performances, although marked differences were found in the application of these skills. Analysis uncovered national-level opera singers implement action-based mental cues imagery, engage in turning the mind strategies, and activate action-based questions to regain focus during performance and to ensure successful character portrayal. The action-based mental strategies utilized by group one singers were found to be pre-planned and largely created within the rehearsal process. International-level participants reported use of deliberate action-based cues primarily to reinforce optimal breath support for desired vocal function in performances. Group two singers activate “in the moment” performances by focusing on: “character intent and energy, communicating with other artists, connecting to the music, what is about to happen, and what you are trying to say…it is like speaking.” Results revealed international opera singers possess such high-level feelings of performing self-efficacy they are able to re-focus in performances through activation of text delivery and active listening and communicating with colleagues and audiences rather than referring to pre-planned performance and imagery cues.

A further differences existing between group one and two participants in the area of skills execution in live performances emerged in the finding: national-level opera singers use deliberate “turning the mind” strategies in response to moments of lack of focus or when negative mental commentary surfaces. These skills include the engaging of action-based orders
and questions directed at the self, colleagues, and audiences such as: “Watch this!” or “Are you listening?” These action-based initiatives were reported as useful strategies to activate a return to “in the moment” performances or in direct response to negative mental commentary including the implementation of self-directed orders including: “Shut up” or “Stop!” International opera singers did not report the use of such strategies but rather emphasized the importance of returning to “in the moment” text delivery, actively listening and communicating with colleagues, and re-focusing on character intentions.

**Outcomes**

Both groups engage complex combinations of skills within the context of live performances contributing to flow experiences involving energy exchanges with colleagues and audiences resulting in feelings of performing self-efficacy. Gender difference did present themselves within the singers’ personal accounts of flow experiences. Three out of five female participants reported the occurrence of flow rarely due to “not being easily satisfied with what I do,” and environmental factors such as experiences of “having your period, or having just gotten off a flight, and being separated from loved ones,” as detractors from flow performances.

Both groups indicated feelings of performing self-efficacy are facilitated, in large part, by the consistent engagement of deliberate preparation strategies and are further reinforced by previous positive performance experiences. At the national level, findings illustrated the cultivation of complex combinations of deliberate skills developed within a highly organized and hierarchical structure contribute to the sustaining of performance excellence. At the international level, the preparedness approach revealed itself to be less hierarchical and involves a global artist perspective addressing the meaning and purpose of performing for these participants.
Unique to group two are results that uncovered these artists have developed a global artist philosophy addressing the nature of performing at international levels. These participants expressed the importance of re-connecting with the initial joy and passion experienced from singing as a key source of motivation. Analysis revealed group two singers access a broader picture of the act of performing that is less about the successful execution of hierarchical skills. Greater importance is placed on the necessity to communicate and interpret music uniquely.

An integral part of this global artist perspective is the implementation of a “law of averages” philosophy that enables these singers to realistically assess their performance levels. In the words of one participant: “[Performing] at 70% and at 90% is not necessarily apparent to everyone. It is what I have got today and that is enough.” This perspective places the emphasis on consistency rather than perfection contributing to the release of expectations of perfection for these international artists, allowing for the sustaining of performance excellence to occur.

Summary

The second part of this research inquiry was to ascertain what similarities and differences exist in the deliberate skills professional opera singers use in the process of sustaining performance excellence at the national and international level. Due to the parameters set in this research inquiry examining the deliberate skills used in preparation that are then translated in live performances, I expected high degrees of similarities in the main categories and themes grounded in the data. Yet within these categories and themes, marked differences did emerge providing valuable insights into the ways in which national and international opera singers deliberately prepare complex combinations of physical and mental skills from the outset that are then selected and executed in live performances, all contributing to the sustaining of performance excellence.
excellence for both groups. Further research is warranted in this budding area of inquiry examining what skills contribute to the sustaining of performance excellence in professional music performance.
CHAPTER SEVEN: CONCLUSIONS

The aim of this dissertation was to investigate what deliberate skills professional opera singers use to sustain performance excellence. The importance and uniqueness of this research inquiry is multi-layered. First, my work is an original research contribution in the area of sustaining performance excellence in professional opera. Second, it is the first systematic research conducted in this area implementing such selective criteria for both participant groups. Third, it is the first study conducted by an active opera performer involving other active performers, the situated nature of the knowledge needed [insider perspective] as an analytic lens to fully understand the complexities of the data and results acquired in the study.

Through the use of grounded theory method and design, two sets of interviews were conducted with two groups of opera singers. The first group consisted of five opera singers who have successfully sustained a national performing career for ten years. The second group of participants was comprised of five professional opera singers who have maintained a successful international performance career for a minimum of twenty years.

Two sub-groups were purposely sampled in the interests of determining what similarities and differences exist in the deliberate preparation skills used between national and international opera singers. Although differences between the two groups were found, implications resulting from the similarity of findings are immediately transferable in the fostering and development of skills for other aspiring and professional opera singers, expert coaches, and voice instructors.
Implications and Suggestions for Deliberate Preparedness Strategies

Findings indicated within the larger skill of deliberate preparedness, a relationship between physical and mental skills exists which serves to contribute to feelings of learning self-efficacy and the sustaining of performance excellence for the singers who participated in this study. The new knowledge garnered from this research proposes opera singers entertain developing deliberate health and wellness strategies including: a regular cardiovascular fitness routine, high levels of hydration, avoidance behaviours related to alcohol intake and smoke, foods associated with GERD, and an adherence to sleep promoting behaviours. Bolstering the previous findings of Sandgren (2005), results revealed adherence to deliberate health and wellness strategies contributes to optimal health and vocal function for singing. Based on the findings of my research inquiry, I suggest opera singers consider limiting voice use pre-performance and during performance engagements to enable consistent levels of advanced vocal production ensuring positive performance experiences and outcomes.

The importance for opera singers to engage in the regular practice and cultivation of skills in the areas of advanced breathing for singing and in the solidification of a strong singing technique was also revealed in the analysis of findings. I suggest vocalists actively seek out expert teachers to aid in the fostering of advanced breathing and technical skills throughout their performance life span. At earlier stages of professional operatic careers, results support the benefits for singers to engage in a regular practice regime to ensure advanced technical and music skills acquisition.

Part of the deliberate preparedness process for singers should also include the hierarchical organization of operatic scores through the development of a music road-map, including the
development of performance and imagery cues. Findings in this area expand on the past research of Chaffin and Imreh (2002) and Ginsborg et al. (2006) who reported benefits of mentally mapping out music in the facilitation of levels of preparation required for successful professional performance outcomes. When considering the inter-relationship of preparation skills for singers, the use of deliberate mental rehearsal strategies and simulated performance practice are also imperative. These strategies expedite the learning of new roles and allow for the consideration that singers simply cannot practice for the same amounts of time as instrumentalists. These conclusions extend Sandgren’s (2005) earlier work which reported that it is necessary for opera singers to acquire mental practice skills to prevent voice overuse, tension, and possible injury, and to accommodate for situations where physical practice is not possible. Once certain levels of preparation are achieved, results support that collaborating with expert coaches enhances stylistic and interpretive preparation and performance outcomes.

Within the area of deliberate preparedness results, combinations of physical and mental skills contribute to the development of feelings of learning self-efficacy. Findings uncovered the crucial role high level feelings of learning self-efficacy play in the continued accruement of technical and music mastery, and the continuation of performance excellence experiences for the participants. The relationship between deliberate preparation and levels of performance in this study expands on the previous research of Ericsson et al. (1993) and Lehmann and Gruber (2006), who reported that to attain high levels of performance one must employ sustained deliberate practice skills. My research takes previous findings past the achievement phase of development to the sustaining of professional performance excellence in professional musicians as opposed to results using student samples.
Implications and Suggestions for Skills Execution in the Performance

In the area of successful skills execution in opera performance, findings revealed the importance of developing a deliberate pre-performance routine to assure technical and music mastery. Use of a pre-performance routine was found to contribute to levels of focus and concentration required for performance excellence to occur for nine out of ten participants. Based on the results of my research I suggest opera singers engage in a consistent pre-performance routine consisting of vocal warm-ups based on the needs of each individual singer. A brief vocal warm-up should be followed by a review of a singer’s score to reinforce all structural, basic, interpretive, and stylistic cues. Results also indicated visualizing specific performance tasks beforehand in combination with review of the score during performances aids in memory retrieval – a required skill for consistent performance outcomes.

The benefits of engaging deliberate action-based initiatives in live performances were reported by all participants in this study. In earlier stages of an operatic career, findings suggest developing action-based imagery cues such as “inflate” and “ground” aid in countering negative thoughts, better access to breaths for singing, and the re-engagement of focus. The national opera singers that took part in this study reported the use of action-based questions such as “Are you listening?” and orders including “Watch this!” as helpful tools for the regaining of focus and higher levels of engagement with colleagues and audiences. Based on results in this area, I suggest voice students and opera singers in the early stages of their careers would benefit from developing deliberate action-based performance and imagery cues. The application of these cues in performances may enhance the execution of optimal vocal production and further facilitation of character delivery and intentions. Use of these action-based cues and initiatives may also
increase the likelihood of “in the moment” positive and consistent performance experiences.

However, results revealed levels of learning and performing self-efficacy are so developed in group two participants that they are able to re-focus in performances by engaging active breathing strategies and re-connecting directly to the text rather than using pre-planned, action-based questions and directed orders. I argue this degree of fluidity in performing can only take place after years of the successful pre-planned implementation and execution of deliberate skills strategies.

The application of complex combinations of deliberate skills within the context of live operatic performances is multi-faceted. The numerous benefits reported by participants included: increased flow experiences involving energy exchanges with colleagues and audiences and higher level feelings performing self-efficacy. There were some discrepancies in my results surrounding the frequency of flow experiences reported by singers in both groups. Yet, analysis indicated with the use of deliberate skills, all singers expressed feelings of satisfaction and contentment with their performance levels.

Unique to group two participants was evidence of the development of a global artist perspective aimed at addressing the nature of performing at elite levels. As seen in Chapter Five, this perspective encompasses a philosophy that provides a constructive way for international opera singers to self-assess their performances. These participants expressed the importance of re-connecting with the initial joy and passion experienced from singing, placing importance on the necessity to communicate and interpret music uniquely. I purport the successful application and execution of deliberate skills in preparation and performance allows classical singers to more accurately assess what specific areas they want to improve and which areas are working well.
The emphasis on skills development and subsequent implementation of these skills places emphasis on consistency rather than nebulous goals of performance perfection.

**Concluding Remarks**

Further research is warranted to facilitate and develop new insights into the skills and processes professional opera singers use to sustain performance excellence. The implications of these new insights are far reaching. Development of knowledge in the area of performance excellence in classical singing can begin to fill the gap of scholarly research and can also serve to enhance the facilitation of better techniques and strategies in the areas of practice, preparation, and performance for professionals and students in performance based areas of study. Finally, the continuation of this research may also contribute to the earlier development of consistency and maintenance of high levels of performance for all opera singers.
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APPENDIX A

Review and Critique of Sandgren Dissertation
Sandgren, Maria,
Becoming and being an opera singer;
Health, personality and skills
Ph.d., Stolkhom University, 2005
91-7155-039-9

Abstract*
The present thesis explores factors and processes associated with the artistic profession and development of opera singers. The profession of opera singers has a long story deriving its origin in early 1600s in Italy. What is performed on opera stages today is written in the musical scores in the 18th and 19th century. The question arises how the modern opera singers live, learn and excel in their contemporary pursuit in order to meet the high demands on performance. The initial study identified health issues related to the professional activity of opera singers. Qualitative and quantitative measurements indicated that psychological problems were associated with a distinct worry for possible negative evaluation from significant others and a fear of vocal indisposition. A range of health-promoting activities was demonstrated aiming at preventing the occurrence of somatic problems that could cause vocal indisposition. Psychosocial problems concerned difficulties to maintain a family life and relations due to irregular working hours. In Study II, the psychological and physiological effects of singing lessons were investigated with respect to amateur and professional levels of singing experiences. Amateur singers experienced more well-being measured by self-reports of emotional states and by lower levels of stress hormones than professionals. In Study III, narrative accounts were collected to identify factors and processes in the artistic development during higher opera education. A descriptive model was created that embraced the development of various skills such as singing technique, means of expressiveness and interpersonal skills. Outcome variables from the education were artistic autonomy, artistic competence and change in self-concept. In Study IV, personality characteristics were assessed among elite students in opera and business education representing an artistic versus a traditional educational streaming. Female opera students, female business and male business students shared the personality characteristic of extraversion indicating a disposition towards sensation seeking. Male opera singers exhibited a profile of elevated levels of emotionality. In general, the findings across the studies demonstrate that the individual development of operatic artistry is a complex process where health-related issues, personality characteristics, skills acquisition and socio-cultural values are critical constituents. A major result was the marked focus on the instrument per se, the voice. Vocal
functioning in singing was described as a means of enabling operatic singing, a mode for artistic expression and indicator of health.

*Author’s Abstract

**The Study**

This doctoral dissertation was conducted by Maria Sandgren from Stockholm University. The stated purpose of this study was: to examine various factors and processes associated with the artistic profession and development of opera singers (p.46). Four separate studies are presented in this dissertation stemming out of a larger research project, “Expressive performance in music, dance, speech and body language”, managed by the Department of Psychology at Uppsala University (p.47). Sandgren proposes a lack of research about opera singers and their artistic process as the basis for her desire to begin a naturalistic inquiry strategy to justify and begin to explore the factor and processes involved for opera singers in their natural setting (Patton, 1987). Within this dissertation Sandgren utilizes qualitative and quantitative designs. The general organization of this dissertation is as follows: The author begins with a one page research topic proposal directly followed by five chapters consisting of a historical overview of the genre of opera followed by two chapters exploring eleven different possible research constructs with a brief literature review of each construct. In Chapter Two the author purports to provide a historical background of the profession of opera singers, give an overview of individual singing expression, changes in operatic modes and examples of performance and educational settings. The author goes on to state this chapter provides an outline for the thesis and as background for Study III (p.2). Chapter three seeks to illuminate certain key features and processes in opera singers’ artistic development namely by providing a 10 page literature review addressing transitional processes in musical development with constructs ranging from “giftedness” and “skills” to contributing “social factors”, “motivation”, “practice strategies” and “expressivity” (p.17-26). This third section is intended to provide additional frameworks for Studies I, II, and III. The fourth chapter introduces the construct “personality” and information regarding trait theory as it relates to athletic activities, creativity, and choice of vocation. A seven page literature review is provided in this section and is intended to provide the background of knowledge needed for the fourth and final study. Chapter Five seeks to address aspects of vocal production, a psychological view of the constructs “artist” and “health”, and a medical view of the professional singing voice (p. 36-46). The intended statement of relevance for this
chapter is to provide the reader with a reference for Studies I and II. Chapter Six serves to introduce the research objectives of the four research projects conducted for this dissertation, while chapter 7 outlines the methods and materials used in the four studies. Chapter Eight outlines an overview of the four studies and Chapter Nine ends the dissertation with a general discussion of results, short comings and implications of the research conducted by Sandgren.

Critique of Conceptual Framework:

Due to the lack of focus regarding the projected area of inquiry under consideration and absence of a clear and concise research question, a critique of the conceptual framework will be presented here. Sandgren admits herself in her Shortcomings and limitations section “...the single denominator for the investigations was the specific sample of opera singers...only one of the four studies was designed with a specific hypothesis in mind” (p.71).

Within the literature review provided for the undefined constructs introduced throughout the paper, a point of concern is the lack of relevance of literature information directly related to the larger research topic. It would have been helpful for the author to illustrate more specifically how the numerous constructs introduced related directly to the various studies. Although this dissertation was in the field of psychology the main thrust of the research dealt with performance related issues for opera singers. With the reader audience in mind it is integral to provide more information addressing the psychological terms used throughout this paper.

It becomes clear Sandgren was involved in larger research projects throughout her time as a graduate student (p.47). The presentation of this dissertation and research is not in the traditional single study technical report commonly associated with North American dissertation style and format. What Sandgren provides is an amalgamation of four studies referenced and discussed after publication in the style and format of a book. This lack of key information regarding the substance of the four studies exemplifies the need for all four studies to be presented in an appendix section so readers can have immediate access to the full range of what the author did in her research and how she came to her conclusions.

In the introduction Sandgren states her thesis is an attempt to elucidate certain factors and processes in the artistic profession and development of opera singers from a psychological point of view (p.2). More specifically, health issues, personality characteristics and skills acquisition are examined. These key constructs introduced are never defined and are never put in context of the missing research question. “...the clear definition of terms and constructs employed in the
study are of great importance to the reader of research”(Bartel, 1990). Furthermore, no background information is presented to reinforce the necessity to investigate the missing research problem.

To further add to the reader’s confusion is the mixing of specific research technique terminologies throughout the paper. In the introduction section, Sandgren states her desire is to engage in a naturalistic inquiry strategy (p.2) which immediately informs the reader the research presented will be qualitative. Yet in the author’s abstract, she specifically states both qualitative and quantitative research methods are used.

Her dissertation begins with a brief historical overview of the development of opera. This overview is not only extremely rudimentary it has nothing to do with the intended research topic. The author’s stated intent for this section is to situate the contemporary opera singer in a historical background by providing an overview of the development of individual singing expression, of changes in operatic modes, and examples of performance and educational settings (p. 2). None of these varied topics are ever addressed. Although the reader is exposed to a brief description of the development of Western Art Music through the various periods, this information is not pertinent to the intended thesis, namely how modern opera singers live, learn, and excel in their contemporary pursuits. What is also immediately missing is the definition of the construct “contemporary opera singer.” Is an opera singer anyone who sings opera, or is it a veteran singer who exists solely on monies made from performing in top opera houses around the world? What is meant by the term contemporary? Does the usage of this word infer a specific time period in which the opera singer must exist to comply with the groups and/or samples used in the research conduct of this thesis? The author goes on to provide a rudimentary description of the development of the Swedish Opera traditions and education. It is not clear why this is presented. Although it can be inferred by the reader the samples used in her various research studies involve Swedish singers this has not yet been established.

Due to the lack of organization in the survey of related information, lack of relation and definition of constructs to the research topic proposed, lack of primary and secondary sources supporting the need for this area of study, lack of a comprehensible theoretical framework of the research, and lack of development of a research problem, it is necessary for the reader to seek out the individual published studies for clarity. Without the full information of each study the
reading of the remainder of this dissertation is an act of much inference, interpretation and guess work.

Design and Conduct of Study I

In an attempt to examine the various factors and processes associated with the artistic profession and development of opera singers, the four studies presented in this dissertation aimed to investigate health issues, skill acquisition, process, and personality characteristics. The initial pilot study identified health issues; conceptualized as descriptions of psychological and somatic symptoms, linked to behaviour strategies related to the professional activities of opera singers in combination with motivational factors.

Both qualitative and quantitative methods were employed. In the quantitative aspect of this study, a sample of opera singers with experiences ranging from students at the end of their education to world recognized performers; (8 females age 27-65 years and 7 males age 31-55 years). In the qualitative aspect of this study 25 females age 21-35 years and 24 males age 21-65 were used. The inclusion of professional opera singers followed guidelines according to grounded theory (Strauss & Corbin, 1990). The author asked participants to suggest professional opera singers according the inclusion criteria regarding gender, age, and professional experience. In order to ensure confidentiality and avoid bias, the author did not reveal by whom the interviewed person was referred.

Qualitative: a semi-structured interview guide was created to identify problematic areas in relation to the artistic pursuits of professional opera singers. The interview data served as the base for the construction of the questionnaire to be sent to another sample of professional opera singers. The semi-structured interview guide involved issues such as health problems of psychological and somatic concerns, coping strategies, motivational factors, specifics of work situation and singing activities. The use of open-ended questions aimed at capturing specific points of view of each individual. The interview with the allied professional participants involved open-ended questions related to the participants’ professional experiences with opera singers.

Procedures: Interviews of opera singers and persons in allied professions were conducted in a place of choice by the subjects. The duration of interviews ranged from 1-2 hours. Before publication of data, opera singers were asked to approve their quotations. All interviews were conducted by Sandgren.
Data Analysis: Interviews were tape-recorded, transcribed and analyzed by the author. The analysis of data followed the notion of grounded theory.

Quantitative: A questionnaire was constructed based on the interview data from the same study. The questionnaire was comprised of 138 questions with two open-ended questions as well as demographic data and professional status. The contents of the questionnaire covered health-related aspects of concern for participants. Two variations of response were used. For assessment of health problems parameters were defined: addictive behaviour, depression, the relation of the voice, hypochondriacal tendencies, and worries of others’ opinions. The scales ranged from do not agree at all to strongly agree.

Procedures: Questionnaires were sent to the homes of singers and returned by mail.

Data Analysis: The distributions of all scores were inspected for deviations from normality. Within group analyses were made using Pearson correlations. Between group analyses were made using T-tests. Dimensional accounts were examined using factor analysis and Varimax rotation.

Interpretation of results: The overview of findings reported from Study 1: Voice, soma, and psyche- A qualitative and quantitative study of opera singers, conducted in 2002 are as follows: In the qualitative portion of the study, the author reported psychological problems were found in terms of fear of vocal indisposition and a habit of regularly testing the vocal functioning by sampling tones (p.58). Somatic problems were found related to symptoms involving the respiratory tract. Psychosocial problems were reported concerning difficulties maintaining a family life and relations due to irregular work hours and free lancing.

In the quantitative study results revealed positive correlations between negative evaluations, somatic problems and depressive tendencies and between worry about negative evaluations and the preoccupation of vocal production (p.59).

A factor analysis was performed on items concerning health-promotion strategies and 5 factors emerged: a) relaxation exercises, b) avoidance behaviour of substances and situations that could negatively affect vocal production, c) use of herbal medications, d) amounts of sleep, and e) avoidance of exposure to illness.

Critique of Design and Conduct of Study I

It should be noted from the outset, the title of this first research study would be ample as a dissertation all on its’ own in the North American doctoral dissertation tradition. Furthermore it
is only in the discussion of the major findings key constructs involved in this two-fold pilot study are introduced. Constructs and terminologies including emotions, behaviours, negative evaluations, psychological problems, vocal indispositions, coping strategies and health-promoting activities are presented in the findings without any previous introduction. It is also not clear how the participants interpreted these constructs and terminologies. Without knowing the operating definitions of these constructs or the underlying assumptions of the mental processes of the participants regarding the definitions of these constructs and terminologies; are they assumed to be cognitive, affective, or conative? (Murray, 1981) The proposed validity of findings loses any potential value and contribution to the area of research. The presentation of how research participants process information is particularly important when dealing with areas of learning, education and process development of participants. For example; how are the participants interpreting the term “vocal indisposition?”

Also of concern is the large range in age of participants in this study. It appears the sample of participants is too large. How can you compare the experiences of a 20 year old opera student to a world renowned 65 year old opera singer at the twilight of his or her career? The large discrepancy in age and experience of participants also opens up the potential for large inconsistencies in the mental processes involved in interpretation of terminologies.

Information regarding the development and procedures followed in the implementation of the research framework were also never provided or represented in data sets, figures, or in hierarchical trees in the data analysis section. Full disclosure of the research findings was also not provided.

Due to the frustrations on the part of the reader regarding the lack of pertinent information necessary to fully critique this dissertation, the decision was made to find the original publication for not only the purposes of clarity but also as a comparison between what was presented in the dissertation and the actual study.

Here are some clarifications and some comments once the original study was found and reviewed.

In the abstract of Voice, Soma, and Psyche: A Qualitative and Quantitative Study of Opera Singers (2002) it is stated opera singers were examined in an exploratory study. Immediately the type of research is outlined. Due to the nature of the type of study there is no working research question. In direct contrast to the literature review presented in the dissertation,
ample primary sources are presented serving to justify the need for the study of the specific problems present in the professional life of opera singers (Sandgren, 2002, p.11).

Similarly missing in both the dissertation and the study are the lack of definition of key constructs. In a publication of a study the definition of all constructs may not be possible to include but within a larger work such as a dissertation this is not acceptable.

Review of the original study provided useful information addressing the research participants, how they were selected, and the numbers involved. 32% of the total population of professionally active opera singers in Sweden participated in both the quantitative and qualitative studies conducted. The original concern on the part of the reader regarding the large range in ages of participants in this study was in fact much smaller than presented in the information provided in the dissertation which serves to validate the procedures and finding of the study more so than originally thought (Sandgren, 2002, p.12).

Although Sandgren reports following the sound research procedures outlined by Strauss & Corbin for the qualitative portion of her study, it is not clear how the information she solicited was coded, broken into themes and controlled for bias. It is necessary to provide an accurate and detailed explanation of the methods, techniques, and research design implemented to ascertain credibility, dependability, and conformability (Lincoln & Guba, p.1985).

The presentation and interpretation of the quantitative data was much more explicit and detailed. Numerous charts and data sets were provided and discussed. Perhaps as a psychology student the author possesses greater ease and knowledge in the presentation of quantitative data. It should be noted that after examination of the actual study; the return rate for both the qualitative and quantitative studies met requirements (Bartel, Oct 14, 2009), the author clearly outlined and justified data analysis methods, and both studies yielded useful information for both the exploratory portion of the study and in the quantitative study examining the psychological, somatic, health-promotion activities and the relation of the human voice to these areas.

In the presentation of data sections for both the qualitative and quantitative portions, data was simply reported; no relation was made to the intended objectives nor was any interpretation provided. There appeared to be a contradiction in the presented findings in the Performance as Achievement section. Sandgren first reports “Achievement in terms of mastering vocal technique...seemed to be of greater concern than expressive qualities...and the performance as a whole” (Sandgren, 2002, p.13). Whereas later on in the discussion of findings in the same
section, Sandgren reports, “...it was obvious these singers...focused more on the means of expressiveness than on their vocal ability and achievement” (Sandgren, 2002, p.14). This discrepancy of findings is immediately apparent and confusing to the reader.

To briefly address the conclusions and implications section, what is the most troubling is Sandgren’s suggestion of potential psychological problems associated with the responses given by performers. Namely, the identification of hypochondriasis, problematic levels of anxiety, issues of perfectionism, and depressive tendencies. It is dangerous to make these leaps of judgment and present possible diagnosis within the confines of a study. The conclusions reported in this study may also deter future artists from participating in and divulging information about themselves.

In Sum, reviewing the actual study referred to in the large dissertation brought more validity to her ability to research and her subsequent findings. It is imperative these studies be provided within the dissertation proper as a reader could potentially dismiss Sandgren’s work without further investigation.

The remaining three studies will be examined strictly from the dissertation with the obvious limitations present.

**Design and Conduct of Study II**

In the second study, the psychological and physiological effects of singing lessons were examined comparing non-professional and professional levels of singing experiences. The sample consisted of 8 amateur singers; 6 female and 2 male age range 28-53 and 8 professional singers; 4 females and 4 males ranging in age from 26-49. In the initial phase of samplings, one of the authors contacted “significant” persons in the field for recommendation of singing teachers according to certain criteria; licensed teachers of classical singers for a minimum of 5 years and having previous professional experience singing. After singing teachers were selected they in turn recruited singing students according to the criteria; ages 25-55, having must had lessons for at least 6 months.

Amateur singers were defined as persons attending singing lessons for non-professional reasons and did not earn money from singing activities. Professional singers were defined as earning a minimum of 25 % of their total income from singing. Singers were checked for cardiovascular disease, medication and/or pregnancy which could affect results.
Qualitative: Two modes of data were collected in this study. Emotional states were assessed by self reports on 5 VAS (Visual Analogue Scale) scales. The construction of the VAS scales was specific for this study. In addition a semi-structured interview guide was created with the aim of assessing subjects’ experience with singing lessons. The interview involved open-ended questions to obtain information addressing the subjects’ emotional experience from immediate singing lessons and their engagement in singing activities.

Quantitative: Two types of physiological measurements were performed. Assessments of heart rate variability, followed by applying an ECG recorder were utilized. Other physiological assessments involving the presence of stress hormones, TNF-alpha, and oxytocin were measured and a second venous blood sampling was taken at the end of the study.

Procedures: The investigations of singing lessons were performed individually and by the same researcher, a nurse at the studio of the singing teacher or the school of the participant or teacher. The ECG monitoring equipment was applied to the subject and two kinds of assessments were performed before and after the singing lesson. The first venous blood sample was taken by the researcher and the subject scored his or her emotional states on VAS scales. Then a 45 minute singing lesson was conducted. After a venous blood samples were taken again.

Data Analysis: A limited analysis of the interview data was conducted. Quotations were selected and served to represent the experiences of singing lessons for the groups of amateurs and professional singers. The quotations were then coded into key units in terms of positive and negative reactions, motivation and goals for engaging in a singing lesson. Two types of physiological measurements were performed. Assessments of heart rate variability, followed by applying an ECG recorder were utilized. Other physiological assessments involving the presence of stress hormones, TNF-alpha, and oxytocin were measured and a second venous blood sampling was taken at the end of the study.

Interpretation of results: Study II: The overview of findings from: Does singing promote well-being? An empirical study of professional and amateur singers during a singing lesson conducted in 2003 is as follows: Statistical analyses of the ECG showed professional singers are more in control of their singing in terms of controlling breathing and muscles compared to amateurs (p.60). Professionals also showed evidence of more cardiovascular fitness. The endocrinological-biochemical analyses indicated amateurs’ experiences in lower level of
stress hormones than professionals. Increased levels of oxytocin are interpreted as a fact that both groups derived well-being from the singing lesson.

Results from the self-rating of emotional states showed amateurs reported experiencing more joy after a singing lesson than professionals. Group differences were shown in a higher level of elation for amateurs and a slight decrease in elation for professionals after a singing lesson. The interview data showed professionals reported more achievement oriented ambitions of improving technique for professional purposes through participation in singing lessons, while amateurs reported engaging in singing lessons as a means of self-actualization and self-expression. Sandgren states her hypothesis was half confirmed - amateurs found singing lessons more emotionally beneficial than professionals” (p.61).

**Design and Conduct of Study III**

The third study presented in this dissertation examined the process of skills acquisition developed in higher opera education. The sample consisted of opera students at the end of their studies; 5 females and three males with a mean age of 29.4 and 26 respectively. All students in third year of their studies at an opera college were invited to participate in this study. The inclusion of the entire group related to the circumstance that this was the only group of third year opera students available in Sweden at the time this study was conducted.

**Qualitative:** A semi-structured interview guide with open-ended questions was created aiming to examine the musical background and experiences related to learning and artistic development during their time at the opera college. In a follow up five years after the completion of the study, the students described their professional standing.

**Procedures:** Three interviews were conducted individually in a place of the participants’ choice. The interviews lasted an hour and were conducted by Sandgren.

**Data Analysis:** All interviews were tape-recorded, transcribed, and analyzed by the author. The data analysis was based on inductive and comparative strategy of generating a structure of artistic development during higher education at an opera college.

**Interpretation of results:** The reported findings from the Study III: *Learning experiences and motivation in artistic development* conducted by Sandgren (2004) are as follows: The majority of students had parents who appreciated music activities. The start of engagement in singing lesson varied amongst men and woman. Males started on average at 18 years of age and women on average at 20 years of age. Majority of the students had prior formal
music education on average of 4 years before entering college. In the follow-up study 5 years later, five out of eight students were professionally active as opera singers (p.61). The thematic analysis of the interview data showed the formative process of education at the university-college level could be summarized in three variables; artistic competence, artistic autonomy, and change in self-concept. The author reports that taken together the artistic learning process involves a range of improved skills, work methods, and a change in self-concept (p.62).

**Design and Conduct of Study IV**

**Quantitative:** Study four sought to assess personality characteristics among elite students in opera and business. The sample consisted of opera students (36 females, mean age 25.4; 26 males, mean age 27.4 and 68 business students; 31 females, mean age 25.4; 37 males, mean age 26.5), in elite university colleges. Data also represented a norm group of 911 junior college students; (407 females and 504 males; age range 17-20s).

The inclusion of subjects differed in the two samples of students representing elite educational settings. Data was collected over 6 years at two opera colleges. All opera students were approached and invited to participate with the exception of two classes of students. The group of business students comprised of a convenience sample.

The data collection was collected on three occasions on the premises of the business college. The business students were contacted by their teacher. They were also requested to approach other business students to participate in the study. In order to apply a normative approach previously sampled data representing norm scores were included, consisting of students at an ordinary junior college (51).

**Quantitative:** Psycho-biological correlates were assessed by KSP; a self-reporting inventory consisting of 135 items grouped into 15 sub-scales (Schalling, Asberg, Edman & Oreland, 1987). All items are responded on a four point scale ranging from does not apply at all to applies completely. The scales are constructed on a rational-theory basis rather than on empirical techniques. The subscales relate to four higher order personality factors. The second personality inventory EPQ-I measures the primary personality factors of extraversion, neuroticism, and psychoticism (Eyesenck & Eysenck, 1975), as well as impulsivity from the Impulsiveness-Venturesomeness-Empathy Inventory (IVE; Eyesenck & Eysenck, 1978). The measurement of the STAI test; a 40 item self-report inventory aiming at assessing stable
differences in anxiety proneness (Spielberger, Gorsuch & Lushene, 1979) was also implemented.

**Procedures:** in the presence of the author, the groups of opera and business students filled in questionnaires at the premises of their respective colleges.

**Data Analysis:** The KSP raw scores were transformed into normative T scores on Swedish age and gender stratified non-patient samples (Bergman & Schalling, 1981). The EPQ-I raw scores were transformed into T-scores based on a large ordinary junior college sample (Levander, 1988). The distributions were inspected for deviations of normality. THE KSP, EPQ-I and STAI were calculated as means of the items raw scores. Between group comparisons were made using the two-way ANOVA F-test.

**Interpretations of results:** In the final Study: *Personality characteristics among elite students in opera and business education* (2004), Sandgren reports results as follows: Male opera students displayed significantly elevated scores in the scales of anxiety/neuroticism, extraversion and aggression compared to female opera students and female and male business students. Female business students displayed and increased level of psychoticism, commonly regarded as a masculine trait (p.63). Another finding was that female opera students, female and male business students displayed moderately elevated scores in extraversion, impulsivity and monotony avoidance, thus indicating a disposition towards sensation seeking. In comparison, the profile of male opera singers yielded a different pattern suggesting more of a disposition towards dysfunctional impulsivity and personality characteristics of non-conformity (p.64). Finally, female opera students and female and male business students scored close to normal scores in the areas of anxiety, aggression, and conformity thus interpreted as an absence of psychic vulnerability within their personality characteristics.

**Critique of Studies II-IV**

In the three remaining studies, there are similar problems and limitations throughout. When Sandgren stated her goal was to examine professional opera singers it remains unclear why amateur singers and students are utilized as her primary participants. It is also not clear why business students were used in study IV in comparison to opera students without any discussion of the possible commonalities that may exist amongst the two subsets.

The lack of definitions of the key constructs presented in this dissertation and the lack of discussion of the interrelatedness of said constructs are equally disturbing and serve to weaken
the academic strength and potential contribution to this area of study. Of particular note is the lack of definition and misuse of the term vocal coach (p.60), as synonymous to vocal teacher. “The voice teacher works on developing vocal technique through building coordination of musculature in the vocal mechanism. The vocal coach works primarily on repertoire and interpretation” (Sataloff, 2006, p. 272). Although it is recognized Sandgren is not a professional opera singer, this confusion in terminology is a glaring error to any reader who dwells in the area of performance and illustrates a lack of rudimentary knowledge necessary to appear competent to conduct research related to vocalists.

There is no discussion in this dissertation addressing the mental processes of the participants in the interpretation of the questions asked or in the understanding and definitions of presented constructs. This exclusion of consideration of mental processes serves to further limit the validity of results and conclusions.

In all four studies, the inclusion of data sets, representations of data and analysis is ever presented. Unless the full studies are provided somewhere in the dissertation; namely in the missing Appendix, it is impossible to consider the results in Sandgren’s conclusions as possessing any type of research integrity, as rigorous, or as having any type of utility in the contribution to the area of artistic development of professional opera singers. Not every reader will willing or able to take the time to seek out each study independently.

The only common denominator amongst all four of Sandgren’s studies was opera singers were involved as a specific sample. This is not enough of a link to support cohesiveness, relativity and interrelatedness proposed research topic.

External validity is also a concern involving Sandgren’s work. The number of her subjects in all four studies was limited. Moreover her findings in Study III of findings of personality characteristics among opera students may not be representative of the professional opera singers used in Study IV (p.72). It is also dangerous to assign specific personality characteristics to persons involved in a particular profession. This can lead not only to bias and stereotyping; it could also lead to the funnelling of individuals into certain vocations they may not be suited for. It is is questionable to diagnose potential psychological disorders or maladaptive behaviours namely social anxiety disorder, hypochondriasis, neuroticism, and depressive disorders (p.67) to a group of research participants based on the limitations of a one hour interview and ratings taken from a questionnaire.
Summary and Conclusions: A final critique and discussion

Taking into consideration the presentation of this thesis does not adhere to the norms expected in the North American dissertation tradition, it is perhaps necessary to discuss briefly the importance of the demonstration of the acquisition of knowledge mastery and the contribution of new knowledge to any given area by the researcher. The topic area Sandgren explores; namely specific areas of artistic development of opera singers; although a new and exciting area of research, the topic is much too broad in scope and subsequently is unsuccessful in demonstrating an overall cohesiveness and interrelatedness of her four studies to the greater whole.

As a budding professional academic the ability to formulate a research question, define key constructs, and explore pre-existing literature, and use appropriate methodologies and research procedures to produce data and analysis that can ultimately contribute something new to any given field is a compulsory skill. Even when the separate publication of the first study was sought out and examined serious flaws in design, conduct and analysis were apparent. This is the risk in assuming it is possible for an early scholar to produce work at the Meta-level. Ultimately this thesis is unsuccessful in demonstrating sufficient knowledge and expertise in the area of voice, soma, psyche, giftedness, skills, expressivity, practice strategies, well-being, coping strategies, motivation, learning experiences, artistic development, and personality characteristics as it relates to contemporary professional opera singers.
Date:

Dear participant

I am conducting a research study as part of thesis requirement for my Doctor of Musical Arts, at the University of Toronto. This study requires the conduct of research into the ways professional opera singers maintain performance excellence. The title of my dissertational study is: Performance Excellence; A study of the habits and processes elite Canadian singers utilize to maintain performance excellence.

In this study I am interviewing a group of volunteers; elite Canadian opera singers, in person or via Skype. Two interviews with each participant will be conducted and will take about one hour each.

The design and conduct of this study is being supervised by both Prof. Lee Bartel; 416-978-0535, and Prof. Darryl Edwards; 416-946-5184 and you are free to contact them at any time. You may also contact the University of Toronto, Office of Research Ethics (ethics.review@utoronto.ca, 416-946-3273)

I hereby invite you to be a participant in my study. Your participation will be entirely voluntary and you will be able to withdraw at any time by indicating this desire to the researcher (or by withholding your survey document). The security of any information you provide will be rigorously guarded. Your anonymity will be assured in any paper submitted for the course and in any related publications. Confidentiality will be maintained throughout the research process – your identity or that of your institutional relationship will not be revealed. Any data collected will be guarded in a secure private location in my home or graduate office and will be destroyed 3 years after collecting.

Please read the following and sign to give me your permission.

I understand that the information I provide here may be quoted by Colleen Skull (researcher) in academic presentation or publication but that my identity or that of anyone to whom I refer will remain anonymous and confidential. I understand I am free to withdraw from this study at any time. I hereby agree to participate and to allow information I provide to be used in this research study.

___________________  __________________________   _______
Printed Name            Signature          Date
APPENDIX C

Research Study Questions for Interview One:

Ice breaker question: What brought you to the study of opera?

Were there musicians in your family? Were they supportive of your study of music?

Pursue idea of "expert" teacher and coach

When you moved into the professional arena of opera performance, What if any skills have you defined as essential to your success?

(Follow up questions based on responses)

Have you developed a pre- and or post-routine of preparation before performing? Elaborate....

Have you established a routine or schedule to maintain your vocal health?

What are your thoughts on reference to "the voice"? Do you view your voice as a separate entity from your sense of self?

Have you established a routine or schedule to maintain your physical well-being?

Please identify some major stressors you may experience in the professional arena of opera performing?

Do these stressors have the potential to affect aspects of your performance excellence?

If so, how to you mediate the effects of these stressors?

Does a professional performer become resilient to the stress or is it an inherent characteristic?

What are your thoughts on the notion of resilience as a necessary skill?

What is your practice routine?

Do you practice every day?

How often do you have lessons/coachings?

How do you prepare for a role?

What aids in your development of the artistic/performance dimensions of your performing?

Do you implement any mental practice strategies?
If you could identify the key elements that contribute to your continued success what would they be?

Describe a peak performance. What specific skills and conditions were involved?

When experiencing a difficult performance, what skills do you employ to turn the performance around and/or ensure the next performance is better?

What is your perception of the focus and concentration as it applies to performance? Are they different? How do you apply them?

How do you stay motivated?

What are your thoughts on the necessity to be detached (meta-cognition) to perform successfully at high levels?

When performing, are certain emotions elicited while singing? If so, what is your experience of them? Do these feelings motivate you?

How much of your sense of self is defined by being a musician?

Do you experience feelings of highs and lows post performance? How do you deal with these feelings?

Do you set goals? (vocally/professionally/career aspirations)