THE EFFECTS OF PROJECTED FILMS ON SINGERS' EXPRESSIVITY IN CHORAL PERFORMANCE

A DISSERTATION IN
Music Education
And
Curriculum and Instruction

Presented to the faculty of the University of
Missouri-Kansas City in partial fulfillment of
the requirements for the degree

DOCTOR OF PHILOSOPHY

by
DANIEL J. KEOWN

BM, University of Wisconsin-Oshkosh, 2001
MM, Indiana State University, 2004

Kansas City, Missouri
2013

THE EFFECTS OF PROJECTED FILMS ON SINGERS'

EXPRESSIVITY IN CHORAL PERFORMANCE

Daniel James Keown, Candidate for the Doctor of Philosophy Degree

University of Missouri-Kansas City, 2013

ABSTRACT

The purpose of this study was to investigate the effects of projected film visuals on singers' expressivity in choral performance. The study was divided into three phases. In Phase One, university choir singers (N = 21) viewed eight audiovisual pairings (two film excerpts and four choral etudes) and rated these pairings according to perceived music to film congruency. Based on these ratings, two choral etudes were identified that elicited the broadest congruency contrasts when paired with the film segments.

In Phase Two, a different group of university choir singers (N = 116) rehearsed and prepared both of the selected choral etudes referred to as "Doh" and "Noo." Subsequently, these singers were organized into smaller chamber ensembles (n = 11), and performed each choral etude three times under the following conditions: (1) while viewing congruent film, (2) while viewing incongruent film, and (3) with no film projected. After each performance, singers reported their level of self-expression. At the completion of all three performances, singers reported their preferred performance condition. Finally, participants listened to their audio-recorded performances and rated these for performance expressivity and personal preference. During Phase Three, choral experts (N = 8) rated performance expressivity and reported personal preference for each audio-recorded performance.

A two-way ANOVA with repeated measures found significant main effects of both etude and film visual performance condition on participants' expressivity ratings ($p < .001$). Additionally, a significant etude x film visual performance condition interaction was discovered ($p = .001$). Participants rated self-expression significantly higher when singing with a congruent film compared with other conditions for both etudes ($p < .001$). Chi-square tests found most preferred experiences during congruent performances, and least preferred experiences during incongruent performances for both etudes ($p < .001$). Expressivity ratings for audio-recorded performances indicated significantly higher expressivity ratings for the performances influenced by the congruent film visual of etude "Doh" ($p < .05$), while no significant differences were found for etude "Noo" ($p > .05$). Implications of these findings are discussed in relation to filmmaking techniques, music education curriculum, choral rehearsal pedagogy, and composition/performance practice, with recommendations for future research.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the School of Graduate Studies, have examined a dissertation titled "The Effects of Projected Films on Singers' Expressivity in Choral Performance," presented by Daniel J. Keown, candidate for the Doctor of Philosophy degree, and certify that in their opinion it is worthy of acceptance.

Supervisory Committee

Charles Robinson, Ph.D., Committee Chair
Conservatory of Music and Dance

Rita Barger, Ph.D., Committee Member
School of Education

Melita Belgrave, Ph.D., Committee Member
Conservatory of Music and Dance

Andrew Granade, Ph.D., Committee Member
Conservatory of Music and Dance

Joseph Parisi, Ph.D., Committee Member
Conservatory of Music and Dance

TABLE OF CONTENTS

Appendix

TABLES

ILLUSTRATIONS

ACKNOWLEDGMENTS

I wish to express my gratitude to all those who helped make the completion of this dissertation possible. First I'd like to thank my advisor and mentor, Dr. Charles Robinson. Thank you for your endless support, expertise, and wisdom during the past three years. I honestly could not have done this without you. To my dissertation committee, Dr. Rita Barger, Dr. Melita Belgrave, Dr. Andrew Granade, and Dr. Joseph Parisi, thank you for your guidance and perspectives throughout this process. Finally, I would like to sincerely thank my family for instilling in me qualities of strength, determination, and perseverance, and my wife, Megan, for her love, support, and endless patience during this journey.

CHAPTER 1

INTRODUCTION

It could be assumed that most people engage with music throughout their lives. This exposure could be welcomed by opting to listen to a favorite song on an mp3 player or may be viewed as an intrusion when *Muzak* is presented to shoppers at local stores. Even more, music has the ability to intrude in such a way that cannot be fully noticed, as when music constantly accompanies ESPN's *Sunday Night Football* highlights. Interestingly, music's role can have more of an affective impact than an intellectual impact (Hallam, 2010). The emotions elicited by music may be considered the single most powerful element of affective impact upon music consumers.

While the written score can be considered the blueprint of a potential emotional experience, it is the performance that brings music to life while supplying an experience for listeners to perceive music as an emotional expression (Repp, 1998). Extensive training of vocal and instrumental technique, and the study of various facets of music ultimately supply performers with knowledge and skills to portray an expressive performance, linking emotion at the center of interpretation between performer and listener in both society and education. Some are skeptical, however, when emotional expression is addressed in the music classroom. Elliot (2005) states that, "contrary to what most non-musicians might assume, music teachers seldom think about whether or how sonic-musical patterns may be expressive of specific emotions" (p. 94). Empirical research has also confirmed an emphasis on technique as compared to emotional expressivity (Karlsson & Juslin, 2008). At the same time, approaches in music education have been criticized for being out of touch with society's ways of experiencing music (Madsen, 2000).

Music educators are applying diverse and varied experiences in the music classroom in an effort to supply students with a music education that enhances understanding of the world, of oneself, and one's own experiences in an ever-changing world (Ballantine, 2001; Gardner, 1993). This is accomplished through innovative and relevant methods of exploring not only technique and music theory, but emotional expressivity (Broomhead, 2006). Complimenting Gardner's theories of multiple intelligences, music educators instructing students in performance have used such pedagogical methods as kinesthetic movement, guided imagery, and metaphors to attain emotional and expressive understanding when responding to a piece of music (Sheldon, 2004; Woody, 2002). While these pedagogical trends are finding success at various levels of music education, other approaches to expressive performance could occur when including visual images.

The projected moving image of a film, known to simulate an "analogous real-life experience" (Messaris, 1994, p. 16), can communicate meaningful information at a cognitive and psychological level, only to be amplified with the inclusion of sound and music. Musicologists and researchers have explored music's function and psychological impact on spectators' perception and interpretation of a film's narrative (Gorbman, 1987; Lipscomb & Kendall, 1994; Marshall & Cohen, 1988). Based on Frijda's (1988) six laws of emotion, Tan (1996) discovered that music could lead to a genuine emotion when the two art forms of music and film are fused together.

With limited research devoted to film music, the impact of film and its narrative on the response to music is not fully investigated or understood. Research has studied participants' perception of music and performance elements from visual performances affixed on a visual medium, and compared these with listening to a performance without a

visual medium (Vines, Krumhansl, Wanderley, & Levitin, 2006). Other researchers have begun to study the effect of film's narrative on participants' cognitive (Boltz, Ebendorf, & Field, 2009), aesthetic (Lychner, 2002), and affective (Geringer, Cassidy, & Byo, 1996) responses to music.

Need for the Study

Due to the emotional effect that can arise from both an expressive music performance and the relationship between music and a film's narrative, the need to study performers' expressive musical influences while simultaneously responding to a film is the impetus for this study. Three specific needs include: (1) Exploration of the expressive nature of music in response to a film's mechanical elements and semantic information within the narrative. (2) Exploration of using projected film visuals to enhance affective response when performing music in a learning environment, while implementing an additional pedagogical approach to the rehearsal process suited especially to visual learners. (3) Exploration of ways in which film visuals may be integrated purposefully in the choral genre at all levels including creation of newly composed works.

This study adds to the body of research regarding interdisciplinary approaches to affect musical expression in a choral performance using projected film visuals to enhance choral performers' expressivity. Additionally, the study may present empirical data on the psychological relationships between musicians' expressivity while performing simultaneously with a film visual.

The purpose of this current study will be to determine the effects of three different projected film visual presentation modes on the expressivity of a choir performance. Research questions include:

1. Will participants' self-reported rating of performance expressivity while viewing a projected film visual differ as a function of performing musically contrasting choral etudes?
2. Will participants' self-reported rating of performance expressivity differ as a function of performing simultaneously with no visual, congruent visual, and incongruent visual stimuli?
3. Will singing participants report a preference among no visual, congruent visual, and incongruent visual performance conditions?
4. Will there be an effect of self-reported expressivity ratings when performing in the varied conditions (no visual, congruent visual, and incongruent visual) on participants' most and least preferred conditions?
5. Will participants' ratings of expressivity in audio-recorded performances differ as a function of the performance conditions?
6. Will participants report a preference among the three audio-recorded performances?
7. Will there be a relationship between singing participants' self-reported expressivity during performance and their ratings of expressivity for audio-recorded performances across all conditions?
8. Will choral expert judges' ratings of expressivity in audio-recorded performances differ as a function of the three performance conditions?
9. Will choral expert judges report a preference among the audio-recorded performances across the three performance conditions?

Definition of Terms

Acoustical music factors: Elements in music that a performer can interpret and manipulate in an attempt of creating a unique and expressive music performance (i.e. articulation, dynamics, phrasing, timbre, tone).

Anempathetic music: Music that is indifferent or juxtaposed in feeling with a film scene (Chion, 1994).

Audiovisual composite: Any combination of a moving image visual excerpt and a musical selection embedded within the visual excerpt (Lipscomb & Kendall, 1994).

Congruent: The perceptional relationship of information from more than one medium matching in mood and/or synchronization.

Diegetic music: Music that forms from a source within the narrative space (Gorbman, 1987).

Empathetic music: Music that directly expresses its participation in feeling with a film scene (Chion, 1994)

Extramusical: Pedagogical approaches to exploring expressivity of music through guided imagery, kinesthetic movement, metaphor, or gestures (Funk, 1982; Sloboda, 1996).

Incongruent: The perceptional relationship of information from more than one medium not matching in mood and/or synchronization.

Film narrative: The depiction in the medium of film of a series of cause and effect relationships occurring through time, which the characters and objects can react towards through sight, sound, smell, and touch within this staged universe.

Mechanical elements: Refers to any and all elements related to the physical and optical projection of a film's visual (i.e. to manipulate the motion's tempo, hue, color, length).

Non-diegetic music: Music that forms outside the diegesis and narrative space (Gorbman, 1987).

Semantic information: Refers to any and all information captured during production and post-production of filming and display with the purpose of establishing meaning upon the spectator.

Soundtrack: All audio components (music, dialogue, and sound effects) embedded within an audiovisual medium.

Synchresis: Spontaneous and irresistible weld produced between a particular auditory phenomenon and visual phenomenon when they occur simultaneously (Chion, 1994, p. 63)

CHAPTER 2

LITERATURE REVIEW

The review of literature is presented in four separate segments. First, the medium of film through the perspective of the visual will be discussed in terms of the development of film production and its impact on the spectator. The second segment will communicate findings about the role of music in film and film music theory from the perspective of composers, musicians, filmmakers, and musicologist scholars with multiple motion picture examples for reference. The third segment will describe empirical research involving the impact music and projected film visuals have on audiences' psychological, emotional, aesthetic and cognitive responses. The fourth segment will present extant empirical research regarding the expressivity of a music performance, the relationship between emotion and performance expressivity, the measurement of expressivity, theories of expressivity, and pedagogical methods in attaining an understanding and response of performance expressivity.

Projected Motion Images' Effect on Emotional, Psychological, and Physiological Responses

The perception of motion has been an essential ability to understanding the physical world for humans since infancy (Barten, Birn, & Ronch, 1971; Fox & McDaniel, 1982). When perceiving motion, a frame of reference allows one to experience one object's motion in relation to another throughout time. Enacting specialized brain cells, the brain can detect motion instantly (Goldstein, 1989); thus, causing emotional, cognitive, psychological or physiological responses from the object in motion. While French philosopher Henri Bergson (1944) describes motion as a dynamic process consisting of a continuous flow, Greek

philosopher Zeno of Elea attests motion is merely an infinite number of frozen positions presented to a viewer in rapid succession causing an illusion of motion (Rock, 1984). It is Zeno's theory that closely relates to the successive snapshots of images circulated through twenty-four frames a second in the medium of film that both captures and produces the illusion of motion when projected onto a movie screen through the mixture of speed and light. Each shot, consisting of the smallest unit of the film, is representative of a specific image at a particular distance and angle in accordance to other shots. These snapshots, systematically representing signs and symbols, are then mechanically reproduced in succession of one another with the purpose to "describe, develop, and narrate an event or series of events" (Mitry, 1990, p. 15) with multiple brushstrokes of light. In return, the spectator interprets the visual illusion, which can produce a change in one's conscious by effecting his perception, sensation, emotion, memory, or thought (Kubey & Csikszentmihalyi, 1990). Throughout the advancements of cinematic technology, the re-creation of motion as an illusion through time and space has been manipulated by multiple cinematic and editing techniques since the birth of film.

Motion has been suggested as one of the most prominent elements in the world of film, video, television, and multimedia (Zettl, 1990). Film theorists have agreed that motion can be expressive and trigger emotional responses from viewers similar to experiencing motion within the physical world (Arnheim, 1957; Giannetti, 2002). It has been suggested that the emotional impact on-screen media has on the human psyche can have a "measurable contribution to viewer's conceptions of reality" (Gerbner, Gross, Morgan, & Signorielli, 1980, p. 10). Emotional behavior can be directed by the valence, which controls the direction of emotional engagement, and the arousal, which defines the intensity of the

emotion when viewing a moving image (Lang, Bradley, & Cuthbert, 1990; Russell & Barrett, 1999). In an effort to investigate this theory, empirical researchers have discovered that the continuous motion of images fixed on an on-screen medium can stimulate emotional responses through self-report (Detenber & Reeves, 1996).

Detenber and Simons (1998) investigated whether participants responded emotionally and physiologically to 27 short segments, six seconds in length, from different films and television shows contrasting in both valence and arousal as compared to still photographs. Measuring emotional response using self-report, skin conductance, and heart-rate response, results indicated that motion in film could contribute to an arousal response, especially when the motion picture depicts an arousing scene. As for the effect on valence, self-report was the only form of data to show an effect on emotional response. In return, these results support the theory that someone who is hypothetically viewing a film depicting danger or terror-stricken images would most likely experience a fright response to a certain degree (Cantor, 2002). Whether the narrative content of a film comes from a documentary depicting realism, which has been linked to significant psychological and physiological reactions, or scripted settings, understanding the captured images' environment could be another variable to consider when studying the effects of the content of a film (Lazarus, Speisman, Mordkoff, & Davison, 1962).

Nevertheless, when studying the effects of content-driven material affixed to an on-screen medium, one must also be aware of the role individual differences among participants has on emotional responses. Some of these individual differences could arise from dispositional mood (Watson, Clark, & Tellegen, 1988) or personal traits (Gross, Sutton, & Ketelaar, 1998). Even more, gender, race, social class and culture can also have a impact on

how one responds towards content within a film or television program (Basabe, Paez, Valencia, Gonzalez, & Rimé, 2002; Vrana & Rollock, 2002). In particular, Vrana and Rollock discovered that female participants tended to report more intense emotional experiences and react with more facial expression towards the imagery than did male participants.

Structural Mechanics of the Projected Moving Image

While the content within the narrative can be assumed to play an important role on the emotional response of the viewer, other structural attributes such as the mechanics of the filmmaking process and style can also affect the emotional outcome of the spectator's viewing experience. Leading towards the artistic and communicative vision of a filmmaker, decisions are made on the framing of a shot, how multiple shots are sequenced, the color and focus of the overall visual, and the speed at which the visual is played back. Other structural attributes that fall outside the control of the filmmaker could include how the moving image is projected. As technology advances, opportunities arise for more IMAX projection equipped movie theaters and larger high definition televisions to consume the living rooms of American households (Belton, 2012; Bos, van Doorn, & Smanik, 2012). This trend could be supported by scientific research reporting an increase in positive emotional responses when viewing projected media on a larger picture size compared to a small picture size (Codispoti & De Cesarei, 2007; Detenber & Reeves, 1996; Lombard, 1995). De Cesarei and Codispoti (2008) also ruled out the notion that systematic changes in color could be a confounding variable when measuring emotional responses between the sizes of the picture images or the distance between the viewer and the screen. Based on the interrelationship theory between cinematic image and the image of reality, the larger picture frame could be a contributing

factor toward the heightened emotional response due to the encompassing size of the projection.

Framing of the Moving Image

Whether captured and projected in a standard 1.85:1 aspect ratio or a widescreen 2.35:1 aspect ratio, the entire picture image is encompassed within a frame of film. The camera can indiscriminately capture multiple objects or subjects at a time (Harrington, 1973). Considering the angle or distance of the camera's shot, theorists have suggested that the content within a sequence of moving images can invoke an emotional response from a spectator (Messaris, 1994). For instance, the incorporation of a close-up was found to present a sense of emotional closeness to the object within the image as compared to a wider shot (Dmytryk, 1984), whereas a loosely framed shot can give the symbolic impression of freedom (Giannetti, 2002). In addition, the lens of a camera can capture certain actions that would normally be missed by a spectator outside in reality. An extremely low angled shot can elude to a threatening impression of dominance whereas a high angled shot can give the impression of powerless entrapment and vulnerability within the narrative (Giannetti, 2002).

By changing the angle of the camera lens to a lateral tilt, a point-of-view shot can occur to bring forth another interpretive dimension to the narrative. This point of view can create another level of realism and hold the attention of the spectator as they empathize on an emotional level from the character or object's point of view. Often times, in order to capture a character's point-of-view, filmmakers will choose to move the camera around while capturing images to add to the realism of the narrative; thus, creating a "mobile window" by the camera (Gibson, 1979). One particular study measuring the cognitive memory of 92 adults found that participants understood and remembered more about the physical properties

of a scene when viewing a video shot by one continuous moving-camera compared to a fixed camera presentation containing a stationary distance shot of the scene and six additional close-up edited shots within the same scene (Kipper, 1986). These results could suggest that the images captured by one continuous moving camera could allow spectators a clearer ability to draw upon and relate to aspects of the film's content similar to that of their physical world in order to summon an interpretation of what they are viewing.

Properties of the Photograph of the Moving Image

The choices in color, hue, saturation, and value of the image can also have an immense effect on how a viewer interprets the narrative (Zettl, 1990). As the color of moving images can be captured from the reality of the physical world, post-production in film allows for filmmakers to manipulate various properties of the moving image photograph. Film theorist, Zettl, explains that color can add another dimension to the meaning of a scene and can function on three levels; (1) informational, (2) compositional, and (3) expressive. The informational function can explain about an object in more detail while the compositional function of color can assist in defining "certain screen areas and [to] bring the energies of pictorial elements into a balanced, yet dynamic, interplay" (p 81). This function often involves low color levels applied to the background and high color levels to the foreground. Thirdly, color can function expressively, often expressing the quality of a particular object or providing more drama and excitement to a scene. However, Zettl also theorizes that color can dampen the emotion of an intimate love scene or a wounded soldier left in a battlefield. He explains that color can make an internal scene seem too external; thus hindering the emotional empathy of the spectator towards the narrative.

The manipulation of color in post-production involves the use of filters. Certain filters can assist in accenting certain skin tones between indoor and outdoor scenes. However, filters can also accentuate mood and meaning of the narrative content. In *The Age of Innocence* (1993), color filters were used to eliminate the brighter colors of the images to give the interpretation of a subdued or repressed society, a fundamental value of the characters represented within the narrative. Contrary to eliminating colors, certain filters can accentuate color as illustrated in *Married to the Mob* (1988). The exaggerated use of color is interpreted as being congruent with the cartoonish nature of this Mafia comedy (Giannetti, 2002).

In general, red can present the feeling of warmth, while blue can be associated with cold. For instance, the use of a blue tint filter in *Payback* (1999) establishes the dark humor and grittiness of the entire film. However, theorists speculate that combination of colors and the relationship between color and hue or saturation assists in the film's energy (Giannetti, 2002; Zettl, 1990). In *Aliens* (1986), many of the brighter and bolder aspects of color are removed to signify the dreary, cold, and metallic elements of the film only to notice a tint of red filtering throughout film, implying alarm to the narrative environment. When a saturation filter is applied to the tree lights in the background of a scene between a couple at a restaurant in *Runaway Bride* (1999), Zannetti suggests the saturated blurriness and glow of the tree lights sets a romantic mood between the two characters. In addition to the processing of a film during post-production, filmmakers can also manipulate the image captured on film by the use of varied lighting techniques to assist in the directional, spatial-compositional, thematic, and emotional functions within a scene (Zettl, 1990).

In the arena of mass media, empirical research has focused on color's influence on cognition (Chute, 1980; Scanlon, 1967; Schaps & Guest, 1968), persuasion (Meyers-Levy & Peracchio, 1995), and emotion (Garcia & Stark, 1991). While some research discovered participants having a higher emotional reaction from films and television projected in color compared to black and white (Scanlon, 1967), others struggled to find any significance between color and non-colored programs among male participants (Donohue, 1973). In a more recent effort investigating emotional effects of color in short television segments, Detenber, Simons, and Reiss (2000) collected data through self-report and physiological measures (skin conductance, heart rate, and facial electromyography) from 34 participants. Television segments in color were rated more positively and arousing compared to black and white (monochrome) segments. While participants consciously had a higher emotional impact to the color segments, data collected through physiological measurements showed no significant difference between color and monochrome television segments.

Editing

Some theorists suggest that editing refers to just the mechanics of film production through the assembly of shots in order to capture a coherent sequence (Katz, 1994), while others believe that editing is an extension to the film text itself (Bordwell & Thompson, 1990). The careful craftsmanship of editing can deliver the perception of time and space to be continuous. German critic Rudolph Arnheim (1957) stated that realism is the experiencing of life as an "uninterrupted spatial and temporal sequence" (p. 20). The visual reality one experiences while watching a film can trigger the same sort of successive glances one experiences in reality through time. Due to these similarities between the edited motion picture and the sense of seeing in reality, spectators have become accustomed to accepting

gaps in space and time within the narrative of a film due to its edits by focusing on the gestalt of what the film is communicating. In defining the editing process on the psychological effect of the spectator, film critic Hugo Munsterberg was primarily interested on how editing had the capability of 'mimicking' the workings of the human mind (Fischer, 1999). Instead of depending on the sequencing of the shots to tell a story, Munsterberg (1970) believed that the mind of the spectator had an important role in the filmmaking process, suggesting that the spectator could bring forth the understanding of time and space from their "outer world" and would be able to link image sequences to the "inner world" of memory, imagination, and emotion (p. 74). This would allow the spectator to perceive a flashback sequence in a scene or follow multiple plots occurring throughout the continuum of a film.

Favoring editing's power to establish a perception of reality, Soviet filmmaker and theorist Sergei Eisenstein (1957) organized short shots and edited them together into a sequence to create the sensation of passage of time. This editing technique was termed montage. It was discovered that the editing techniques of the montage could also have an incredible effect on emotion. Similarly, Kuleshov (1974) theorized that movement could be created through the editing process, drawing towards an emotional interpretation. Although the actor's performance or an object's symbolic meaning could contribute to the conveying message, Kuleshov and Eisenstein discovered that the way in which the moving images were assembled and edited was essential to the process of conveying and manipulating a message to the viewer similar to how a series of words and their relationship towards each other could create a meaningful sentence. Harrington (1973) explains the following example:

> Consider these three shots: a plate heaped with steaming, appetizing food; a little girl, about six or seven, wearing a filthy dress and staring at the camera with an expressionless girl followed by the food and then the smiling face, the viewer assumes that the hungry girl has been offered the food and is now happy. Reverse the

> order: smiling face, food, expressionless face. The filmmaker has now depicted disappointment and despair (p. 24).

The order of shots and the relationship toward one another has an effect on the overall rhetorical meaning of the entire segment. Therefore, after each new shot is introduced, new meanings can be derived from the images through their sequential relationships.

Scientific research has been conducted to distinguish editing techniques on the spectator's perception of the given scene as a whole (Goldberg, 1951; Touzard, 2001) and its continuity (Levin & Simons, 2000; Simons & Levin, 1998). Soviet filmmakers Lev Kuleshov (1974) and V. I. Pudovikin (1970) investigated the various effect changes in film editing on the spectator's perception and interpretation of a film segment. By filming a character with neutral expression and intercutting the shot with an insert depicting a bowl of steaming soup during one segment and a child playing during a second segment, audience members interpreted the image of the neutral face in the context of the other surrounding shots from the film.

Another effort in studying the effects of motion picture editing also involved the detection of continuity errors. Levin & Simons (1997) formed a six-shot video of a conversation between two actresses. Within each cut of the video segments, the investigators added at least one continuity error. For example, during the scene two actresses are sitting at a table with a soda bottle, plastic cups, and red plates. During the next cut, everything on the table remains the same except that the red plates were now white. These patterns of changes continued after each shot throughout the entire scene. For this procedure, investigators asked participants to simply pay close attention to the video. Ultimately, out of the ten participants, only one noticed any changes within the narrative environment between each shot. When asked to watch the video a second time and specifically look for inconsistencies within the

narrative, only two of the nine changes were reported. These results confirm the theory that one cannot process objects and components within a narrative (Neisser, 1967); thus, filmmakers depend on the viewer's naturalistic perception to input and process as much information from each cut into a coherent understanding of the scene's gestalt.

Motion Manipulation of the Image

The perception of motion's speed can be judged in accordance to an object's movement in relation to the stable environment surrounding the object. During the process of crafting a film, filmmakers can manipulate the speed of the moving image during production with the assistance of fluctuating the camera's capturing speed or during the post-production process through playback. Slow motion's screen motion shows the event moving slower than its actual primary motion. Several meanings can transpire out of the slow motion effect. The effect could act as a "metaphysical paradox" of the image's cinematic reactions during the moment of the action (Prince, 1998, p. 60) as witnessed in *The Last of the Mohicans* (1992) where the slow motion effect seems to hold the Hawkeye character as he desperately runs toward the woman he loves who is under attack. The effect could also distance the audience from the action within the narrative as demonstrated at the end of a long and violent battle during the opening scene in *Gladiator* (1999) (Seydor, 1997). Thirdly, the effect can act as a second choreographer to the movement that is occurring within the narrative (Cubitt, 2004). Whether applying slow motion to conjure a "grotesque ballet' of the video-taped footage of Jack Ruby's assassination of Lee Harvey Oswald (Watson, 1994, p. 220), *NFL Films'* footage of San Francisco 49er's Dwight Clark catching the winning touchdown pass from quarterback Joe Montana while the team celebrates during the 1981 NFC Conference Championship, or the visual motion of bullets streaming through

the air in *The Matrix* (1999), slow motion places the spectator in time of the action; thus, theoretically intensifying what is being experienced in the same way dance can emotionally intensify the music performance experience.

The opposite effect of accelerating the images became a reality during the birth of filmmaking due to the imperfections of recording and playing back movement prior to the standardization of film's production at 24 frames per second. In capturing people walking on a street, this accelerated motion can theoretically produce a seemingly jerky, frenzied, and unpredictable movement of a scene. Giannetti references French aesthetician Henri Bergson's view that by accelerating the motion of people, a machine-like visual effect can occur. When this inflexible motion transpires, the results can often times be humorous as seen in *Tom Jones* (1963) (p. 127).

Sound in Film

As part of the audiences' on-screen moving image experience, ever since the introduction of sound in film (*The Jazz Singer*, 1927), sound has been offered as another mode in communicating information to the spectator. Not only can sound assist in the verbal communication of dialogue within the narrative, sound can also add to the level of realism within the scene (Chion, 1994) or contribute to the over exaggerated/other worldly nature of a film (Kerins, 2011). Often times after the production of a film, sound editors and designers can recreate an entire soundtrack without the inclusion of the production track. In this instance, filmmakers can take extra liberties in establishing a specific sonic experience that can shape how the narrative is seen, heard, and felt, ultimately influencing cinema's "internal development" (p. 141). French filmmaker and critic, Michel Chion, suggests, "depending on density, internal texture, tone quality, and progression, a sound can temporally animate an

image to a greater or lesser degree" (p. 14). Today's audiences continue to receive a growth of sonic stimulation through advancements in sound production technology with the use of Digital Surround Sound in both films and television programming (Kerins, 2011). Therefore, it has been assumed that sound's association to the visual of film, traditionally and culturally, has had intrinsic value upon the spectator (Tagg, 2006). In addition to the dialogue and sound effects communicated through a film, music is the final sonic element that has influenced the course of communication with film audiences for the majority of film's existence.

The Role of Music in Film and Film Music Theory

In referencing music's power in film, George Burt (1994) states that music can "open the frame of reference to a story and to reveal its inner life in a way that could not have been as fully articulated in any other way" (p. 4). At the same time, music can also manipulate spectator's emotions on how to interpret a film. Within these emotions conjured up by music's interaction with the narrative, spectators can be placed within the center of the narrative in almost a hypnotic state, forgetting that they are seated in a theater or on their own living room sofa passively watching a movie. Despite the vast exposure of film music on audiences around the world, the art form from both a musicological, psychological, and empirical standpoint has often been neglected (Prendergast, 1992). Unlike other forms of music, the lack of focus on the art form of film music could be the result of its, often times, unconscious purpose within a film (Kassabian, 2001). Recently scholars, musicians, composers, and psychologists have begun to explore multiple theories of music's role in film (Gorbman, 1987) and its psychological effect on an audience's emotional and cognitive perception (Boltz, 2004; Cohen, 1994).

Stemming back to the era of silent films, music has almost always functioned to some degree within a film. Music has been considered one of the many art forms that plays a role in establishing the illusion of drama based on the *Gesamtkunstwerk* Wagnerian theory, which states that all forms of art work together to form the final product (Paulin, 2000). By definition, film music is music that accompanies a film. The two most common ways that music functions within a film is diegetically or non-diegetically (Gorbman, 1987). The diegesis of a film refers to the fictional and narrative world of the film. Therefore, diegetic music is music that originates from within the narrative, which can be heard and responded to by characters and objects. The non-diegesis of a film refers to the objective world of the audience in order to communicate the content from the narrative, as intended by the filmmaker, through the use of film screens, projectors, speakers, and other technical aspects of a film. Non-diegetic music is considered music that shapes the perception of the narrative without being a part of the narrative world, often referred to as an unseen element in the movie experience (Thomas, 1997). Even during the infancy of film making, filmmakers were often confused on how music functioned in film. During the production of *Lifeboat* (1944), director Alfred Hitchcock questioned that since the entire movie took place in a lifeboat on the open sea, where would the music be coming from? Realizing that Hitchcock was suggesting that the music he was referring to was coming from the diegesis, film composer David Raksin, answered his question with a question, "Ask Mr. Hitchcock to explain where the cameras come from, and I'll tell him where the music comes from" (p. 1). Therefore, non-diegetic music is not intended to form out of or be a part of the narrative world. By definition, at no time can the non-diegetic music collaborate with objects in the narrative world where objects can hear, recognize, and respond to this music (Brown, 1994).

At the birth of classical American cinema, non-diegetic film music had three functional layers (Brown, 1994). First, non-diegetic music acted aesthetically as a wallpaper of sound in order to psychologically subdue audience's fears of darkness and to pragmatically cover up the sound of the projector. On December 28, 1895, the Lumière Brothers asked a pianist to accompany the viewing of a series of short films at the Grand Café in Paris. Witnesses of these films described the experience as images suddenly coming to life on the side of a wall (Toulet, 1995). It became apparent that the inclusion of a piano accompaniment could lend warmth and ease from the familiarity of music against these "ghostly" and "disembodied" images that were being witnessed for the first time. Second, non-diegetic music can act as an "aesthetic counterbalance to the iconic/representational nature of the cinematic signs" (Brown, 1994, p. 32). In translation, non-diegetic music draws the attention away from properties such as film editing and visuals from different perspectives within the narrative, and makes the audience believe in a signified reality by filling in visual gaps of an edited scene. Similar to the act of ventriloquism, the fusion of music in conjunction with a film hides the mechanical elements of cinematic art, giving an illusion of reality to the cinematic experience (Eisler & Adorno, 1947; Kalinak, 1992). For instance, the shower scene in *Psycho* (1960) lasts three minutes and fourteen seconds and consists of 54 separate shots. By embedding Bernard Herrmann's music score into this scene, audience members can experience the scene with a linear reality compared to viewing 54 different shots juxtaposed at different camera angles, close-ups, and long-shots without the music present. Ultimately, the fusion of music within the shower scene conjures up the illusion of experiencing the action as if the spectator was present; thus, adding to the realism of the action. Thirdly, non-diegetic music can shape or skew the perception of the characters

and situations within the narrative. For instance, in Hitchcock's *Spellbound* (1945), composer Miklós Rózsa writes the obsession/paranoia theme based on a chromatic descending melodic figure. Every time the John Ballantyne character sees the color white or parallel lines, he begins to become paranoid. The audience doesn't realize the paranoia until the obsession/paranoia theme on the Theremin accompanies the Ballantyne character within the narrative.

Since its infancy, film music has functioned differently throughout the history and various genres of American cinema. First and foremost, music can be linked as a signifier of emotion (Brown, 1994). Prior to recorded music, nickelodeons would use a pianist or theater organist to accompany silent films using music that ranged from popular charts of the day to classics. Criticism grew quickly as audiences would shockingly experience a discrepancy between the emotional perception of the narrative and the music accompanying the film (Wierzbicki, 2009). During a viewing of *War Brides* (1916), a dramatic scene occurred where Nazimova, a peasant women, throws herself to the king pleading before killing herself only to be accompanied by a frivolous popular tune titled, "You Made Me What I Am Today" (Winkler, 1951). Realizing how music could emotional shape the narrative of silent films, publishers began creating collections of mood music such as Rapée's *Motion Picture Moods for Pianists and Organists* (1924) and Zamecnik's *Sam Fox Moving Picture Volumes* (1913). These collections of previously composed pieces were identified by mood so as to give the musician a mood reference in accordance to the mood being depicted in the film. Familiar with thousands of music titles from his work as a clerk in the New York offices of the Carl Fischer publishing company, Max Winkler invented the music cue sheet, which selected specific sections of music and descriptors of how to play the cues for specific films.

In an effort to enhance the film experience based on emotion, Winkler's cue sheet invention pioneered the process of how music would be composed for films in the coming years.

Functions of Film Music

Time, geographic location, and cultural atmospheres in a film can be assisted with the presence of specific music. *A Man Called Horse* (1970) is a film about a Western man who finds purpose among a primitive Native American culture. In an attempt to tell the story in a culturally responsive manner, composer Leonard Rosenmann chose to score the film with Sioux chanting and quasi-Native American instrumentation, which included percussion, recorders, and flutes. Miklós Rózsa decided to utilize melodies and scales from medieval Spain to depict the geographical and cultural influences in *El Cid* (1961). Even the use of previously recorded popular songs such as Bill Haley & the Comets' "Rock Around the Clock" and the Beach Boys' "Surfin' Safari" in George Lucas' *American Graffiti* (1973) shaped the time period and demographics of teenagers cruising and partying one night during the early 1960s. The mastery of creating an unknown, otherworldly atmosphere was captured in an avant-garde style of writing with the inclusion of prepared piano and uncharacteristic processing of acoustical sounds in Jerry Goldsmith's score to *Planet of the Apes* (1968). Even the decision to include electronic music in *RoboCop* (1987) to depict the world of man versus machine can be of significance when shaping a sonic atmosphere in a film (Karlin, 1994).

Music can also provide a film with a sense of unity and coherence to a story. Similar to opera forms, many early classical films such as *Spartacus* (1960) deployed an opening prologue and a closing cue to reinforce the form of the film. Derivative of Richard Wagner's use of *leitmotifs* in his *Der Ring des Nibelungen* cycle, *leitmotifs* became an essential

characteristic of the majority of classical Hollywood films from the 1930s to the early 1950s. By assigning specific themes to characters, things, and ideas, composers were able to assist in the storytelling process. The choice to combine two different motifs representative of two characters into a newly arranged theme, as evidenced by Eric Korngold's love theme in *Sea Hawk* (1940), allowed the plot to develop without disrupting the unity of the story. In regards to the Wagnerian *leitmotif* phenomenon, American composer Roger Sessions (1979) states that the detail in the line of the theme is more significant than its development. This statement can be related to the notion that a theme should not be so complex that audience members whose focus should be directed towards the dialogue and visual depiction of the story cannot decode the music.

Music in film also has the ability to communicate unspoken thoughts of a character. The monothematic "Laura" theme in *Laura* (1944) can be susceptible to the cliché of a classic expression of the Laura character. However, Raksin uses the theme to create a psychological subtext with everything associated with Laura. As the character, detective Mark McPherson, begins to fall in love with the ghost of Laura, he begins to let his mind wonder about her as evidenced by the haunting renditions of the "Laura" theme. Dialogue and actions within the narrative can communicate to an extent. The use of music from the non-diegesis can add greater depth of feeling, emotion, and understanding inside the minds of characters and situations within the diegesis. In *Sixth Sense* (1999), James Newton Howard's music cue during the final scene immediately clues the audience into when the Malcolm Crowe character realizes the shocking truth of his existence. With the assistance of narrative flashbacks and a music cue that begins mysterious but quickly crescendos to a statement by strings and a wordless choir that inhales and exhales upward harmonic shifts,

this music cue suggests the inevitable truth of Crowe's mortality. Together, both the character and audience learn of this turning point in unison due to the enhancement of how the music congruently communicates what Crowe's mind is realizing at that very moment in time; thus intensifying the drama by a moment of surprise and disbelief.

Music also has the power to bring focus, attention, and perspective to a specific point within the narrative of a film. In *Witness* (1985), a young Amish boy who is witness to a murder waits in a chaotic police station. As the boy moves through the disheveled quarters of the police station, the filmmakers supply the audience with only the diegetic sounds occurring within the police station, a sonic representation from the boy's point of view. However, once turmoil sets into the boy's psyche caused by recognizing a picture of the murderer hanging on the wall of the police station, Jarre's music suddenly appears and brings attention to this turmoil immediately. In another film, *To Kill a Mockingbird* (1962), the story is told from the perspective of a six-year-old girl recalling the story as an older adult. In the telling of the story, Elmer Bernstein chooses to use a flute solo playing simple, playful melodies with asymmetrical changes in meter and rhythm to depict this translation between the child and adult's point of view. Even a single main theme can develop simulations and representations of consciousness as evidenced by the melodic, rhythmic, harmonic, orchestral, and timing elements of the "Indiana Jones March" theme to suggest that while he is a hero, he got away with another close call again (Link, 2004).

In addition to communicating thoughts of a character, music can become another visual component of a film. Bernard Herrmann's score to Vertigo (1958) plays a significant narrative role not just through the eyes of the character, but through the situation of the narrative. As the character, Scotty, peers downward from above a bell tower, shock chords

containing accents of dissonant brass and arpeggiated glissandos performed by a harp accompany Hitchcock's use of downward zoom and upward tracking shots to simulate Scotty's fear of heights. Similar to the role of the camera in this regard, Link (2004) suggests that music takes on the subjective role of seeing by intensifying the anxiety of Scotty's position. In addition, Link continues to suggest that music can allude to the scope of a visual space within a narrative scene. As an objective shot of Mount Rushmore appears in *North By Northwest* (1959), elements of size, scope, and distance are geometrically represented metaphorically through large intervals and horizontally rhythmic and harmonic music elements in the score. These uses of music have also been referred to as referential narrative cueing (Gorbman, 1987).

Narrative cueing of a film score can also take on a connotative role that interprets and illustrates narrative events. One way that narrative events can be illustrated through music is through a technique termed "Mickey Mousing." Named after the technique of hitting the action's accent points in cartoons, synchronizing timed points in the music to specific points in the action has been a common technique acquired by American classic film composers since the golden age of film scoring. John Williams' score to the Circus Train Chase scene in *Indiana Jones and the Last Crusade* (1989) is a classic model where the music's tempo, orchestration, themes, accents, cadences, and rests specifically illustrate the action occurring within the narrative. While musically accenting certain points in the narrative is fundamental in hitting the action, film composer Brian Tyler (2011) states that he also finds himself accenting to the way shots are edited, camera angles, and perspective to a scene as demonstrated in a car chase scene in *Fast Five* (2011).

Other times music will be composed in a linear fashion through the action of a film. At times this music accents nothing specifically and ignores specific shifts of emotion. One specific mood can be the intention of the filmmaker when directing and composing a scene. The bluegrass banjo score from *Deliverance* (1972) and the vaudeville/Dixieland jazz score to *Going in Style* (1979) are two examples of approaching the overall tone of a film to a particular style of music. Emotional shifts can also occur within this approach, scoring without accents to specific shifts in action. Howard Shore's score to *Lord of the Rings: Fellowship of the Ring* (2001) presents a different style to scoring action. Instead of accenting certain sync points to the action within a scene, Shore writes in a linear fashion as evident by the aleatoric upward flowing patterns as the Fellowship desperately pokes and prods the Water Watcher monster who has grabbed the Frodo character with one of his wailing tentacles. The music acts as a dimension of awe and shock at what is unfolding compared to emphasizing accent points of what is already being told through the visual.

Film music has also been known to either intensify or relax the pace of a film. The two-note ostinato shark theme from *Jaws* (1976) is a musical idea that is represented throughout the film. As the shark lurks near its prey, the theme can be heard at a slow tempi with rubato. As the shark draws closer, the two-note ostinato grows faster and louder before devouring its prey, illustrated by the high pitched accents and frenzied rhythms of the orchestra. Film composer Pino Donagio's solo flute writing for a scene in *Carrie* (1976) helped ease and relax a scene that was previously filled with high adrenaline mayhem. In this vane, music can also give rise to an epic spectacle such as the case in the triumphant opening of the chariot run in *Ben-Hur* (1959) or add an anticipation of suspense as heard by the dissonant sustained strings in the opening sequence of *Alien* (1979).

Most often, the empathetic approach to film scoring by allowing the score to compliment the scene's tempo, tone, and phrasing, dominates the artistic craft of marrying music to film. However, a second type of scoring, termed anempathetic, exhibits indifference between music and the narrative (Chion, 1994). Often times an anempathetic approach to scoring a film can bring forth sense of irony through the growth of counterpoint between what the audience sees juxtaposed to what they hear as illustrated by the placement of Lou Reed's lilting song "Perfect Day" accompanied by a character going through the motions of a drug overdose in *Trainspotting* (1996) or intensify a scene dramatically; thus, allowing the ingredients of the various experiences to formulate what is really happening. For instance, a great tragedy occurs when the Sean Brody character is suddenly attacked by a great white shark when untangling a log from a buoy off Amity Island in *Jaws the Revenge* (1987). Prior to this catastrophe, children's voices can be heard caroling "The First Noel" from the shore; all within the narrative's diegesis. During the shark attack, light-hearted sounds of children's voices accompanied by a wind band continue the carol in the open air while this madness unfolds in the water. The innocent nature of this carol in conjunction with this horrific action only intensifies the scene, adding a truer dimension of reality to the scene. While short bursts non-diegetic music acting as stingers accompany the scene, the familiarity of non-diegetic wall-to-wall "shark attack" music so common in the first three *Jaws* films is reduced resulting in a dramatic sense of realism and tragedy.

Similar to relaxing the pace of a scene, indifferent music can be used to tone down a scene such as a verbal confrontation in *Who's Afraid of Virginia Woolf* (1967) or the use of the sweet lyrical line of "Somewhere Over the Rainbow" to subdue the violence being portrayed through the eyes of a little boy in *Face/Off* (1997). The irony that is brought forth

in delivering a comedy genre film also relies heavily on the musical score. At times, one may feel a comedy needs "funny" music. Composer Michael Giacchino (2009) feels the opposite, where as the music needs to be as sincerely serious as scoring a drama or action scene in order for the humor of the visual and dialogue to have more comedic impact on the audience.

The absence of both non-diegetic and diegetic music has also been a filmmaking technique to intensify dialogue or add realism to a scene. Sound designer Gary Rydstrom (Kerins, 2011) clarifies how even the greatest score composed would have delineated the impact of the opening battle scene in *Saving Private Ryan* (1998). By depending solely on the visual and its diegetic sonic landscape, audience members were given the opportunity to experience this scene as if they were in the middle of the combat. This realism was multiplied due to the choice to silence the non-diegetic music. Therefore, music in film has the ability to subdue intended emotion.

In differentiating the speed of perception, Chion's theory (1994) suggests that people who hear the sound of spoken sentences as a form of receiving information, can discern and comprehend information quicker through this aural sensory than using the visual sensory of reading the sentences in a book. Therefore, it has been suggested that the eye perceives more slowly since it takes more time to explore a visual field in order to comprehend the information. In the auditory field, a person can gather all of the auditory information at one time. In this regard, by suggesting that multiple viewings of a visual would be needed before anticipating its perception of time, the incorporation of sound in film could allow the use of sound and music to take over and manipulate the perception of time with more ease. As a

result, music has been experienced by audiences to give an illusion of speeding up a slow scene with fast music and slowing a fast scene down with slow music.

Music has also carried the unpopular role of creating wall-to-wall music with a neutral intention. While Steiner's score to *Gone With the Wind* (1939) has multiple functions, some have suggested that certain sections of the film carry no apparent function to the drama and is present for no other reason than to create a continuous flow of sound and music (Timm, 2003). This wall-to-wall function could be a carry over from how audience members traditionally experienced film during the silent film era in nickelodeons.

In exploring both diegetic and non-diegetic music in film, some have raised questions with regard to how relationships can occur between these two worlds (Winters, 2010). One the earliest examples of these two worlds meeting occurred in Hitchcock's *Shadow of a Doubt* (1943) where the uncle Charlie character controls the nondiegetic music within the diegesis environment once he tips over the glass, causing the non-diegetic music to stop. In referencing the use of "Somewhere Over the Rainbow" during a gun battle scene in *Face/Off* (1997), the mother tells her little boy to put on his headphones and listen to his music in an attempt to shield him from further anxiety. The audience experiences the song within the diegesis evidenced by the narrowed frequency response of the tune coming through the boy's headphones in the midst of the heavy gun battle. However, the tune transfers from the diegesis to the non-diegesis once the visual shots depict the battle from the boy's perspective while accompanied by an audience perceived wider frequency response and stereo image of the tune, reminiscent of how a non-diegetic music score is mechanically established within the production of a film. In sum, the awareness of the diegetic and non-diegetic worlds can be ambiguous at times and dependent on one's interpretation of what is occurring in the film.

These narrative scenes exemplify how the standard definition of non-diegetic music can be a part of and within the film's narrative world.

Concerned with the narrative space and not the narrative levels (e.g. diegetic, non-diegetic) of film music, Winters suggests that it isn't whether or not the characters can 'hear' the sound of music that determines if the music is part of the fictional world, but whether the music appears to exist in time and narrative space of the diegetic world. Therefore, Winters contributes the term "intra-diegetic" music in reference to music's role within the time of space of the film's narrative world. Whereas other non-diegetic music could be understood as music not dictated by the narrative events and functioning from a distance during montage scenes, the intra-diegetic music functions within the narrative's time and place. Although this music does not function within the diegesis, the intra-diegetic theory can be considered part of the "filmic universe" (Frampton, 2006). For example, if one were to be floating in space as a TIE-Fighter roars past, the physical laws of reality would not allow sound to form in the vacuum of space. Within the physical laws of the filmic universe, one can hear and accept the sounds of the explosions and roar of the TIE-Fighter within the space atmosphere of *Star Wars* (1977). Winters is suggesting that while the bombastic bursts of the symphony orchestra cannot be physically heard by all space fighting pilots within the film's narrative, the symphony's music is still present in time and space of the filmic universe. This theory suggests that objects and characters within the diegesis can possess an influence on the way in which the music is presented within the film, possibly involving an interaction between the worlds of the diegesis and non-diegesis.

These modern attempts to fuse the diegetic and non-diegetic worlds can be another function of music in film as illustrated in Ridley Scott's *Blackhawk Down* (2001). Through

the collaboration of sound designer John Title and music composer Hans Zimmer, both diegetic sound and non-diegetic (intra-diegetic) music can transform the psychological effect of what the audience experiences. During the beginning of the film, a palette of rock, orchestral, and ethnic music pulse in synchronization with the diegetic sound of the chopper blades. This synchronization between the diegesis of the chopper and the non-diegesis of the music functions as an "autonomous character in the unfolding of the drama on a pure sonic level" (Rudy, 2004, p. 2). At a subconscious level, this transformed soundscape informs the spectator that the soldiers are on task and in control of the situation. However, once the militia comes in to cause chaos to the civilians causing the United States soldiers a direct order not to intervene, the rhythm of the chopper's rotors and the steady pulse of the underscore begin to shift out of sync; inevitably signifying a situation where the soldiers lose control of the situation within the narrative scene.

Film Music Listening Codes

Based on personal preference and exposure to music, consumers of music can listen differently from one another (Copland, 1985). Copland has also theorized that the focused state in which a listener is in can also have an influence on what the listener is hearing. Similar to Aaron Copland's (p. 7) three planes of listening to music, Gorbman clearly states three codes in which one can listen to music within a film.

First, spectators can listen to music in film for is musical purposes. This *pure musical code* suggests that the music is created or chosen first, in many instances, while the visual make-up of the film is designed around the various elements of the music. For example, in *Atonement* (2007), the character, Robbie, allows Giacomo Puccini's *La Bohème* opera duet "O Soave Fanciulla, O Dolce Viso" to be played diegetically on his record player. However,

as the montage between Robbie typing and Cecelia doing her make-up winds down, the duet enters the non-diegetic musical world. Through further analysis of the aria's libretto, an interesting subtext is created and another layer to the film's canvas links a connection between the meaning of the lyrics and the relationship between the characters of Robbie and Cecilia. Fresh off of composing a letter informing Cecelia of his true feelings for her, the meaning behind the lyrics and form of the duet between Mimi and Rodolpho depicts two lovers becoming acquainted with each other. This *pure musical code* soars and connects the quick 'back-and-forth' edits of this scene's montage with a direct relationship between the meaning of Mimi and Rodolpho's duet and the relationship between Robbie and Cecilia within the narrative of the film.

The second code of listening is referred to as the *cultural code*. This code identifies attributes of culture and/or establishes a time and place. For instance, the trumpet has a long historical connection with the United States military. By including the trumpet as the main instrument in *Patton* (1970), listeners immediately identify the movie and the Patton character as a military man consisting of strength, honor, and power. This archetypal approach bears cultural associations immediately about the character and possibly the film.

Finally, the *cinematic code* bears specific formal relationships with elements in the film. For instance, when viewing a car chase scene, one might expect fast, syncopated music to accompany this scene due to similar music elements described to have occurred in previous car chase scenes in previous films. An obvious example where filmmakers used this *cinematic code* to inflict humor upon the audience occurred in Lord and Miller's *21 Jump Street* (2012). During a car chase scene, the two main characters, Schmidt and Jenko, find themselves escaping harms' way on the interstate. Two instances involved the

preparation of what would amount as collisions between two gasoline tanker trucks during this speeding car chase scene. The *cinematic code* can infer that any time two gasoline tanker trucks are about to collide resulting in a massive explosion, one ultimately hears the non-diegetic underscore ascend and crescendo to a final orchestral climatic cadence point immediately before the sound of the massive explosion encompasses the narrative's diegesis. During these two instances, Mark Mothersbaugh's score follows this *cinematic code*, preparing the audience musically toward a massive explosion. However, by the time the orchestra reaches the cadence point where the explosion is about to occur, the gasoline tanker trucks don't explode. As the Schmidt and Jenko characters react to this explosive anticipation by tightening up and wincing, almost as if they hear the orchestral climax intruding into the diegesis, comedic humor is established due to the audience and character's anticipation of a massive explosion set up by the *cinematic code* of climatic explosion music so often experienced in similar film scenes.

Due to cinema's strong influence on American society's popular culture, cinema's music, music genres, and stereotypical clichés, familiar through a *cinematic code*, can also trigger the *cultural code* based on previous cinematic experiences. For instance, Ennio Morricone's score for the spaghetti western *The Good, the Bad, and the Ugly* (1966) assisted in sonically designing an aesthetic consisting of a sparse score, uncomplicated harmonies, unconventional orchestrations to Hollywood's standards, and very few melodies. While the use of the electric guitar can depict the grittiness of the Western landscape in the film, the use of whistling, yodeling, grunting, harmonica and an ocarina helped define the genre of Italian spaghetti westerns. Based on the consistent associations between the music and the rugged toughness of the main character in the film, this iconic score has been referred to other visual

content when conjuring up the interpretation of ruggedness. Although few films such as *There Will Be Blood* (2007) and *No Country for Old Men* (2007) may be singled out for taking a contemporary approach by including intense glissando string passages and atmospheric drones, McDonald (2012) suggests that the composers are merely commenting upon the physical setting of the narrative. By removing any trace of previous western score connotations from films such as *The Searchers* (1956), *Magnificent Seven* (1960), or *The Good, the Bad, and the Ugly*, the composers are eliminating stereotypes and clichés that could draw a spectator away from the narrative's story. Therefore, the *cinematic code* of film music could also be referred to as another *cultural code* based on cinema and film music's influence on popular culture (Tagg, 1989; 2006). Ultimately, it is critical to understand that both filmmakers and audiences can be influenced by all three film music codes in the crafting and interpretation of a film.

Compositional and Performance Process of Film Music

It is the job of the film composer to incorporate music to best fit the film as intended by the producer(s) and the director(s) of the film while constantly adjusting the process due to time and budget factors (Karlin, 1994; Timm, 2003). Typically, the film composer is called upon last during the post-production phase of the film. Prior to composing, the composer meets the filmmakers at a spotting session where instructions are given to the composer of how they envision the music to function and where music should be placed within the film. Regardless of the how the filmmakers communicate this information during the spotting session, it is up to the composer to decipher their intensions while inducting the appropriate moods, accents, and musical direction for the film. However, the musicians who will perform the score when it is written also have a vital role in the formation of the music.

Traditionally, the composer(s) composes the music in time to record in synchronization with the film. Since the advent of the recorded film score, full piece symphony orchestras would be called upon to perform the music in a recording studio. During this process, musicians would respond to the conductor's gestures during the performance of each music cue, similar to the response of musicians performing in the concert hall. With the assistance of the music editor, the conductor would conduct the music while following the film projected on a giant projection screen behind the players and a video monitor placed on podium.

This process of recording orchestral music for films still exists today with the assistance of analog and digital technology (Prendergast, 1994). While the conductor views the film with punches and streamers to assist the alignment and tempo of the music, the use of click tracks via headphones are often used among both the conductor and some performing ensemble musicians. Typically, the orchestra is seldom aware of what is occurring on the screen behind them as they focus on the conductor's gesture to respond from musically and expressively during the recording session (Kompanek, 2004). Conversely, filmmakers have strived for a music score that transcends the traditional orchestra. These scores are often written for soloists, smaller acoustical ensembles, or the use of electronic instruments. Based on a composer/conductor's performance process, the complexity of the composition, the physical demands of performer, and the amount of musicians performing at one time, the performer(s) may have the opportunity to view the film while simultaneously performing the music in the recording studio as pianist Lang Lang experienced while recording Conrad Pope and Alexandre Desplat's musical score for *My Week With Marilyn* (Parfitt, Weinstein, & Curtis, 2011).

Every composer has a process of writing a film score that other musicians will later perform and record. Whether composing with pencil and paper or improvising a melody on a MIDI keyboard and sequencer to be transcribed for performance, the compositional process is a personal decision that the composer makes when exploring his/her craft. With advancements in digital and analog technology, many film composers are writing, performing, and recording their own music in the confines of their own personal studio. Stemming from a tradition of composers who used their own personal studio to perform and record their own mock versions of the score using electronic synthesizers and sequencers in order to share with the filmmakers the framework of the score before sending it to be recorded by acoustic instruments, today, many films are calling for electronic/synthesized sounding scores or a fusion of electronic and acoustical instruments in films (Yewdall, 2003). This film scoring process lends itself to composers performing and recording the actual performance of the score with the assistance of digital audio workstations, virtual instrument software, and recording/MIDI hardware. Through the process of over-dubbing, film composer Brian Tyler seeks every opportunity to personally perform on and record as many instruments as possible in his film scores (DesJardins, 2006; Tyler, 2011). Hans Zimmer prefers to be in control of every musical sound that is heard in a film. Referring to his composing philosophy and process, Zimmer states (Coleman, 2012a):

> When you write on paper, you're basically writing an instructional manual for other people to perform. When you are writing on the computer, or the way I do, is you perform every note. At one point or the other, every note that is in the score has been played by me and being fiddled around with by me. So it takes a lot longer. Technology doesn't make things faster, it makes it slower if anything, because it opens up endless possibilities.

When comparing the writing process of film scoring as creating an instructional manual, Zimmer may be suggesting that the performance of how the music is performed and how it

can be manipulated cannot be communicated through standard notation. Through the assistance of the video monitors displaying the film and his computer, keyboards, and analog modules, Zimmer is able to create his intended performance of the music for the film, which probably could not be replicated if interpreted by another party.

Film Music Incorporating Vocal Soloists and Choir Ensembles

The traditional classical American film has generally been accompanied with a traditional classical orchestra. However, choirs have been included as another timbral color in the midst of an orchestra for such films as the *Lord of the Rings: Fellowship of the Ring* (2001), *Star Wars: The Phantom Menace* (1999), *The Omen* (1976), *The Mission (1986),* and *Conan the Barbarian* (1982). The use of vocals has found more prominent roles in such recent films as *Passion of Joan of Arc* (1995), *Beautiful Mind* (2001), and *Titanic* (1997). However, David Snell is one of the few composers who has composed a completely a cappella score consisting of moody vocalizations in Montgomery's film noir *Lady in the Lake* (1947). While the voice is capable of creating a variety of colorful timbres, it can be understood why filmmakers still lean more toward the use of orchestras and electronics in order to capture a larger and more diverse bank of timbres for a film score.

Empirical Research in Film Music

The role of music in film and its various theories have been discussed at length and documented by both filmmakers (Bernstein, 1978; Hoover, 2009; Morgan, 2000) and film music scholars (Brown, 1994; Gorbman, 1987; Karlin, 1994; Prendergast, 1992). Researchers have recently begun to explore this film music phenomenon with more objectivity through empirical research, which, both supports several film music theories and proposes other perspectives on the subject. In one study, an action scene from *Minority*

Report (2002) was interpreted differently based on the music that was accompanying the film (Tan, Spackman, & Wakefield, 2008). As the two characters in the narrative are being chased on foot, participants experienced the scene once with diegetic music playing Henry Mancini's light ballad 'Moon River' through the mall's PA system within the narrative, once with the same recorded version of 'Moon River' but embedded as incongruent non-diegetic music, and once with an entirely different congruent non-diegetic chase scene underscore from *Empire of the Sun* (1987). While most participants thought that the congruent non-diegetic chase scene underscore was more likely to be the original score in the film as intended by the filmmaker, participants reported more perceived tension in both mood of the scene and the relationship between the characters within the narrative when experiencing the scene with the diegetic music. It is notable that the filmmaker originally decided to include the diegetic version of 'Moon River' in the final version of *Minority Report*; thus, supporting Chion's (1994) theory that an anempathetic relationship between music and the visual narrative can produce a more intense experience. This seems to indicate how *cultural* and *cinematic codes* of film music can be evident when participants refer to the traditional action music to most likely accompany the scene. In contrast, the results also discovered that the relationship between the two characters within the chase scene were reported by participants as calm; thus, supporting the theory of how indifferent or incongruent music can also relieve the perception tension and intensity from within a film's narrative.

Psychological Responses to Film and Music

An empirical approach to film music research has focused primarily on the emotional impact and cognitive understanding of the film's plot (Bullerhahn & Güldenring, 1994; Cohen, 2010). Marshall and Cohen (1988) discovered that music could alter the emotional

interpretation of an abstract animated representation of three different geometric shapes in motion. In the experiment, participants experienced five different conditions (i.e., film alone, weak music alone, strong music alone, weak music in film, and strong music in film). The description of the newly composed "strong" and "weak" music varied on musical dimensions such as fast/slow, major/minor mode, and high/low pitch. Results indicated that various points in the animated activity led to more active interpretations when accompanied by music compared to no music.

In order to provide a more accurate representation of film and music's craftsmanship, Lipscomb and Kendall (1994) used a motion picture film and various music segments from its score in a similar study. Within five different scenes from one film, music from all five of these scenes were matched separately with the other four scenes for a total of twenty-five audiovisual composites. In rating which audiovisual composite were perceived as a best match, reported data suggested that all five of the scenes consisting of the original music cue, as intended by the filmmaker, were considered the best match in every case. However, with noticeable degrees of potency and activity through the interaction of film and music, it was suggested that music does have a strong effect over one's perception of an audiovisual composite regardless of the visual stimulus. Ultimately, these results show that music can have significant effect on the perception of the film regardless of its congruency.

Other psychological investigations on music's influence on perception of the visual narrative can be directed toward music's role in preparing the spectator to predict what may come next in a scene. Vitouch (2001) showed a scene from *The Lost Weekend* (1945) with one of two soundtracks and asked 48 participants to describe what they thought would happen to the characters after the excerpt ended. Using Miklós Rózsa's opening theme from

the film as the theme to bring forth a positive connotation and Samuel Barber's *Adagio for Strings* theme as the theme to insinuate a negative connotation, qualitative and quantitative reported data, indicated that participants anticipated a narrative situation with a more positive outcome when accompanied by the positive connotative theme as compared to the negative. This study demonstrated that music could be a preemptive subtext in the film by psychologically guiding a spectator's interpretation of the narrative reality of the film while assisting in foreshadowing the development of the story. However, it has been suggested that not all music can accurately foreshadow what is about to come next in a given scene (Boltz, Schulkind, & Kantra, 1991). This produces the notion that it is not just music, but music's meaning to the spectator that can alter the interpretation of the events that unfold within a film (Cook, 1998).

Different music scores for the same film can also lead to different judgments on what is occurring or what is about to occur in a film (Bullerhahn & Güldenring, 1994). By composing three different styles of music (i.e. thriller, melodrama, crime) based on orchestration, modes, motifs, and the place and length of the music in conjunction with a 10 minute experimental film, 412 participants were able to experience the film with each style of music embedded within the film. Through a questionnaire consisting of six unipolar rating scales of mood and three open ended questions regarding opinions from within the film's narrative, Bullerhahn and Güldenring (1994) discovered contrasting narrative interpretations among the three scores. In general, participants discovered there to be a sense of trickery in both the character development and the outcome of the film when accompanied by the thriller and crime versions of the underscore. Furthermore, the melodrama score

brought forth perceptions of family relations between the characters and often a sense of closure with the assistance of a final major chord in the underscore.

While other studies have found relationships between music and its influence on the interpretation of the relationship between two characters in a scene (Boltz, 2001), the guidance towards a particular character identity (Shevy, 2007), the sensation of closure to a given scene (Thompson, Russo, & Sinclair, 1994), or it's effect on the perception of emotion from what a neutrally expressed character is feeling (Tan, Spackman, & Bezdek, 2007), music can also bring forth attention to a specific visual aspect within the film (Bolivar, Cohen, and Fentress, 1994; Marshall and Cohen, 1988). For instance, an example of this change from structural congruency to semantic congruencies could include the use of a lullaby that directs a spectator's attention towards a baby's crib within a scene. When exposing participants to a film containing interactions between wolves, Bolivar, et al. (1994) found that the use of "friendly" music in conjunction with the film seemed to decrease the perceived degree of aggressiveness between the wolves as compared to viewing the film with "aggressive" music. This research supports the theory that all music can have an effect on the perception and interpretation of a film's narrative.

Physiological Responses to Film and Music

Music also has the ability to trigger physiological responses to a film (Thayer & Levenson, 1983). In studying these responses, Thayer and Levenson used a black and white instructional safety film portraying industrial accidents entitled "It Didn't Have to Happen," which has been used in other psychophysiological research (Lazarus, Speisman, Mordkoff, & Davison, 1962), and accompanied the film with either no music (control condition), "horror" music (increase condition), or "documentary" music (decrease condition). Sixty male

college students were divided equally into three separate groups (n = 20) with the assignment of experiencing one of the three conditions. Data were obtained at 86 periods through a number of physiological response devices to measure heart rate inter beat interval, somatic activity, skin conductance, finger pulse amplitude, and self-reporting of experienced anxiety while experiencing the film under one of the three conditions. By focusing on the response peaks in association with the accidents over a continuous timeline, results indicated that participants' electrodermal responses to the film were increased while experiencing the "horror" music. Interestingly, the electrodermal responses for the "documentary" music condition was lower than the "no music" condition, suggesting music's ability to subdue a physiological emotional response to what is being seen in a film.

Cognitive Responses to Film and Music

Through the principles of innate grouping (Bregman, 1990) and learned connections (Cohen, 1993), music can also have a cognitive response to film. The visual, dialogue, sound effects, and music are the multiple components of a film that can lead to absorption of information upon the audience (Cohen, MacMillan, & Drew, 2006). In studying music's contribution to a story's comprehension, Boltz (2001) had participants view short film clips accompanied by either positive, negative, and no music. In assessing comprehension, data was collected immediately after viewing each clip to measure participants' evaluation of the personality and motivations of the main character in the film and recall of various actions that occurred within the film. Results indicated that recollection of the film's actions was heightened among participants when the film and music's mood were congruent with each other. Following this research, Boltz (2004) conducted another study where participants experienced similar variations in congruency but were asked to attend to the audio track,

video track, or both in the pursuit of consuming information. This experiment informed that although memory comprehension was high when attending to audio or video alone during the mood incongruent composite of the audiovisual, memory comprehension was low when instructed to attend music and video together. Therefore, it is possible the mood congruency could have an affect on one's memory when attending to more than one sensory.

Recently, with the assumption that incongruency between more than one sensory could result in an encoding deficiency, the Congruence-Associationist Model (C-A M) was adopted to develop a deeper understanding of how the brain encodes and decodes information from multiple sensory in order to absorb, comprehend, and remember material from a film (Cohen, 2010). Based on two visual (visual surface and text) and three aural (dialogue, sound effects, and music) channels, comprehended action within a film travels through a hierarchy of four levels of processing. The physical features of the five channels, such as lines, phonemes, and frequencies begin in the A domain before traveling to the B domain where these smaller components are grouped into structural information. In music, components of musical information in this domain can be considered the combination of frequencies in a particular rhythmic sequence that encompasses a beginning, middle, and end termed a melody. By consuming visual components of images that could resemble a tree, birds flying in the air, and grass swaying with the wind from the A domain, these components could be grouped in the short term memory of the B domain as an illusion resembling a scene outside in the country. If other components would happen to enter the A domain such as the shapes and textures of tall buildings and vehicles travelling in motion on gray, concrete floors, a much different illusion could transpire for a spectator when this information is comprehended in the B domain. Both of these domains are considered the

bottom-up processing levels where information begins by travelling from the bottom upwards. At the same time, information from more than one of the five sensory channels can form a perceptional grouping such as the simultaneous presentation of the visual and music within the medium of film. When information from both channels match in either mood (Boltz, 2001, 2004) or synchronization (Lipscomb, 2005; Iwamiya, 1994), the perceptional relationship is known to be congruent. When these channels perceptually differ, an incongruent relationship between the channels has occurred. Some information can leak into the D domain, which can reference previously learned experiences to draw upon when decoding various components in B domain. For instance, a collection of musical sounds that have been organized into a waltz with an orchestration of woodwind, brass, and organ instruments can lead one to describe the music as circus music in reference to a *cultural code* based on past experiences in a circus environment. By transferring this music excerpt from short term memory and immediately processing it in the long term memory, the music's *cultural code* associated with a circus is being sent through a decoding process within the D domain until it finds its way to the consciousness of the working narrative (domain C); thus, a reference of circus music and all its connotations associated with a circus follows.

Drawing from the circus-waltz music example, the exposure of circus music can be either intensified or altered based on melding the music channel with the other sensory channels. Also referred to as temporal congruency by cognitive neuroscientists (Revonsuo & Newman, 1999), the synchronous firing of neurons in the brain as a result of music and the visual binding together to bring forth conscious attention to an action, formulates in the orbitofrontal cortex (OFC) where emotions are generated through the amygdala and medial prefrontal cortex (Kveraga, Ghuman, & Bar, 2007). Therefore, in transporting various parts

of information from domains of the C-A M model to the C domain, emotions and cognitive recollection of information may not always correlate when influenced by the combination of the five sensory channels in a film. If a film scene projects the images of a circus with tents, animals, acrobats, and children eating cotton candy in association with a circus-waltz, the emotional response could be much different if the same circus-waltz music accompanied a car chase scene or a scene of a man walking in a dark alley during a thunderstorm. What Boltz and Cohen et al.'s research compliments in neuroscience is that due to the long term memory's location in the brain, different from where the emotional information is processed, by using all channels of sensory, the comprehension of gathering information from the film at a cognitive level can be more difficult.

In an attempt to synthesize a variety of information using multiple sensory modes while experiencing a film/multimedia work, spectators will often agree to a contract with the filmmakers that the sounds occurring from the film are coming from within the visual of the film's diegesis and non-diegesis. This mental fusion within the human mind, occurring when sound and visual are presented at the exact same time, is referred to as the phenomenon of *synchresis* (Chion, 1994). For instance, the sound of the back side of a leather wallet smacking a slab of raw meat played exactly in sync with a character punching other character in the face will be interpreted by the spectator as a powerful upper cut to the jaw. *Synchresis* plays a role in convincing the spectator that whatever is seen on the screen is truthfully associated with what is simultaneously heard. While this reassociation of sound to picture is done for many reasons, Chion stresses that this phenomenon stretches the relationship of sound to image in order to create the opportunity for a purposeful and effective interpretation of the film work as a whole.

Throughout the culture of audiovisual consumers, spectators have grown accustomed to accepting this audiovisual contract in film/multimedia works. Chion continues by suggesting that the eye perceives more slowly because it must explore the entire visual space while simultaneously following along in time. However, the ear can perceive and remember sound quickly as it evolves. Therefore, the phenomenon of *synchresis* is dependent on the spectator focusing primarily on the visual of the characters punching each other within the film's narrative and less focus driven by the authenticity of how the punches to the face sound. These spectators cannot afford the time it takes to discern where the origins of the punching sound effect originates in order to precisely collect visual information in time while interpreting the information. In other words, most spectators do not say, "Wait, that punching sound isn't real, that sounds as if someone replaced the original punching sound with a recording of someone using the backside of a leather wallet and slapping it against a slab of raw meet."

Chion's *synchresis* theory and Cohen's Congruence-Associationist Model can direct the spectator as to why audiovisual consumers tend to accept the soundtrack embedded within a film/audiovisual work and how filmmakers implement these phenomena and theories when fusing sound and image together in an attempt to guide spectators towards a specific interpretation. In this case, filmmakers may choose to formulate an incongruent relationship between music and the film anempathetically in order to intensify or supply irony to a given scene, only to theoretically reform the relationship between the music and film to be interpreted as congruent.

Effect of Film on the Perception of Music

Other researchers served to explore film's influence on the perception of the music. Boltz, Ebendorf, and Field (2009) discovered that the visual of film, indeed, had an influence on the way a melody was perceived and that mood congruency created opportunities for the visual to display a cognitively distorted recognition of the melody. Tempo and dynamics were considered to be the most influenced acoustic elements of music perceived to affect the mood congruency of the visual while pitch was the least influenced element in the study.

Opposite of cognitive research regarding the film visual's influence on music, Vines, Krumhansl, Wanderley, & Levitin (2006) examined participants' continuous judgments of music's emotional tension while viewing a video of a live performers performing compared to no video. Similar to music's influence on the visual, the visual's role in the performance video both enhanced and reduced the perception of tension in the music. In a similar study, Geringer, Cassidy, and Byo (1996) examined undergraduate students' (N = 105) effective and cognitive responses to music when simultaneously viewing scenes from Walt Disney's *Fantasia* (1940) as compared to listening to music without the visual. Both groups listened to J. S. Bach's *Toccata and Fugue in D minor* and Dukas' *The Sorcerer's Apprentice* and responded to affective elements such as the degree of liking, involvement, and emotion experienced. In addition, questions addressing elements of the music, including tempo, meter, texture, instrumentation, and dynamics allowed for the calculation of cognitive responses. In understanding the relationship between the music and the video in this study, researchers stressed that the Bach music was visually supported with abstract graphics and non-programmatic images from *Fantasia*, whereas the Dukas music implied a depiction of the characters within the film's story. Unlike the examination by Vines et. al. (2006), the visual images were not of the specific performers performing, but of an animation containing

its own narrative plot. Although there weren't significant differences between the two stimuli when experiencing the Bach music, there were differences in effective and cognitive responses between the video-music and music alone stimuli. In both cases, higher ratings were found when experiencing the music with the video as compared without. While this study could suggest that the marriage of music and the visual narrative of film could bring forth more emotional effectiveness and cognition to certain types of music or specific performances of a musical work, the researchers also documented the awareness of participants' familiarity with the music and it's popular association with the film. These results could suggest further investigation into a performer's own emotional and expressive reaction to performing music while viewing a projected film visual.

Music Performance Expressivity

Bennett Reimer (1970) states, "Any success at all in capturing and presenting a sense of 'expressiveness,' that is, of 'feelingfulness,' is artistic success to that degree" and that "the deeper the sense of feeling captured by a piece of music, the more profound its expressiveness and the more powerful its presentation of insights into subjective reality" (p. 39). Expressiveness in music can be considered an essential component to the delivery and consumption of a meaningful music experience for both the performer and listener, and has been considered a portrayal of expressive human behavior, linking the same behavioral characteristics for such emotions as joy, boldness, serenity, anguish, fear, agitation, or exuberance to a music performance (Davies, 1980; Juslin & Laukka, 2004; Walton, 1994). In order to better understand how expressive performances are created, researchers have sought to understand how expressive performances are transmitted and understood.

Several components that play an integral role in the communication of expressivity in music include the inspiration of the composer, the written score, the interpretive and expressive intentions of the performers, the produced sound of music, and the perception and emotional response of the listener (De Poli, 2004; Gabrielsson & Juslin, 1996). Another way of analyzing this concept is by understanding that the composer codes her ideas in notation, whereupon, the performer decodes the notation into an acoustical signal for the listener to decode into an emotive response (Kendall & Carterette, 1990). The expressive intentions of the performers and the formation of sound have been of particular interest when exploring an expressive music performance. Prior to the initial sound of music, it has been suggested that the composer's written representation of the music, in the form of musical notation, has two levels: (1) symbolic - act as an identifier to the intended sounds across time and (2) physical - gives instructions to the performer on how to perform the music passage (De Poli, 2004). In addition, the communication of music can also rely on a performer's stylistic interpretation of the music based on past experiences. Therefore, it can be assumed that part of the communication of music lies between the symbolic notation of the score and the music instrument. It is up to the listener to then translate and synthesize the sounds communicated to them through the performance. Others have argued that the expressivity of a performance begins from the performers' intention and not what is written on the notated score (Gabrielsson & Juslin, 1996). Nevertheless, in studying various models of expressive performances, several empirical approaches have been explored during the past four decades.

One should also be aware of a performer or recipient's musical, personal, and situational factors when perceiving and responding to a music experience (Gabrielsson, 2002). These factors can have an effect on the listener's emotional perception and emotional

induction. The performer or recipient may pursue cognitivist approach to perceiving the emotions expressed in the music without necessarily feeling those emotions. The listener may describe a song to be joyous without them being influenced by the feeling of joy. Contrary, the emotional induction could be reached through an emotivist approach where the performer or recipient can actually feel the emotions induced by the music. From the results of a study focusing on college students' emotional responses in everyday listening, Juslin and Västfjäll (2008) devised a theoretical model in an attempt to account for how music induces emotions. Six psychological mechanisms were derived from this model: (1) brainstem reflexes – rapid reactions to emotions over a short term over time, (2) evaluative conditioning – pairing a piece of music with a special purpose repeatedly over time such as "Happy Birthday," (3) emotional contagion – when a listener internally mimics the perceived emotion expressed in the music, (4) visual imagery – when a listener imagines an internal scene that bears a close relationship to the music, (5) episodic memory – the association of music to a past experience that evokes a specific emotion, and (6) music expectancy - trigger of emotion based on music's delayed or inhibited response.

Acoustical Music Factors and Structural Communication of Emotional Expressivity

To study music performance scientifically, one must have a means to objectively measure, analyze, and evaluate sound and its various components (Madsen & Madsen, 1997). Generally, spectators of a performance describe a non-expressive performance with little variation as being mechanical (Canazza, De Poli, Rodà, & Vidolin, 1997). However, through objective science and research, recent studies have focused on a coherent framework involved in exploring individual music factors and the deviation of these factors in order to study the perceptible and sonic relationship between the way a performance sonically

functions, the emotive intention of an expressive performance, and the spectators' perception of music performance expressivity (Juslin & Sloboda, 2010). In measuring the expressivity of a performance, two modes of communication should be considered: visual and aural.

Visual Mode of Communicating Expression

Not only can the experience of watching a performer create music affect the perception of acoustical music factors such as length of tone (Schutz & Lipscomb, 2007) or music tension (Levitin, 2006), but it can have an immense impact on emotive and expressive elements of a performance (Broughton & Stevens, 2009; Hamann, 2003; Vines, Krumhansl, Wanderley, Calca, & Levitin, 2011). Body movement of a performer can be a visual component to analyzing an expressive performance. Audience members tend to focus on physical movement by the performer when judging the expressivity of a performance (Davidson, 1993). For instance, singers have been known to use movement in a song to express the lyrics (Davidson, 2009; Thompson, Graham, & Russo, 2005; Welch, 2005). Popular Finnish singer, Olavi Virta has been recorded as having used a wide variety of facial gestures in conjunction with vocal gestures to convey a deeper sense of the lyrics (Aho, 2009). However, one should not confuse singers' body movement solely on expressing an emotion, as singers will often lean back to allow for improved vocal projection (Turner & Kenny, 2010). Instrumentalists, too, can show amounts of facial expression and body movements when performing. At the same time, the visual of body movement can have an effect on the perception of expressive musical factors. In a study where a professional pianist performed a piece of music three times, once with a variation of no movement, once with head and facial movement, and once with full body movement, participants rated the pianist performances containing full body, head, and facial movement higher in phrasing, dynamics,

rubato, and overall expression (Juchniewicz, 2008). In another study, by removing the sound from video clips of marimba, bassoon, and saxophone performances, participants were able to accurately identify the intended expressions of happy, sad, and angry based on the physical gestures of the performers (Dahl & Friberg, 2007). While human beings have been known to consume more information visually compared to aurally (McPherson & Schubert, 2004), it is evident why body movements can dictate one's perception of a performance as being expressive.

Aural Mode of Communicating Expression

Performance expression has also been known as systematic variations or deviations in timing, dynamics, timbre and pitch that forms the microstructure of a performance (De Poli, 2004; Gabrielsson & Juslin, 1996; Johnson, 1996; Palmer, 1997). For instance, expressive timing refers to the lengthening or shortening of notes, or the manipulation of tempo (Cambouropoulos et al, 2001). Expressive timing can be the result of specific instructions in the written score at the symbolic level or at the physical level where the performer takes that initiative to musically interpret a musical deviation in timing within the performance.

An extant amount of research has focused on how performers communicate specific emotions (e.g., sadness, anger, happiness, suspense, fear) to listeners (Gabrielsson, 2003). In transferring music expressivity to real human behaviors, some have hypothesized that performers can deviate from certain acoustical music factors in a manner comparable to vocal speaking expression (Laukka & Juslin, 2005). For instance, someone who is gleefully happy tends to talk extremely fast with staccato-like contours to their phrasing in the communication of the voice. Juslin and Laukka (2003) suggest that performers and listeners can use a number of music cues (e.g. dynamics, tempo, articulation) to express and

experience specific emotions. For example, one study had three pianists perform three different melodies, each time emoting a feeling of anger, sadness, fear, or happiness (Juslin & Madison, 1999). Listening participants were then asked to listen to each of the performances and report the type of emotion they felt. Results indicated that anger was generally associated with high sound level, fast tempo, and staccato articulation, whereas sadness was identified through low sound level, slow tempo, and legato articulation. These findings support earlier research when associating certain music cues to specific emotions (Dowling & Harwood, 1986; Hevner, 1936; Rigg, 1964; Thompson & Robitaille, 1992).

In capturing deviations of these acoustical music factors in the communication process, an investigation into Brunswik's (1956) lens model in perception has been the initial resource for many researchers. The lens model illustrated and quantified how various sub-categories or cues from within an environment could be combined in order to attain regularities of the natural world. Originally intended as a model for visual perception, Juslin (1997) later used it as a model for aural perception in music performance expression. In music, the lens model describes how performers encode emotions using variations acoustical music factors such as tempo, articulation, and dynamics while allow the listener to decode the perceived acoustical music factors in order to realize an emotive expression. While there can be noticeable variations among different performers' renditions of a piece of music, studies have shown that a performer's emotive intention through acoustical music factor variations can compliment listeners' perceptions of the emotions transpired from the performance (Gabrielsson & Juslin, 1996). However, Juslin (2000) stresses for effective communication to occur, the performer's use of acoustical music factors must consistently match with the listeners' interpretation of the music factors. For example, a performer who

articulates an arpeggiated passage with more detachment in order to emote a gleeful expression, must have a listener who decodes the articulation of staccato as representative of a gleeful emotion in order for there to be a clear understanding of the expression and recognition of emotions in a performance.

In an attempt to empirically decompose the various subcategories of an expressive performance, Juslin (2003) outlined sources of how performers alter musical parameters as a means of communicating music emotionally in the development of the GERMS model. The first main source derives from *generative rules* (G) that mark structural aspects of music (acoustical music factors) that can be altered or varied (e.g. tempo, dynamics, articulation). *Emotional expressiveness* (E) incorporates the manipulation of the generative rules in establishing an emotional interpretation. The human limitations in motor precision through *random fluctuations* (R) can produce music as a human character with the slightest imperfections contrary quantized computer performances. *Motion principles* (M) involve the tempo variations in relation to natural body movements, while *stylistic unexpectedness* (S) reflects a performer's deliberate actions of varying the structural aspects of the music to supply unpredictability to a performance. All five of these components occur simultaneously as a reflection of the psychophysical relationship among the acoustical music factors supplied by the performers and the psychological interpretation on the part of the listener. While solely one acoustical music factor can contribute to the creation and recognition of an emotional moment in a performance, an emotionally expressive outcome is often dependent on the complex interaction of two or more acoustical music factors within a given performance.

Phrasing, Tempo, and Dynamics. Tempo can be an acoustical music factor that tends to be varied in order to communicate an emotional idea. For instance, sadness has been closely associated with a slow tempo. While tenderness can be another emotion to fall under slow tempo, happiness, anger, and fear have generally been associated with a fast tempo (Juslin, 2001). Random fluctuations regarding the precision of a performance can effect the expressivity of a performance (Juslin, 2003). Unlike quantizing a MIDI performance on a computer sequencer, timing fluctuation with subtler nuances to given note values can give the performance the feeling of a human performance compared to a computerized performance.

Some of the earliest empirical research in expressive timing began by analyzing timed distances from the onset of two consecutive notes (Seashore, 1938). By this notion, a performer may choose to lengthen or shorten the distance between two notes based on the performer's expressive intentions. While the intention of the performers can be similar to each other, these fluctuations and changes in tempo can be different between individual performers. Just as overall expression has been linked to vocal speaking or patterns of physical motion, Friberg and Sundberg (1999) compared the resolution of a phrase toward a *ritardando* in Baroque music similar to that of a runner decreasing in speed to a stop in motion. Even an interruption in the sound, such as a fermata rest, or a delay towards the onset of the next note in order to create psychological tension can be expressive factors (Friberg, Colombo, Frydén, & Sundberg, 2000; Meyer, 1956). Moreover, the slowing down of consecutive notes suggests an indication of closure to the associated phrase (Todd, 1985).

In conjunction, tempo, dynamics, rhythm characteristics, and articulation are factors that are fundamental in expressive phrasing (De La Motte-Haber, 1968). The framework of a

phrase often includes a beginning, middle, and end. Within these sections of a phrase, different shaping of tempo and dynamics can change the emotive feelings and character of the performance (Friberg, 1995). Applying a sense of continued direction in tempo, dynamics, or both to a series of notes (also known as grouping) before changing one or more of the acoustical music factors for the next group can signify an interpretation of an expressive phrase (Friberg, 1995; Repp, 1992). Continually, performers may choose to focus on the highest note when delivering an expressive phrase. The sense of resistance could be accomplished during an upward swing of an arpeggio by slowing down to the highest note of the arpeggio with a slight pause before establishing a sense of release on the downward fall with an increase in tempo.

Performers also have a tendency to perform the higher notes with more intensity (Sundberg, Friberg, & Frydén, 1991). This musical instinct can also have a major influence on how a performer will shape a phrase (Windsor & Clarke, 1997). Many times a performer's expressive tension can be found through the accentuation of voice leading, causing the important musical line, often the melody, to be performed with more volume while initiating a produced sound slightly before the rest of the musical canvas surrounding the melody (Palmer, 1989).

Articulation. Articulation, such as staccato, legato, glissando, and marcato can be another variable to consider in the midst of an expressive music performance. Running parallel with human behavior, staccato articulation can represent feelings of happiness, anger, or fear, while legato tends to depict sadness and tenderness (Juslin, 2001). When making a connection between articulation and human behavior, a performer may take into account the time duration of each step a human takes from the point of touching the ground to lifting the

foot off of the ground when naturally walking. For instance, the foot's contact to the ground when briskly skipping tends to have a short duration with much detachment, similar to staccato. Therefore, it can be evident why staccato could be associated with happiness or glee as skipping has been considered an activity that human beings participate under such circumstances. These biological motions can be considered intentional or non-intentional patterns of variability (Penel & Drake, 1999). Accents can also occur in conjunction with articulation, creating a louder attack at the initial stage of sound's production.

Overlapping of notes' duration based on articulation should also be considered when analyzing an expressive performance (Bresin & Battel, 2000). It was discovered that when using overlapping of notes to create melodic motion, descending melodic patterns such as laments, depicting sadness or mournfulness, were performed more often in comparison to ascending melodic patterns (Bresin, 2000). Written notation may also include expressive markings for the performer to interpret such as *dolce*, *furioso*, and *teneramente*.

Tone and Timbre. Tone or timbre can also be manipulated expressively to create an expressive response. Less attention has been paid to music timbre in regards to past research in music performance expressivity (Juslin & Laukka, 2003). When investigating emotional responses to expressive uses in tone or timbre, it is important to understand that an instrument's unique timbre in and of itself can induce a certain emotion within a listener. For instance, in describing a performance by a sitar player, a music listener stated, "notes were thrown out like silvered drops of rain. Like carbon dioxide bubbles making their way through the liquid in a bottle of pop" (Gabrielsson, 2011, p. 424). Therefore, one must listen beyond the instrument's timbre by listening for deviations or variation in the energy of harmonic overtones within the instrument's performance. Furthermore, Vassilakis (2005)

proposes that the auditory roughness causing a rattling or buzzing sound of the instrument's canvas could also be another indicator of a perceptually expressive performance.

While much of the research on music timbre has focused on relationships between vocal speaking, and timing and dynamics in music performing (Juslin & Laukka, 2003), Barthet, Depalle, Kronland-Martinet, & Ystad (2010) discovered that clarinetists' timbre varied, causing listeners to report an expressive change in the performance. This study found a difference in the initial sound quality (e.g., bright, dull) and the relative energy between odd and even harmonics. Since this was the first attempt to study expressivity in clarinetists' timbre, the investigator suggested future research in delineating whether these timbre variations were caused by the mechanics of the instruments when playing longer notes or if listeners associate certain clarinet timbres to specific emotions.

Referencing Juslin's (2011) categorical and dimensional approaches to emotional expression, happiness tends to be associated with a bright timbre. Other categorical and dimensional approaches suggest anger to be associated with a sharp timbre, fear with a fast and shallow timbre, tenderness with a soft timbre, and sadness with a dull timbre. Again, the combination of timbre and other acoustical music factors are important for emotional valence.

In the realm of the vocal instrument, singers can produce a multitude of various tones and effects with their voice through the manipulation of various resonating chambers and the management of air flow (Goodwin, 1980; Imagawa, Sakakibara, Tayama, & Niimi, 2003). Vibrato can be one vocal music factor to considered when emoting anger or joy (Jansens, Bloothooft, & de Krom, 1997). In a study where a professional singer was asked to perform a set of art songs two different ways, once in a manner that the singers found appropriately

expressive and once with no emotional expression, listeners reported on various acoustical music factors and the emotional quality of the music performance (Sundberg, Iwarsson, & Hagegård, 1994). Results indicated that the intended expressive performances, agitated in nature, produced a higher sound pressure level and vibrato. In addition, ornamentation has been performed in such ways as to express sadness, love, and anger for both the violin and flute (Timmers & Ashley, 2007).

Whether singing an opera aria with a large amount of vibrato or singing in a Bulgarian choir using 'open-throat' technique (Mitchell & Kenney, 2008), the emotion expressed through timbre could be contingent on one's cultural background or past experiences (Nattiez, 1999; Olwage, 2004). Therefore, cultural contextualization should be another variable to consider when collecting human responses regarding expressive and emotional music performance.

Melodic and Harmonic Tension. In the process of decoding the written notes to forms of emotional expression, harmonic and melodic tension has influenced the way music has been performed (Friberg, 1991). Tension between melody and harmony can be increased through the modulation in key, relationship between chords with more distance from tonic, tones foreign to the diatonic scale, chords containing more dissonant intervals, and unexpected melodic contours (Bigand, Parncutt, & Lerdahl, 1996). Friberg (1991) found that performers tended to slow down and increase in volume in areas of music that contained a high harmonic change. The cause of distancing a melody or harmony from its home scale under the circle of fifths can be a cause for performers to interpret deviations in tempo, dynamics, articulation, or tone within a piece of music. Intervals themselves can also lead to

random variability where longer intervals tend to yield themselves to more deviation in timing (Repp, 1997).

Modes and Scales. The harmonic language and scales of a given music figure can express specific emotions to the listener. One of the earliest studies reproduced music performances consisting of a major and minor key, and various complexities of harmony (Hevner, 1936). Participants were then asked what the music expressed to them. Using a variety of 66 adjectives, participants reported associations including major mode with happiness, minor mode with sadness, dissonant harmonies with exciting and agitated, and consonant harmonies with graceful and serene. Concurrently, musicologists and sound therapists have drawn links between intervals within a melodic line to various emotional characteristics (Sonnenschein, 2001). For instance, the interval of a perfect fifth can produce a sensation of power, comfort, or a feeling of home. Contrary, the interval of a minor second can produce a tense, uneasy, or mysterious sensation. Based on the composer's choice of intervals, a performer could be physiologically influenced by the structure of how notes are arranged within a music scale.

Lyrics. If it was believed that music is a completely neutral entity with no specific emotions, one may suggest that listeners develop emotional conventions of music through music-lyric pairings in vocal and program music (Cooke, 1959). Cooke discovered that the lyrics were often consistent with the emotion of the given piece. For instance, the act of performing a minor third interval parallel with the lyrics 'Confutatis Maledictis' in Mozart's *Requiem Mass* could be another way listeners associate emotional meaning to music. Based on these past musical experiences, a performer could associate the minor third interval with

the depiction of 'doom' as referenced in the "Confutatis Maledictis' text.' Therefore, lyrics could have a direct impact on how a performer interprets and expresses a performance.

As referenced in a plethora of research, expressive features can be difficult to decode through one single acoustical music factor. Juslin (2003) states that expression is a "set of perceptual qualities that reflect psychophysical relationships between 'objective' properties of the music, and 'subjective' impressions of the listener" (p. 276). This suggests that expression should not be focused solely on acoustical music factors or the perception of the listener. Instead, both of these factors are essential when dealing with expression; similar to the way human beings express their state of mind in real life. This can give some credence to why performers are sometimes unable to explain the features of how they apply expressiveness to a performance (Sloboda, 1996).

Listening Factors Influencing Perception of Emotion and Expressivity

Evidence supports the notion that listeners do experience real emotion based on music performance (Juslin & Laukka, 2004; Gabrielsson & Wik, 2003). In drawing connections between the structure of music and the structure of feelings, Langer (1953) suggested music as a "tonal analogue of emotive life" (p. 27). However, when scientifically identifying perceptions of expressivity, one's age, gender, music experience, and culture could be other factors to consider in how a listener structures experienced feelings and reacts emotionally, cognitively, or physically to a music performance. Few studies have focused on the decoding process of the listener's modes of emotion and expression based on these factors.

Age and Music Experience

Studies have shown that age tends not to be a factor in the detection of emotion in music (Meerrum-Terwogt & Grinsven, 1991) or acting (Hortacsu & Ekinci, 1992). In fact,

both studies claimed to have had children as young as five years of age detect emotions from a performance with similar results as adults. While five-year old children have shown a distinction between happy and sad emotions in music based on tempo deviations, other studies have shown that they cannot distinguish happy versus sad in music based on mode (Dalla Bella, Peretz, Rousseau, & Gosselin, 2001). Regardless, in deciphering emotions from a music performance, multiple studies have supported the notion that musically trained and untrained listeners are generally in agreement with the performers' intended expressed emotion during a performance (Hevner, 1936).

Gender, Culture, and Music Familiarity

Gender can also be a considering factor when analyzing listener emotional reactions and responses to a music performance. Although not significantly different, Gabrielsson and Juslin (1996) discovered that females displayed higher decoding accuracy of emotions in a music performance than male listeners. These results confirm other results based on gender and emotional responses outside the field of music. In determining the intensity of emotions that arose in male and female participants when viewing photos of a negative nature, researchers found that American female participants reported higher levels of emotion compared to Chinese men (Davis, Greenberger, Charles, Chen, Zhao, & Dong, 2012). While differences can be found between gender, this study also found emotional experiences to be different between cultures. However, music listeners seem to be able to detect similar emotions from other cultures. When Canadian undergraduate students listened to Hindustani ragas, participants' reported emotion correlated with the intended emotions of the raga (Balkwill & Thompson, 1999). Listeners outside of western culture have also reported similar results (Balkwill, Thompson, & Matsunaga, 2004). This evidence suggests that

listeners can identify emotion in unfamiliar music. Concurrently, it is difficult to determine if the actual contours and other characteristics of emotions expressed through music performance are the same among different cultures.

Audience and Ensemble Feedback

Researchers have discovered that people tend to enhance a performance when in the presence of other people (Triplett, 1898; Zajonc, 1965). Cottrell (1972) speculates that it isn't just the mere presence of people that causes an effect on the performance, but the audience feedback can have a more purposeful enhancement or interference to a musician's performance. Audience applause, cheering, sing-a-long, or dancing can be positive aspects that musicians can gauge during their performance. However, a perceivably uninterested audience with negative or no feedback can create interference in the musician's performance with the possibility of producing anxiety or stage fright (Kirchner, Bloom, & Skutnick-Henley, 2008; Osborne & Kenny, 2008; Steptoe, 2001; Wilson & Roland, 2002). Conversely, Murnighan and Conlon (1991) discovered that the success of a performer depended on the internal focus of each other within an ensemble instead of an outside audience. This supports the assumption that when a musician is in a comfortable state among fellow musicians, more opportunities arise for the musician to succeed technically and expressively in a performance. Similar to Broadway singers or African-American gospel choirs, singers may resort to observing and communicating visually to each other in their pursuit of performing expressively comparable to a performer communicating expressively to a passive listening audience.

Acoustical Feedback

Formation, spacing, and acoustics have been other variables considered when listeners decipher preference of one choral performance over another. By relocating individual singers within a choir ensemble, noticeable differences can occur in the formation of sound from the perspective of the listener (Kohut & Grant, 1990; Tocheff, 1990). Choir singers have also noticed differences in their sound when physical spacing and formation of singers have been altered (Daugherty, 1999). Choristers have reported the ability to hear themselves and each other better when in a spread spacing formation compared to close spacing. Daugherty also discovered that while females preferred mixed formation while male singers were divided between singing in sections or mixed formations.

Acoustical factors such as a sound's opportunity to be reverberated could also have an impact on the perceived quality of a performance. Zabriskie (2011) found that listeners rated perceived tone quality and intonation higher on reverberated choral performance recordings compared to non-reverberated recordings. Interestingly, all recordings were of the same performance but manipulated post hoc with the use of digital processed reverberation. While singers may modify their voice based on acoustical feedback (Ternström, 1989), opportunities to perform in reverberated spaces could improve intonation, tone, and blend; all characteristics that can be applied to an expressive performance. Depending on the style of choral music and whether instrumental accompaniment is part of the performance, the acoustics of a space could be another element to consider on the level of expressivity brought forth to a music performance.

Individual vs. Ensemble Performance Expressivity

One-on-one music instruction between a student and teacher can occur within the school-learning environment. However, it can be more common for students to participate in

private music lessons outside of school as an extra-curricular activity. Besides non-performing music courses in elementary and secondary schools, elementary and secondary students' music education generally occurs within an ensemble. Therefore, one of the ways students are evaluated on various music facets, including expression, is through ensemble achievement (Frakes, 1986).

In order to investigate beyond the measurement of individual expressive achievement (Steinberg & Raith, 1985), Broomhead (2001) sought to determine if there was a relationship between an individual's music expression and an ensemble's music expression in a choral setting. Using a sample of 11 high school choral ensembles, consisting of 82 individual ensemble members, results showed no significant relationship between ensemble expressive achievement and individual expressive achievement. However, the singing participants' years of experience singing in a choir were related to the expressivity of the individual singer. Therefore, it stands to reason that while the choral experience can have an effect on an individual's expression within the ensemble, a singer who sings in an expressive ensemble does not necessarily grant them the experiences of singing expressively as a soloist. Broomhead suggests this result may be due to inefficient teaching of expression in a manner that individuals can internalize and produce independently. Overall, the act of singing in a choral ensemble can naturally strengthen an individual singer's formant resonances, preempting the singer to possibly take more ownership in expressively singing within the collection of choral formant resonances (Ternström & Kalin, 2007).

Music Performance Expression Rating Measurement Tools

Although much has been written about expressive performances, researchers have struggled in developing a universal model in striving for scientific objectivity when

identifying expression (Broomhead, 2006). The individual and subjective nature of an individual to perform and perceive music with a degree of expressivity could be a reason for this struggle in developing a universal model. Therefore, researchers have continued to investigate and study empirical research targeting specific components brought forth by various researchers and musicians.

As musicians translate written symbols into sounds through their instruments, many musical and acoustical factors of a performance contribute to what can be considered the expressivity of the music performance. In an effort to collect music information and analyze music cues from a performance, a system pioneered by Seashore (1936) was formulated to objectively analyze and measure various musical components to a performance. These acoustical music factors consisted of duration, articulation, frequency, and intensity. Since this time, others have revived ways in which to objectively measure factors of a music performance (De Poli, 2004; Gabrielsson 1974; Shaffer, 1981; Repp, 1992, 2000; Windsor & Clark, 1997).

Cooksey (1977) devised and tested a rating scale for the evaluation of high school choral performances. In its infancy, this facet-factorial approach rating scale was formed through the collection of performance descriptions and pairing them with a numerical Likert-type scale. These descriptions included diction, precision, dynamics, tone control, tempo, balance/blend, and interpretation/musical effect. Ratings from this first experiment were analyzed and found to be statistically reliable. The interpretation/musical effect was one of the first documents formed to reliably rate music performance expression as a global entity.

Similar to Cooksey's approach to measuring various facets of music, Broomhead (2001) developed an instrument to measure choral performance expression called the

Expressive Performance Achievement Measure (EPAM). This statistically reliable measurement tool has been used by judges to score one of seven levels of expressiveness within six sub-categories: timing, dynamics, articulation, performance factors, articulation, and style (Broomhead, 2009; Broomhead, Skidmore, Eggett, & Mills, 2012). This can be the closest standardized tool for measuring specific acoustical music factors of expressivity within a performance.

Other studies have measured performance expression by how listeners emotionally experienced a given performance. When exploring how junior high choirs expressed four different types of emotions through 16 contrasting versions of a musical figure, judges reported their emotional perception from each performance through the completion of a five-point Likert-type scale, ranging from 'very representative of the emotion' to 'no detectable emotion' (Ebie, 2004). This allowed investigators to determine if a performance resembled one emotion more than the other three emotions.

Other statistical research has explored components of expressivity by comparing audio recordings of expert performances (Collier & Collier, 2002; Repp, 1992). Johnson (1998) asked college students to listen to Mozart's *Concerto for Horn and Orchestra*, *No. 2*, movement 1 through a MIDI computer software program that enabled participants to control the tempo and manipulate rhythmic nuances into the performance. After listening to the concerto one time through MIDI playback, participants were asked to listen a second time while manipulating the timing in order to create a thoughtful and musical performance. Participates degree of rubato used indicated a performance closer to that of a recording of a professional performance. Another study discerning the difference between four performed emotions measured the mean sound level, sound level variability, mean articulation,

articulation variability, mean tempo, and tempo variability from MIDI data and status messages (Juslin & Madison, 1999). This type of research allows musicians and scholars to the understand the exact changes musicians make to their performances while producing insight into performers' expressive interpretations through the manipulation of certain musical factors in order to produce a more expressive performance.

Another line of research in expressive performance involves theoretical relationships between the laws of physical motion, dynamics, frequency, and timing of a performance through mathematical models of computer programs (Ramirez, Hazan, Maestre, & Serra, 2008; Mazola & Göller, 2002; Sundberg, Askenfelt, & Frydén, 1983; Todd, 1985). The typical approach to these studies were to formulate a set of rules for how one could perceive a given performance to be expressive or not. For example, Sundberg et al. (1983) discovered that if the computer program played with durations that are specific in the notation, the result would be a rigid performance. The formulation and experimentation of these rules suggested to researchers that performers must understand these rules before breaking them. By breaking them to an extent, one can create an expressive performance. However, if these rules are being broken due to sheer ignorance of the rules, an unimpressive performance can be the result. At the same time, many of these rules did not hold up throughout testing; thus, limiting a continued growth of research in this area of expressive performance.

Advancements in technology have allowed researchers to study visual aspects of expressive music performances by means of video-based motion capture (Castellano, Mortillaro, Camurri, Volpe, & Scherer, 2008). This technological tool allows researchers to collect measurements of movement position in three spatial dimensions. Afterwards, the extraction of image boundaries and the movement of those boundaries can be analyzed

across time. Loehr and Palmer (2007) adapted this technology by applying small markers to each joint in order to collect movement data from piano performers.

Qualitative data has also been collected within an authentic choir rehearsal setting (Broomhead, 2006). Broomhead observed three choral teachers instruct their choirs employing specific approaches towards the formation of an expressive performance. The instructional behaviors and insight from teacher interviews were then categorized and placed in an order of effectiveness in relation to expressive performance. This form of data collection presents insight into how other methodologies can be formed when collecting future data.

Different tactics have been used when reviewing a performance. The majority of studies have allowed raters to either listen only, watch only, or watch/listen to a performance (Frego, 1999; Madsen, Geringer, & Madsen, 2009). However, some studies have focused on the conductor's expressivity by rating the conductor's expression in relation to the performance expression. One particular study used deception by having a rater view a video of three different conductors, each conducting with a different level of expressivity while having the same exact audio-recorded performance played back in synchronization with the video (Morrison, Price, Geiger, & Cornacchio, 2009). Other studies have compared the expressivity of the conductor to both independent raters and adjudication judges at festival contests (Price & Chang, 2001).

Self-reporting based on perceptual feedback has been another common means for collecting performance responses from performer's practice monitoring (Chaffin & Imreh, 2001), methods for examining unfamiliar music (Sheldon, 2000), attention to musical factors when singing (Ginsborg & Chaffin, 2011), and musician's proneness to anxiety and flow

during a performance (Kirchner, Bloom, & Skutnick-Henley, 2008). Musicians frequently gauge their own performance, making adjustments based on what they hear. Intonation, rhythmic characteristics, and phrase contour are elements of a music performance that musicians refer to immediately when perceiving their own performance (Finney, 1997; Howell, Powell, & Khan, 1983; Mürbe, Pabst, Hofmann, & Sundberg, 2003). These three elements are essential in addressing expressivity and should be acknowledged when collecting self-reporting data from the performer's perspective.

Physiological response data from music stimuli such as a lump in the throat, chills down the spine, or goose bumps can also be collected through self-reporting (Sloboda, 2005). Sloboda found that tears occurred in the listener more frequently during melodic appoggiaturas and harmonic sequences of Albinoni's *Adagio for Strings,* while shivers were provoked by new and unfamiliar harmonies. Ghun, Hamm, and Zentner (2007) had participants press a hand-held clicker when an arousing reaction accompanied by goose bumps occurred during the listening process of music. Participants have also self-reported emotions of sadness, fear, happiness, and tension through the manipulation of a computer slider when comparing the opening minutes of various music performances (Krumhansl; 1997). Similar to measuring music tension using the Continuous Response Digital Interface (CRDI) dial (Madsen & Fredrickson, 1993), perceived music expression has been recorded by allowing participants to sit in front a computer screen displaying a coordinate system with valence along the horizontal axis and arousal/activation along the vertical axis, which allowed participants to report perceived music expression continuously through the manipulation of the mouse cursor (Madsen, 1997a; Schubert, 1999). Other technological measurement tools have offered researchers the opportunity to collect participants' perceived

emotion by how much pressure they exert on the sentograph while listening to a music performance (Clynes, 1977).

Some of the earliest known investigations on musical expression involved participants giving free form, descriptive reports on perceived expression from piano and piano and violin performances (Gilman, 1891; Downey, 1897). Due to the complex nature of targeting specific components or acoustical music factors of an expressive music performance, often referred to as an 'ill-structured domain' (Spiro, Feltovich, Jacobson, & Coulson, 1995), it can be understood why researchers may choose to avoid restricting listeners to identify expressive aspects of a performance in the confines of an objective list of components. Madsen and Geringer (2008) reasons that by drawing a picture of the emotions a participant is perceiving while listening to a segment of Puccini's *La Boheme*, results can be just as valid as collecting data through sophisticated technology, established models, or expert perception. This suggests that by having the participants define what constitutes emotion, through drawing, more reliable data could be collected that would otherwise be missed through a different methodology. Similar to Gilman and Downey, others have approached this means of collecting data when referring to self-reporting emotional or expressive music performances (Gundlach, 1935; Rigg, 1937).

Pedagogical Approaches to Expressive Performance

David Elliot states, "An essential task of music teaching and learning is to develop student musicianship in regard to musical expressiveness" (Elliot, 1995, p. 156.) In fact, music educators and performers have viewed expression as the most important aspect of a performance (Laukka, 2004). While researchers have also found the study of expression to be of great importance (Persson, 1995, Marchand, 1970), the pedagogical methods of

achieving expressivity have been absent in these studies (Tait & Haack, 1984). This trend tends to run parallel in music education for the majority of the 20th century. Although music teachers intend to focus on expressivity in their teaching, technical aspects can often dominate the pedagogical practices in music education; thus the teaching of expressivity skills are often neglected in the music learning environments (Kelly, 2009; Persson, 1993; Tait, 1992). However, music education and expressive performance research has recently migrated towards the exploration of how expressivity can have a prominent impact on students in a music performing environment (Persson, 1996; Sheldon, 2000, Woody, 2000).

Sloboda (1996) suggests that music learners may find it too challenging to store and retrieve memory programmed changes and nuances of music through a lectured based approach. In particular, the subject of expressivity can be difficult to express in words (Hoffren, 1964). Based on Clynes' (1977) theory that brain patterns associate themselves with basic emotions through patterns and shapes of expressive music, both aurally and visually, Sloboda asserts that musicians use an 'extramusical' approach (metaphors, gestures, mental imagery) in storing and retrieving these musical factors by abstracting them through personal analogies. A template of analogies could stem from the use of bodily movement, gesture, speech and vocal intonation, or expressions of emotion. The implementation of these 'extramusical' approaches within the music learning process could provide music educators with countless strategies of teaching expressivity to performance-based music learners (Juslin & Perrson, 2002; Palmer, 1997).

If music educators choose to incorporate the 'extramusical' approach, they must be able to translate their intentions through a vocabulary that all students understand when using these analogies. Some argue that using the 'extramusical' approach could create confusion,

causing students to get lost in translation (Madsen, 1997b, Stollack & Alexander, 1998). Instead, students may respond and understand music factors and their purpose within a music performance if the teacher would directly address the sound properties of the performance. Nevertheless, teachers must be cognizant of the age and ability levels of each group they are teaching through appropriate language that lends to the success of all students in the learning environment (Flowers, 2000). Other research suggests vocal modeling as a strong pedagogical approach to teaching expressive musical factors (Dickey, 1992). This approach could be delivered in person by the instructor, other musicians or students, or through sound recordings (Rosenthal, Wilson, Evens, & Greenwalt, 1988). Studies suggest that performers who are consistently exposed to audio-recordings of performances of specific expressive features can be more apt toward replicating the same expressive features in performance (Woody, 1999). With the purpose of creating a healthy understanding and experience through expressive music performance practices, Woody (2000) suggests three general pedagogical approaches that can be used among music educators: (1) attention to the acoustical music factors of a performance (tempo, dynamics, articulation), (2) attention to aural modeling and imitation, and (3) attention to the emotions of the performers through 'extramusical' approaches.

From the minimal research brought forth on the subject of expressive performance instruction (Carpenter, 1988; Marchand, 1970; Woody, 2000), more often, teaching communication has been categorized as either being verbal or nonverbal. However, recent research suggests that through various approaches to teaching expressivity, both verbal and nonverbal instruction can occur simultaneously (Broomhead, 2006). In Broomhead's qualitative study, three choir directors and their choirs were observed rehearsing music.

Since this study observed how expressivity was taught within the rehearsal, the definition of expressive instruction categories were not determined until all data was collected. From this data, seven pedagogical approaches were noticed in the attempt to teach expressivity within a choir rehearsal. These approaches included: (1) student-initiated input – students participate in a verbal discussion with each other about music performance, (2) teacher inquiry – teacher asks students for input, (3) referential – the use of 'extramusical' analogies, 4) demonstration – modeling, (5) teacher feedback, (6) detailing – students are specifically instructed what to do expressively, and (7) conducting – students respond to the conductor's gesture. Uniquely, Broomhead includes the student-initiated input approach, allowing students to participate and dictate which expressive elements are to be addressed within the rehearsal; thus, allowing students to take more ownership in their development as expressive singers. This observation lent itself toward creating problem-solving activities in the rehearsal where students formed groups to discuss an expressive approach such as phrasing or timing to a portion of music (Broomhead, 2009). Implications from this study suggest an increase in music students' ability to grow into expressive singers by discovering, as a group, how to approach various music cues to a performance rather than having the music instructor concretely instruct the students how to be perform expressively.

Studies have shown that student musicians can effectively learn from all three approaches (aural modeling, concrete acoustical instruction, and instruction through imagery and metaphors) during music performance instruction (Woody, 2000, 2006a). However, student musicians have repeatedly expressed preference in imagery/metaphor-based instruction as compared to acoustical concrete instruction or aural modeling (Lindström, Juslin, Bresin, & Williamon, 2003; Woody, 2006b).

Student and Musician Responses Toward 'Extramusical' Pedagogical Approaches in Choral Performance

In an attempt to establish successful learning opportunities for choir ensemble members of multiple intelligences and learning styles, a choir instructor can meet this goal through rehearsal and pedagogical instruction that not only includes direct, acoustical instruction or attention to what is written on the score through music reading, but through 'extramusical' approaches such as guided imagery, kinesthetic movement, metaphors, or gestures when exploring the expressivity of music (Funk, 1982, Sloboda, 1996). Regardless of the different professions or interests that individual choir members possess, each individual singer has a unique set of gifts and intelligences that assists him in learning, communicating, understanding, and applying towards a cause (Gardner, 1993). While one singer gravitates more towards exploring music by exercising her logical-mathematical intelligence by requesting a numerical number system, which represents how loud a crescendo should be within a piece of music when differentiating between contrasting dynamic levels, another singer may find more success in singing a crescendo effectively by exercising her bodily-kinesthetic intelligence through the stretching of a rubber band in conjunction with increase volume. Therefore, the multiple intelligence theory stands reason to why choir instructors choose a variety of pedagogical approaches to effect a musical change in a rehearsal performance.

Metaphors and Guided Imagery

The term, figurative language, refers to the use of analogy, metaphor, simile, and verbal imagery (Sheldon, 2004). Because the formation of appropriate verbal descriptors can be essential in guiding musicians through a sensory learning experience, the description of

sound is often borrowed from worlds of space ("broad"), temperature ("hot"), shapes ("round"), textures ("smooth") and color ("bright") (Bunch, 1995). In order for a music instructor to guide a student toward a more expressive performance, she may offer some form of figurative language as a method for guiding students to convey a mood (e.g., "sing as if you are saying goodbye to a close friend who is leaving, never to return") or contextual motion (e.g., "imagine your consonants are walking briskly down the steps") with some expressivity (Woody, 2002). Some have suggested that singers may be more apt to adopt this approach since one of the elements in their music consists of lyrics (Woody, 2000). An effective connotation between instruction and performance is when instructors use words or metaphors to describe the music and how if should be performed. In order for an instructor to communicate a musical intention and translate it into an emotional expression, he may choose to use a code of expressive performance (Juslin, 2001). This code connects certain moods such as happiness, sadness, fear, anger, and tenderness to specific music cues in tempo, articulation, and dynamics. Another study focusing on listeners' ability to identify expressive nuances of performances reported similar perceived performance expression using, both, figurative vocabulary and music terminology (Sheldon, 2004).

A narrative story presented to an ensemble could also be a form of visual imagery. During a rehearsal, a conductor describes a fictional story in conjunction with the *Adagio* movement of Mozart's *A-Major Piano Concerto, K. 488*, concerning one voice part named Delia, who needs to catch a train but is late because she continues to dally (Walton, 1994). The story continues stating that the train is on a fixed schedule and cannot wait for the late arrival of Delia. Due to the physical complexities of the instruments assigned to this voice part in rehearsal, it is assumed that this motor-effective metaphor approach could be the

appropriate rehearsal technique for those who respond better to an imaginary visual (Barten, 1998). Therefore, by establishing a visual story containing several pictures to the musicians, more perspective to a specific moment or the gestalt of the performance could lend itself toward a well-intended performance of the fictional story.

Just as motivational self-talk can enhance self-confidence and reduce anxiety during a performance (Hatzigeorgiadis, Zourbanos, Mpoumpaki, & Theodorakis, 2009), trigger words have been known to minimize distraction; thus allowing a performer to be more focused (Edmundson, 1996). Broomhead, Skidmore, Eggett, and Mills (2012) took the trigger word concept and applied it as an approach toward an expressive performance. In this study, junior high singers (N = 155) were divided into two separate groups. Using a pretest-posttest control group design, members of the experimental group participated in a 40-minute intervention over three days where singers were taught to adopt characteristics of such positive words as bold, confident, and free through breathing exercises, group activities comprised of creating, rehearsing, and performing instrument compositions, and singing alone and together. The control group spent these three days addressing the practices of a regularly scheduled choral rehearsal. After both groups completed the posttest, results revealed that the experimental group demonstrated significant changes in the overall expression of performing, dynamics, timing, and performance factors such as facial expression and movement. At the same time, no significant differences were found among the control group. The investigators assumed that the use of positive trigger words only enabled singers to more freely apply the preexisting skills to their performance.

When presented with these metaphors and guided imagery, performers may undergo a cognitive translation process in order to convert this figurative language into an expressive

musical language (Woody, 2006a). Woody (2006b) had 84 college music majors complete a research packet during individual practice sessions. Students were given three melodies to work on in conjunction with specific imagery-based instruction from their teacher. After the process of practicing and preparing each piece for performance, student musicians were asked to write down their thoughts while practicing. While some student musicians indicated they used a cognitive translation process to achieve a musical goal, others chose to personalize with the provided imagery in an attempt to create an expressive performance.

Similar to induced musical emotions, some performers prefer to be induced into an emotion compared to imagining a certain emotion when transferring an expressive gesture to their performance. A questionnaire was administered to 135 music students from three European countries, asking them to report the importance of expressivity in their everyday practice (Lindström, et al., 2003). The majority of the participants (60%) regarded the feeling of emotion as a necessary component to expressivity in their everyday practice. One participant commented that "you have to feel the emotion in order for others to feel it" and that "listeners would be able to differentiate between genuine and faked emotion" (pp. 33-34). In addition, student participants noted that there are both external (the music itself, composer's intention, mood of the piece) and internal (performer's own mood and emotion) factors to consider when determining what emotion to express. Results from this study indicated that students use more external factors (36%) as compared to internal factors (29%) or both factors (34%) when choosing how to expressively emote in a performance. Regardless, an average of 51% of the students' practice time was spent practicing expressivity, suggesting a personally strong importance on emotional expressivity among the participants.

Kinesthetic Movement

Another 'extramusical' approach to inducing expression within the rehearsal or music classroom is through kinesthetic movement. This is the ability to use one's body in a skilled way in practicing self-expression (Gardner, 1993). Bailey (2007) suggests the use of physical movements and gestures on the part of a choir musician has five main purposes: (1) to build vocal technique, (2) develop musicianship, (3) build tonal musicianship skills, (4) nurture an individual's general understanding of music, and (5) develop artistic expression. Some pedagogical uses for expressing music through kinesthetics could include the sweeping of arms across the body when interpreting a legato phrase or pretending to bow a musical line on a violin when interpreting a syllabic stress.

Research has sought to examine the effects of verbal, vocally modeled, kinesthetic, and audio-visual treatment conditions on male and female middle-school vocal music students' abilities to expressively sing melodies (Ebie, 2004). Under each condition, singers performed a melody four times, each representing an emotion of happiness, sadness, anger, and fear. Results found that music students responded most expressively under the kinesthetic condition as compared to the other conditions. In particular, males tended to have a higher expression rating over females when expressing anger under the kinesthetic condition. Gender was not a factor for the other three emotions under this condition. However, Ebie does suggest that the enthusiasm garnered from the kinesthetic condition may be due to the variety of activities that fell under the kinesthetic condition (acting out, drawing a picture, walking, or physically movement the body).

Conducting Gestures

A musician's expressivity in a rehearsal or performance can surface by responding to the conductor's physical gestures. While clear and fluent conducting technique is essential, conductors must also be able to inspire and motivate musicians to perform with expertise and expression through the communication of movement, gestures, and facial expression (Hunsbergrer & Ernst, 1992; Johannsen & Nakra, 2010; Manternach, 2012). Often times this is done through more than just keeping an ensemble's timing together by conducting a steady beat, but through expressive conducting gestures. In referencing the importance of conducting gesture, former conductor of the Chicago Symphony Orchestra, Daniel Barenboim stated:

> I firmly believe that it is really impossible to speak really deeply about music. All we can do then is speak about our own reaction to the music… I will therefore attempt the impossible and maybe try and draw some connection between the inexpressible content of music and, maybe, the inexpressible content of life (Barenboim, 2006).

This statement thus considers that the conductor's non-verbal message through gesture has the potential of communicating more than singer's responses to verbal instruction or written score.

Studies have found that certain gestures are capable of transmitting specific musical and expressive ideas (Byo, 1990). Even each gaze and facial movement from the conductor can be expressive signals sent to the performers (Poggi, 2002). Although each conductor brings her own musical and instructional gestures to the music creation environment (Garnett, 2005), a wealth of research has found that expressive conducting gestures leads to higher ratings of an expressive performance (Grechesky, 1985; House, 2000; Morrison, Price, Geiger, & Cornacchio, 2009, Silvey, 2013). Morrison and Silvey (2012) investigated the effects of conducting expressivity on choral ensemble evaluation. In the study, one group of participants watched and listened to an excerpt performed twice, once conducted by a high

expression conductor and once with a low expression conductor. The second group did not watch, but only listened to the two performed excerpts. Both groups reported higher expression ratings for the performances lead by the high expression conductor. Regardless of the type of conductor gesture (positive or negative), observers have reported significantly higher expressivity ratings of their perception of a performance under the direction of expressive conductors compared to neutrally expressive conductors (Silvey, 2013). Although some studies have struggled to find relationships between a conductor's expressive gesture and expression in an ensemble's performance (Price & Chang, 2005; Sidoti, 1990), student musicians have reported a higher preference for an expressive conductor over a conductor with no expressive gestures (Price & Winter, 1991).

Visual Images

Artistic representations such as drawings, pictures, and paintings can be another pedagogical tool for structuring opportunities for musicians to express musically (Block, 2012; Winston, Kenyon, Stewardson, & Lepine, 1995). In addition to examining the effects of verbal instruction, vocally modeling, and kinesthetic procedures on middle-school vocal music students' abilities to expressively sing melodies, Ebie (2004) also included the use of a visual image as a fourth condition to measure expressivity. Termed as the audio-visual condition, this stimulus featured several still pictures presented on a visually projected fixed medium, showcased on a slide show format as one of the responding conditions. Results indicated that middle school students' demonstrated a higher level of expression when singing melodies in conjunction with viewing still pictures in a slide show format compared to singing melodies after receiving verbal communication from the instructor or vocal

modeling. The results from Ebie's investigation suggest further exploration into other forms of projected on-screen visual stimuli on performer's musical and expressive responses.

Summary

The purpose of this current study was to determine the effect of three different projected film visual presentation modes on the expressivity of a choir performance. Based on the mechanics of film, film's narrative and semantic content, music's function within the art form of visual media, and the *pure musical*, *cultural*, and *cinematic* film music codes that are often associated with the moving images in American culture, an attempt to understand musicians' responses through an expressive performance when experiencing a projected film visual was the focus of this investigation. This study consisted of three phases. Phase One was implemented to determine the two choral etudes that had the most significant contrast in congruency and incongruency perception when matched to two contrasting film segments. These results would determine which two out of the four newly composed etudes would be used for the second phase of the study to determine the effects of congruent and incongruent film visuals on the expressivity of a choral performance. Phase Two explored the performers' rating of intrinsic self-expression during the singing performance while simultaneously viewing each film segment. Singing participants performed each etude ender three film visual conditions: (1) no film visual, (2) congruent film visual, and (3) incongruent film visual. Opportunities to identify preference of the performance experiences were also offered. Furthermore, participants would rate the overall perceived aural expression and preferences of the audio-recorded playback of the performances. Finally, data was gathered from an independent panel of judges who reported their perception of aural expressivity from the audio-recorded play back of the performances.

CHAPTER 3

METHODOLOGY

Overview

The methodology was implemented in three phases. Phase One was used to develop two film stimuli segments and to compose four original choral etudes for use in the study. Further, this phase established the pairings of the selected projected film segments with the four newly composed choral etudes. Determining which of the etudes had the broadest congruency contrasts with the two film segments accomplished this task. The two etudes offering the most congruency contrasts when paired with the two film segments were used as the performing etudes for the second phase of the study. In preparation for the second phase, participants rehearsed and memorized both selected etudes during regularly scheduled rehearsals. Phase Two included participants singing each etude while simultaneously viewing the film segments. Each etude was performed under three conditions: (1) without a film projected, (2) while viewing a congruent film, and (3) viewing an incongruent film. Singing participants reported their levels of expressivity during performance, preferred performance condition, level of expressivity heard in audio-recorded performances, and preferred audio-recorded performance. Phase Three collected choral music professionals' ratings of expressivity exhibited in the audio-recorded performances.

Visual Stimuli and Choral Etudes

Visual Stimuli

The first objective in selecting stimulus materials was to choose two short film segments. These were selected from a collection of 50 films that could establish an immediate response from participants without the film's previous narrative content to elicit

an interpretive response. In an effort to reduce familiarity and associations to film content, the researcher selected segments from documentary styled films rather than genre and plot driven films. Further, documentary styled films could be considered a genre less well known among American university students compared with genre and plot driven films. Although the two selected film segments' mechanical elements and semantic information within the narrative contrasted with each other, similarities in framing angles, frequency of shots as structured through editing, and "in color" images were desired in an effort to control for other possible confounding variables within the visual stimuli. Ultimately, two film segments from two different documentary films were chosen based on the mechanical manipulation of the films' tempo and the narrative content and environment. Since new music was to be composed and performed, the entire commercial soundtrack (i.e. dialogue, music, and sound effects) as intended by the filmmakers was removed from the film segment stimuli for this study.

Two colored and visually diverse 30-second film segments contrasting in tempo and narrative content, characters, and environment were selected. Film Segment 1 consisted of 51:07 to 51:37 from *Koyaanisqatsi* (Reggio, 1982). This segment's narrative content depicts a vast number of people walking and riding escalators inside a city's crowded union station environment. The scene represents two different shots captured from a stationary point-of-view. The first shot captures people getting on and off an escalator and the second shot captures people entering and exiting a building from inside the station. The mechanical production of the film's tempo has been increased in speed as evidenced by the fast and rapid representation of the moving images. Images in both shots indicate a camera's capturing point at eye-level with a medium proximity to the people and objects. The images tend to be

drained of bright colors with a slight tint of brown and grey representative of the concrete, urban environment within the narrative.

Film Segment 2 consisted of 33:40 to 34:10 from *Oceans* (Mauvemay, Cluzaud, & Perrin, 2009). Crafted as three different shots, this scene depicts dolphins dashing out of the ocean water as waves curl throughout each scene. With no more than three dolphins jumping out of the ocean at one time, all of the stationary shots are captured at a medium proximity, slightly above eye-level of the dolphins. An enlivened brightness of the color blue is filtered throughout, accenting the colors of nature's oceans. The mechanical production of the film's tempo has been decreased in speed as evidenced by the slow motion representation of the moving images. Overall, the elements of these two film segments could be considered contrasting in visual tempo (fast vs. slow), narrative objects (people vs. animals), environment (urban city vs. nature), and color (diminished vs. emboldened). The visual representation of both film segments were unaltered and presented as originally intended by the filmmakers. (See Appendix B).

Choral Etudes

The second part of developing stimulus materials was composing new music that could be adequately rehearsed and performed by varying ability levels of university choirs, and have a diverse congruency relationship in articulation, mood, and tempo between the two film segments. Four newly composed SATB choral etudes were written specifically in conjunction with one of the two film segments (See Appendix C). Two etudes were composed specifically to Film Segment 1 on a neutral "doh" syllable and two other etudes were composed specifically to Film Segment 2 on a neutral "noo" syllable. The decision to use newly composed choral etudes was made to control for past associations with a given

musical work (Thompson, Russo, & Sinclair, 1994; Vieillard, Peretz, Gosselin, Khalfa, Gagnon, & Bouchard, 2008). By composing the choral etudes on a neutral vowel, text meaning and interpretation would not be an issue during the rehearsal and performance of the pieces.

Etudes A (140 beats per minute) and B (126 beats per minute) compositionally consisted of staccatos, accents, angular intervals, and layered rhythmic ostinatos to match the narrative content and tempo of Film Segment 1. The composer's intention was for the music to function congruently with the articulation, contour, mood, and tempo of Film Segment 1. The style of minimalism was culturally issued based on other music and fast moving film scene relationships found in non-narrative American films such as *Baraka* (1992) and *Koyaanisqatsi.* An empathetic approach to the score was used through the consistent repetition of music figures depicting the consistent routine of various people walking within the narrative.

Both Etudes C (50 beats per minute) and D (62 beats per minute) were composed congruently with Film Segment 2 by use of a linear and legato line. Only Etude C was composed in triple meter with the melody starting in the soprano line before trading with the tenor line. Etude D was composed in duple meter with fragments of triplets in the melody held by the altos and tenors before modulating towards a Neapolitan cadence. Moreover, both etudes encompassed a tonal harmonic framework throughout. The composer's intention was for the music to function congruently with the articulation, contour, mood, and tempo of Film Segment 2. Etudes C and D were written in a linear fashion to avoid accenting particular points within the narrative, and unfold a general mood throughout the film segment.

Overall, the composed music of all four etudes were to function non-diegetically, never deviating from the common function of tonal film music found in some American films. The compositional framework in each piece accounted for vocal range, vocal and musical independence, tonality, a steady tock in one or more voices throughout, consistent vocal production from all four voices, dynamic contrast, articulations, fluctuation of tempo, and congruency with one of the two film segments.

Phase One

The following procedure was designed to determine which two of the four newly composed etudes had the broadest contrast in congruency between the two film segments. One etude would be deemed most congruent with Film Segment 1 and least congruent with Film Segment 2 while the second etude selected would be considered most congruent with Film Segment 2 and least congruent with Film Segment 1. Results from this procedure determined which two etudes would be used in conjunction with the two film visual stimuli during Phase Two of the study.

Participants

Twenty-one volunteer undergraduate choir students (males $n = 9$; females $n = 12$) from a Midwest university ranging from freshmen to seniors (freshmen $n = 7$; sophomore $n = 1$; junior $n = 7$; senior $n = 6$), served as participants for this study. The decision was made to use university choir students in the first phase of the study to attempt to match the perspectives of different university choir singers who would participate in the second phase of the study. Participants' major field of study consisted of both music related and non-music related fields as indicated in Table 1.

Table 1

Categories of Participants' Major Field of Study – Phase One

Field of Study	*N*
Music Education	11
Music Technology	2
Business Management	1
Fashion Merchandising	1
Fine Arts – Music	1
Fine Arts – Music/Fashion Merchandising	1
Fine Arts – Music/English	1
Graphic Design	1
Technical Theatre	1
Vocal Performance	1

Reported years of lifetime choir participation ranged from two to thirteen years (M = 8.1; SD = 3.16), and one participant reported 10 or 11 years of lifetime participation in choir. The university choir's conductor assisted by showing a videotaped invitation and arranging a schedule for participants to volunteer. The videotaped invitation, which included the purpose and time commitment of volunteer participants, was presented to the entire choir before offering the opportunity to sign-up for the study (See Appendix A).

Audiovisual Stimuli

Etudes A and B were composed for Film Segment 1 and Etudes C and D were composed for Film Segment 2. Therefore, one etude from A and B would be chosen to represent a congruent relationship with Film Segment 1 and incongruent with Film Segment 2, and one etude from C and D would be chosen to represent a congruent relationship with Film Segment 2 and incongruent with Film Segment 1. Between Etudes A and B, this study investigated which etude had the broadest contrast in congruency between Film Segment 1 and Film Segment 2. Between Etudes C and D, this study investigated which etude had the broadest contrast in congruency between Film Segment 2 and Film Segment 1. University

singers' congruency ratings were calculated and then compared using paired-samples *t* tests to determine the difference in perception of congruency between each film segment embedded with the same etude. In addition, a repeated measures intervallic test was calculated to determine significant differences within each film segment among congruency ratings for all four etudes. The combinations of etudes and film segments were relabeled as indicated in Table 2 in order to give each combination of etude and film an audiovisual composite label.

Table 2

Frequency Distribution for Congruency Responses Under Each Audiovisual Composite

Etude	Visual	Audiovisual Label	*M*	*SD*
A	1	Audiovisual 1	4.91	2.10
A	2	Audiovisual 2	3.00	1.27
B	1	Audiovisual 3	5.33	1.58
B	2	Audiovisual 4	3.81	2.06
C	1	Audiovisual 5	4.29	1.65
C	2	Audiovisual 6	5.05	1.94
D	1	Audiovisual 7	4.24	1.81
D	2	Audiovisual 8	6.19	1.57

Choral etudes were generated as musical instrument digital interface (MIDI) files using *East West's Quantum Leap* virtual instrument software. With the replication of choir voices through *Quantum Leap's* oscillation of "choir oohs," each MIDI etude recording occupied precise value in pitch, rhythm, duration, and velocity as representative of the written notation. The MIDI files triggering the oscillation of *Quantum Leap's* virtual instruments were sequenced and recorded as a separate audio file through *Avid's Pro Tools 8* (multi-track audio editing and mixing workstation). All four audio files (representative of each etude) were synchronized and embedded within both film segments using *Avid's Pro Tools 8* editing hardware and software; thus creating eight separate audiovisual composites.

Each composite consisted of music throughout the entirety of each clip, entering and concluding at identical points within the film.

All eight audiovisual composites were then imported into *iMovie* (video-editing software program). Five different sequences were created by randomly selecting the order of audiovisual composites through a random numerical generator service (http://random.org) to account for order effect. Each sequence of audiovisual composites were then embedded within the project event window of *iMovie*. Each video sequence included the eight audiovisual composites and audio/visual text instructions throughout the sequence in an attempt to inform and guide participants throughout the study. Each of the five video sequences was exported as a "mov." video file. Audio and visual instructions were given prior to the presentation of each audiovisual composite, preparing participants to focus on the next audiovisual, and concluding with audio and visual instruction on when to report data (See Appendix D).

Study Design and Procedure

Phase One of the study was conducted to determine which two etudes out of four would represent congruent and incongruent relationships to the two film segments. A counterbalance design was employed in which the four choral etudes in conjunction with the film segments would be deemed the independent variable and the participants' response to congruency of music to film would be the dependent variable.

Groups of five participants were seated with individual computers and wearing Sentry headphones. A pencil and a questionnaire packet were provided for each participant. Each of the Phase One video sequences was assigned to a single Mac computer accompanied with *Quicktime* software. Following completion of consent forms (See Appendix E), participants

turned off personal electronic devices, put on the headphones, and began the *Quicktime* video sequence consisting of all eight audiovisual composites. Once the video began, participants were instructed to refrain from manipulating the computer controls in order to experience the entire study uninterrupted. This was the last communication the investigator had with participants until the conclusion of the study.

Following the video sequence's introductory instructions and completion of the entire first audiovisual composite, participants were allowed five seconds to rate the congruency of music to film for the audiovisual composite. Using the questionnaire, participants rated the congruency of music to film using an 8-point Likert-type scale (1 = least congruent; 8 = most congruent) (See Appendix F). As stated in the instructions, 'most congruent' indicated a best fit between the music to film while 'least congruent' was stated as the worst fit between music to film. No further definition was given for the term "congruency". The participant independently decided on the congruency relationship of music to film based on mood, accent alignment, timing, or style congruency. The same process was followed for each of the eight audiovisual composites. Following the final audiovisual composite, participants reported demographic information (gender, grade level, field of study, years of lifetime choir participation) and provided free-response comments if they wished.

Phase One Analysis

A paired-samples *t* test was applied to compare the mean congruency ratings between Audiovisual 1 and 2, and between Audiovisual 3 and 4. Each pair of composites presented the same etude under different visual conditions. Results showed a significant difference in mean congruency ratings between Audiovisual 1 and Audiovisual 2, $t(20) = 3.76$, $p < .005$, and between Audiovisual 3 and Audiovisual 4, $t(20) = 3.20$, $p < .01$. While both

comparisons were significant, Etude A from Audiovisual 1 and 2 was considered to have broader contrast in reported congruency with a *p* value of .001 whereas Etude B from Audiovisuals 3 and 4 had a *p* value of .004. Therefore, Etude A was considered to have the broadest contrast of reported congruency between Film Segment 1 and 2 with Film Segment 1 being a congruent match with Etude A.

A second paired-samples *t* test was applied to compare the mean congruency ratings between Audiovisual 5 and Audiovisual 6, and between Audiovisual 7 and Audiovisual 8. Each pair of composites included the same etude under different visual conditions. Results indicated no significant difference between Audiovisual 5 and 6, $t(20) = -1.58$, $p > .05$. However, results indicated a significant difference between Audiovisual 7 and 8, $t(20) = -5.13$, $p < .001$. Etude D had a statistically greater contrast between the two Film Segments compared to Etude C. Film Segment 2 was deemed a congruent match with Etude D.

In order to cross-reference contrast in reported mean congruency ratings within each film segment, two one-way repeated measures ANOVA's were conducted to compare all four etudes' mean congruency ratings within each film segment. A significance level of .008 (.05/6) was established to reduce Type I error rate. Within Film Segment 1, a significant main effect was not found in response to congruency between the four etudes, $F(3, 60) = 2.39$, $p > .05$. These results indicated that participants' congruency response to the four etudes were not significantly different when accompanying Film Segment 1. Within Film Segment 2, a significant main effect was found in response to congruency between the four etudes, $F(3, 60) = 13.71$, $p < .001$. Post hoc *t* tests indicated that significant differences in congruency response between Etude A and C ($p < .001$), Etude A and D ($p < .001$), and Etude B and D ($p < .001$) occurred while paired Film Segment 2. These results indicate that

participants' congruency response for Etudes C and D (composed for Film Segment 2) were significantly higher from the rating of Etude A when accompanying Film Segment 2. Furthermore, Etude D also had a significantly higher congruency rating compared to Etude B (See Table 3).

Table 3

Significant Differences Between Pairs of Etudes within Film Segment Two

	Etude B	Etude C	Etude D
Etude A	$p > .05$	$p < .001$	$p < .001$
Etude B		$p > .05$	$p < .001$
Etude C			$p > .01$

- Type I error rate significant p value = .008

Phase One Conclusion

The purpose of the Phase One of the study was to determine which two newly composed etudes had the broadest contrast in congruency ratings between the two film segments. Each of the four etudes were embedded within both film segments; thus, encompassing eight audiovisual composites. Etudes A and B were composed with the intention of functioning congruently with Film Segment 1, and Etudes C and D functioning congruently with Film Segment 2. Although Audiovisual 3 (Etude B and Film Segment 1) had a higher mean in reported congruency, results indicated that Audiovisuals 1 (Etude A and Film Segment 1) and 2 (Etude A and Film Segment 2) had a broader contrast in reported congruency than Audiovisuals 3 (Etude B and Film Segment 1) and 4 (Etude B and Film Segment 2). Therefore, Etude A was chosen as the largest congruently contrasting etude between both film segments.

In determining the etude congruency relationship with Film Segment 2, results indicated that Audiovisual 7 (Etude D and Film Segment 1) and 8 (Etude D and Film

Segment 2) had a significant contrast in reported congruency, while no contrast was found in Audiovisual 5 (Etude C and Film Segment 1) and 6 (Etude C and Film Segment 2). Therefore, Etude D was chosen as the largest congruently contrasting etude between both film segments.

For the purpose of Phase Two, Etude A, titled "Doh," would be represented congruently with Film Segment 1 and incongruently with Film Segment 2. Etude D, titled "Noo," would be represented congruently with Film Segment 2 and incongruently with Film Segment 1. Etudes B and C were disregarded and eliminated from the second and third phases of the study.

Phase Two

The following procedure was designed to discover the effect of simultaneously viewed projected films on singers' expressivity in choral performance. Singers performed each etude under three conditions: (1) while viewing no visual film, (2) viewing a congruent film, and (3) viewing an incongruent film. Singers reported their expressivity following each performance, and their preferred performance experience after experiencing all three performance conditions. In addition, participants rated the overall expressivity of each audio-recorded performance, and indicated their preferred audio-recorded performance.

Participants

One hundred and sixteen volunteer choir singers (male $n = 47$; female $n = 69$) from two different Midwest universities served as participants for this study. University A participants were drawn from an auditioned freshman and sophomore choir ($n = 32$), an auditioned choir opened to all university students ($n = 33$), and an auditioned chamber choir consisting of upper level undergraduate and graduate students ($n = 16$). University B

participants were drawn from an auditioned choir for freshmen through senior students (n = 35). Combined participating singers from both universities ranged from freshmen to graduate students (freshmen n = 31; sophomore n = 24; junior n = 25; senior n = 22; graduate n = 14) from multiple areas of study (See Table 4).

Table 4

Categories of Participants' Major Field of Study – Phase Two

Field of Study	*N*
Music Education	29
Vocal Performance	26
Music Therapy	15
BA Music	8
Music Performance	5
Choral Conducting	4
Music Business	4
Music Composition	4
Psychology	3
Undecided	3
Communications	2
Business	1
Conducting	1
Elementary Education	1
English	1
Human Development	1
Information Technology	1
Linguistic Studies	1
Mathematics Education	1
Nursing	1
Pharmacy	1
Piano Performance	1
Pre-Med/Biology	1
Secondary Education	1

Reported years of lifetime choir participation ranged from one to twenty years (M = 9.47; SD = 4.50) among participants. Volunteers were recruited from four separate choral ensembles that had already prepared etudes "Doh" and "Noo" as part of the choir's structured rehearsal process. At the conclusion of the fifth rehearsal, choir singers were invited to volunteer as

participants for Phase Two of the study, and were informed that the study procedures would take place during their normally scheduled rehearsal time (See Appendix G).

Preparation for Learning Choral Etudes

In preparation for performing both etudes at a mastery level from memory, all choirs rehearsed both etudes during the first 10 minutes of five consecutive rehearsals prior to Phase Two of the experiment. All three choirs at University A received rehearsal instruction from the same conductor. Due to a distance factor between universities, the choir from University B received rehearsal instruction from the university's assigned conductor. Both conductors followed a lesson plan and script to avoid method bias between choirs (See Appendix H). In order to eliminate bias toward a hierarchy of rehearsal practices, the lesson plan scripts approached each rehearsal with neutrality, avoiding the use of metaphors or guided imagery, while limiting the amount of kinesthetics used in rehearsal (Woody, 2002). Furthermore, the rehearsal environment did not allow for questions or comments from singers during rehearsal to maintain consistency among ensemble rehearsals. This expectation was addressed before the first rehearsal by the statement: "Due to the small amount of rehearsal time, I ask that you save your questions and do your very best in interpreting the score as you see fit." At the same time, an attempt to create an authentic rehearsal experience was incorporated by directing attention to the musical notation through the use of sight-reading and stressing importance of interpreting dynamic and articulation markings in the score. Each rehearsal included objectives and expectations for upcoming rehearsals.

To prepare singers to perform without a conductor, singers practiced initial entrances for each etude with a visual and audio countdown embedded in a projected audiovisual medium during the fourth and fifth rehearsals. In conjunction with the tempo of each etude,

an audiovisual numerical countdown was displayed on an overhead screen. The countdown projected the images of each number synchronized with the audio production of a click track. The click track subdivided the beats in synchronization with the associating images of each numerical beat. For the purpose of rehearsal, "Doh" displayed "3, 2, 1, Sing," while "Noo" displayed "4, 3, 2, 1, Sing," representing the meter of the etude. Prior to the countdown, the starting pitches for each part were sounded, beginning with the bass note and concluding with the soprano note.

Design and Procedures

A counterbalanced design was conducted in which the type of film segment in relation to the choral etude being performed was deemed the independent variable and the participant responses to the expressivity of the music performance was the dependent variable. The second phase of the study included two parts: (1) performing etudes under each condition followed by rating self-expression for each performance and (2) listening to playbacks of each performance followed by rating expressivity of each audio-recorded performance.

Part One. Each chamber choir, including eight to fourteen volunteer singing participants, was randomly assembled from each larger participating choral ensemble with no fewer than two singing participants to a voice part. On the day of the performance portion of the study, all volunteer participants were informed of their random chamber ensemble assignment. Chamber ensembles were lined up in an SATB order prior to entering the room where the experiment would be conducted. After entering, participants were asked to turn off cell phones and proceed to the preset music stands in SATB order. Music stands were placed in one arched semi-circle, allowing participants to face the projection screen as

diagrammed in Appendix I. Immediately following consent in accordance to the guidelines of the Social Sciences Institutional Review Board (SSIRB) (Appendix J), participants were directed toward the questionnaire placed in front of them on the music stand. Instructions for this study were presented as an audio recording by the investigator in order for all participants to receive the instructional input in the same timing and manner throughout the study (Appendix K).

Participants were informed that they would perform each of the two etudes three times, once without a visual stimulus and twice with a visual stimulus in a random order. These instructions stressed that singers should sing each etude as expressively as they desired in accordance to the film segment. Attention was brought to the questionnaire, informing participants to self-report their overall individual self-expression after each performance. Due to the subjective nature in defining expression (Sloboda, 1996; Spiro, Feltovich, Jacobson, & Coulson, 1995), participants were instructed to self-define self-expression. Self-reported expression was reported using an 8-point Likert-type scale (l = least expressive; 8 = most expressive) (Appendix L).

Depending on the order of visual stimuli, participants either experienced no visual stimulus, Film Segment 1, or Film Segment 2. Film Segment 1 consisted of the same scene from *Koyaanisqatsi* as experienced in the first phase of the study, but with 15 extra seconds added before the initial point where music entered the film during Phase One; thus representing 50:52 to 51:37 from the film. Film Segment 2 consisted of the same scene from *Oceans* as experienced in the first phase of the study, but with 15 extra seconds added before the initial point where music entered the film during Phase One; thus, representing 33:25 to 34:10 from the film. While the singers performed from 51:07 to 51:37 from Film Segment 1

and 33:40 to 34:10 from Film Segment 2, the extra 15 seconds of film allowed for participants to get acclimated to the visual and allow time to prepare singing with the assistance of starting pitches and the numerical click track.

With the 15 additional seconds, Film Segment 1 (*Koyaanisqatsi;* 50:52 - 51:37) represented three different shots captured from a stationary point-of-view. Shot one captured people walking around in a large, open spaced urban station building, shot two captured people getting on and off an escalator, and shot three captured people entering and exiting a building from inside the station. Images in shot one were captured primarily from a distance at a high point-of-view and directed down toward the images. Shots two and three indicated a camera's capturing point at eye-level with a medium proximity to the people and objects. The mechanical production of the film's tempo has been increased in speed as evidenced by the fast and rapid motion representation of the moving images. Film Segment 2 (*Oceans*; 33:25 – 34:10) represented five different shots depicting dolphins dashing out of the ocean water as waves curl throughout each scene. With no more than three dolphins jumping out of the ocean at one time, all of the stationary shots were captured at a medium proximity, slightly above eye level of the dolphins. All other content driven and mechanical production for Film Segment 2 has been indicated in the procedures of the first phase of the study.

The exact audiovisual numerical countdowns experienced during the rehearsals were embedded into the visual of each film to indicate when singing should begin. However, the numerical countdown eliminated the word 'sing,' as presented in rehearsals to allow participants to perform continuously from the first note without the word 'sing' overlapping with the film visual. For the non-visual stimuli, singers were presented with the audiovisual

countdown with the exception of the word ‘sing’ to indicate when they shall begin the etude. All performances were recorded onto a micro-processing computer.

After each performance, participants were given five seconds to rate their individual expression as experienced during the performance. After experiencing all three film visual conditions for “Doh,” participants were asked to rate the most preferred and least preferred individual performance out of the three conditioned performance experiences for “Doh.” Next, participants performed “Noo” three times under the same visual conditions in a random order. The same procedure was implemented for all three performances of “Noo.” To account for order effect, performance sets of each etude were rotated between each chamber ensemble. Directly following the data collection of part one of the experiment, the investigator informed participants of the second part of the study.

Part Two. Participants listened to each of their chamber ensemble's recorded performances through speakers without a visual stimulus and rated each audio-recorded performance’s level of expression. Participants were instructed to self-define "expression". Using an 8-point Likert-type scale (1 = least expressive; 8 = most expressive), participants rated the overall expression of each performance as they heard it (Appendix M). Similar to part one, participants rated their most preferred and least preferred performances following all three audio-recorded playback performances of the first set of etudes. Following the first set, participants listened to and rated the second set of etudes. To account for order effect, the sets of etudes were randomly rotated. Following ratings of the last performance, participants reported demographic information (gender, grade level, voice part sung for these performances, field of study, years of lifetime choir participation) and completed a free-

response comment if desired. At the conclusion of data collection, participants were informed of the opportunity to be briefed of this study during their next choir rehearsal.

Apparatus

Avid's Pro Tools 8 hardware and software were used to playback the visual stimuli, playback pre-recorded instructions, record audio performances, and playback each audio-recorded performance. All digital audio files were stored and run from a *Glyph GT050* external hard drive through a *G5 Power Mac* to *Avid's 002* audio interface. Two *Rode NT1* condensor microphones were connected to the *002* audio interface to record performances. Each performance was recorded at 16 bits, 44.1 khz sample rate. Playback audio was sent through TRS ¼ inch cables from the *002* interface and into *JBL Control 28-T* (University A) or *M-Audio BX5a* speakers (University B). Video files, controlled by *Pro Tools 8* software and hardware, were played back from the *Glyph* hard drive and *G5 Power Mac's* processor and projected through a *Hitachi CP-X306* video projector (University A) or *Casio XJ-S31* video projector (University B) onto a 6' x 8' screen approximately 10 to 15 feet in front of the singing participants. Video playback, audio instruction playback, and recording of performances were simultaneously controlled via *Avid's Pro Tools 8* during the study. All recorded audio files were backed up onto a *Glyph GT062* external hard drive at the conclusion of the study at both universities.

Phase Three

Phase Three of the study collected choral music professionals' ratings of expressivity from the recorded performances of Phase Two of the study.

Participants

A convenience cluster sample of eight volunteer choir music professional participants (males $n = 5$; females $n = 3$) from the Midwest region of the United States were asked to judge the expressivity of the recorded performances of both choral etudes under the three performance conditions. Choral music professionals were defined as practicing or retired choral conductors or accompanists with more than three years experience in the field of choral performance or choral music education. Volunteer adjudicators' experiences ranged from seven to forty-seven years ($M = 19.38$, $SD = 13.94$). Recruitment of volunteers included email invitations to choral music professional educators at the elementary, secondary, and post-secondary levels (Appendix N).

Design and Procedures

The independent variable included exposure to the recorded performances while participants' reported rating of expressivity was the dependent variable. Three performances of the same ensemble performing the same etude under three visual conditions constituted one set of performances. Twenty-two performance sets were performed and recorded during the second phase of the study. In an effort to reduce the fatigue factor, each participant evaluated only five or six sets of performances out of 22 sets of performances. The varied number of sets of listening experiences among each volunteer judge was decided to account for an equal number of judges' ratings for each set of performances. Performances within each set and the sets themselves were randomly ordered to account for order effect. Each set of performances was judged twice.

Volunteer judges rated the audio-recorded performances independently on a personal computer using headphones at an individual workplace. Each judge was seated in front of one computer wearing Sentry headphones, and had a pencil, and a questionnaire in paper

form. Each set consisted of recorded performances in all three conditions sung by the same chamber ensemble of the same etude. Each of the 22 sets of performances was presented on a Mac computer using *iTunes* playback software. Once the participants consented to the study (Appendix O), they turned off electronic devices, put on the headphones, and began the *iTunes* playback, initiating the entire verbal audio instructions and audio recordings for the study (Appendix Q). Once the participants began, they were instructed to refrain from manipulating the computer controls in order to experience the entire study uninterrupted. After audio instructions were given, participants were informed to prepare for the first audio-recorded performance example.

Following the first recorded performance example, participants were allowed five seconds to rate expressivity of the performance as they heard it. Judge participants were instructed to self-define "expression." The ratings of each performance's expressivity were reported using an 8-point Likert-type scale (1 = least expressive; 8 = extremely expressive) (Appendix Q). After rating the entire set of three performances, participants reported their most preferred and least preferred performances within the set. Adjudicators also had the opportunity to report written comments regarding any "aspect(s)" on the set of the three performances. This procedure was replicated for the next five or six sets of performances before reporting demographic information.

Stimuli

The use of *GarageBand* multi-track audio editing software was incorporated in the structuring of instructions and sequencing of each audio-recorded performance. Twenty-two sets of audio performance examples were imported into *GarageBand*. Eight different sequences were created by randomly selecting the order of audio-recorded performance sets

using a random numerical generator service (http://random.org) to account for order effect. Each sequence of audio-recorded performances was aligned with the appropriate recorded verbal instruction for final imprint. This alignment of audio regions, both performance and verbal instructions, accounted for the prescribed amount of time for participants to report data before moving on to the next listening example. Therefore, the function of pausing the audio sequence in order to take time to report data was not needed. Audio instructions were given prior to each audio-recorded performance, preparing them to experience the next performance, and concluded with audio instruction on when to report data. In addition, instructions were given on what to focus on and when to report data. The entire edited sequence was exported from *GarageBand* into an AIFF audio file. Audio sequences were then played back using *iTunes* audio-playback software.

CHAPTER 4

RESULTS

Data were analyzed using the Statistical Package for the Social Sciences 20.0 (SPSS) software. A series of ANOVA's, paired-samples *t* tests, and Spearman correlation coefficient tests examined data to address research questions posed in the first chapter. An alpha level of .003 (.05/15) was adopted to reduce Type I error rate due to the comparison of 15 variables within the data collected during calculation of ANOVA and *t* tests.

Results – Phase Two: Initial Treatment of Data

Singing participants from two universities rehearsed two choral etudes ("Doh" and "Noo") during five consecutive 10-minute rehearsals prior to the second phase of the study. While each rehearsal followed a scripted lesson plan, the ensemble from University B was led by a conductor other than the conductor who led the participating ensembles at University A. The two participating universities were from different Midwest states.

As indicated in Phase 1, etude "Doh" was established as being congruent with Film Segment 1, and etude "Noo" was established as congruent with Film Segment 2. During Phase Two, singing participants were randomly divided into smaller, balanced SATB chamber ensembles and asked to perform each etude three times while simultaneously viewing one of the three film visual conditions: (1) no visual condition, (2) congruent visual condition, and (3) incongruent visual condition. Following each performance, participants were asked to rate their self-expression. Following the set of performances, participants were asked to rate their most and least preferred performance experiences from among the three performances. The following tests were conducted to investigate the effect of etude and

institution/conductor on self-expression ratings to determine how the data could be reliably analyzed.

A one-way ANOVA with repeated measures was applied to test for possible main effect of institution/conductor. Results indicated no significant difference in self-reported individual expressivity ratings as a function of institution/conductor, $F(1, 114) = .001$, $p > .05$. Therefore, data from participants at both institutions were combined for subsequent analyses.

A two-way repeated measures ANOVA was used to examine the effects of etude ("Doh" and "Noo") and film visual performance condition (no visual, congruent visual, and incongruent visual) on ratings of self-reported individual expressivity. Because Mauchly's test indicated that the assumption of sphericity was violated, the Greenhouse-Geiser adjustment was applied to adjust the degrees of freedom for both film visual performance condition, $\chi^2 = 7.76$, $p < .05$, and etude x film visual performance condition, $\chi^2 = 8.74$, $p < .05$. Results indicated that a significant etude x film visual performance condition interaction was present, $F(1.86, 214.20) = 8.04$, $p = .001$ (See Figure 1). In addition, significant main effects were found for both etude, $F(1, 115) = 22.99$, $p < .0001$, and film visual performance condition, $F(1.88, 216.26) = 39.04$, $p < .0001$. Subsequently, *t* tests were conducted to determine the effects of film visual performance condition and etudes on the rating of self-reported expressivity.

Choral Etudes – Self-Report

Research question one: *Will participants' self-reported rating of performance expressivity while viewing a projected film visual differ as a function of performing musically contrasting choral etudes?*

Three paired-samples *t* tests were conducted to investigate whether etude composition had an effect on participants' ratings. Self-reported expressivity ratings between etudes within the same performance condition were compared. Results indicated a significant difference in expressivity ratings between etudes "Doh" and "Noo" in the no visual condition, $t(115) = -5.81$, $p < .001$. Participants assigned a higher expressivity rating when performing "Noo" under the no visual condition compared with "Doh" (See Table 5). No significant differences were found in expressivity ratings between "Doh" and "Noo" for congruent, $t(115) = -2.21$, $p > .003$, and incongruent visual conditions, $t(115) = -1.54$, $p > .003$. These findings indicate a noticeably higher expressivity rating when singing "Noo" compared with "Doh." Figure 1 shows the etude x film visual performance condition interaction.

Table 5

Mean Rating of Self-Reported Expressivity by Performance Condition and Etude

	M	*SD*
No Visual – "Doh"	3.88	1.67
No Visual – "Noo"	4.95	1.49
Congruent Visual – "Doh"	5.23	1.49
Congruent Visual – "Noo"	5.59	1.22
Incongruent Visual – "Doh"	4.37	1.72
Incongruent Visual – "Noo"	4.64	1.47

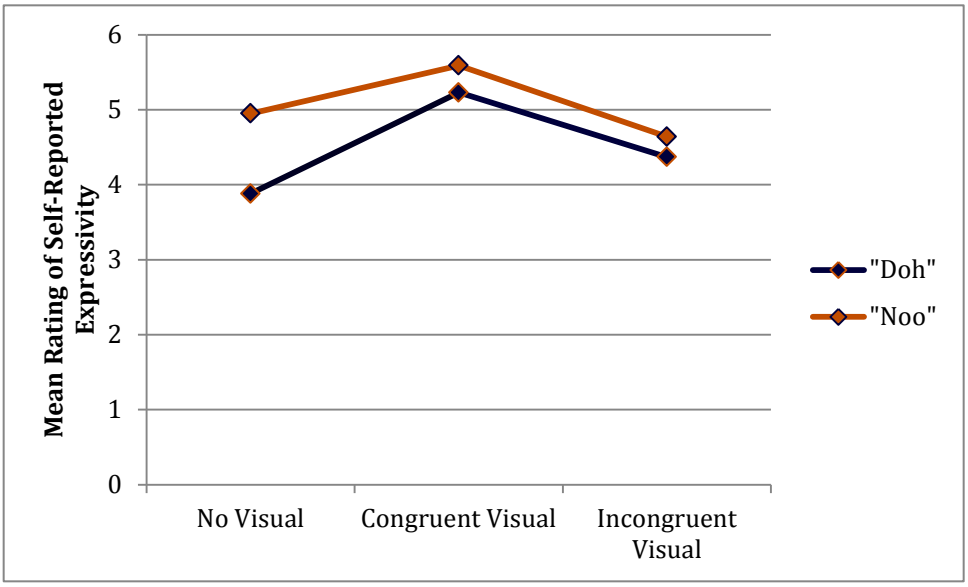


Figure 1. Etude x Film Visual Performance Condition Interaction.

Visual Stimuli – Self-Report

Research question two: *Will participants' self-reported rating of performance expressivity differ as a function of performing simultaneously with no visual, congruent visual, and incongruent visual stimuli?*

A repeated-measures ANOVA was conducted for each of the two etudes ("Doh" and "Noo") to compare the effects of performance conditions (no visual, congruent visual, and incongruent visual) on expressivity ratings. A significant main effect for performance condition was found for etude "Doh", $F(2, 230) = 31.28$, $p < .001$. Paired-samples *t* tests indicated significant differences between no visual and congruent visual conditions ($p < .001$), and congruent and incongruent conditions ($p < .001$) as shown in Table 6. No significant difference was found between the no visual and incongruent visual conditions ($p > .003$). Self-reported expressivity ratings were significantly higher in the congruent visual ($m = 5.23$, $sd = 1.49$) compared with incongruent visual ($m = 4.37$, $sd = 1.72$) or no visual conditions ($m = 3.88$, $sd = 1.67$).

Table 6

Paired-Samples t Test Results: Effect of Performance Conditions on Self-Reported Expressivity Ratings for Etude "Doh"

	t	Sig. (2-tailed)
No Visual – Congruent Visual	-8.326	< .001
No Visual – Incongruent Visual	-2.56	> .003
Congruent Visual – Incongruent Visual	5.26	< .001

ANOVA results comparing expressivity ratings for the etude "Noo" indicated significant differences as a function of performance condition, $F(2, 230) = 18.61$, $p < .001$. Paired-samples *t* tests indicated significant differences in ratings between no visual and congruent visual conditions ($p < .001$), and congruent versus incongruent conditions ($p < .001$) as shown in Table 7. No significant difference was found between no visual and incongruent visual conditions while performing etude "Noo." Self-reported expressivity ratings were significantly higher in the congruent visual ($m = 5.59$, $sd = 1.22$) compared to the no visual ($m = 4.95$, $sd = 1.49$) or incongruent visual conditions ($m = 4.64$, $sd = 1.47$) (See Figure 2).

Table 7

Paired-Samples t Test Results: Effect of Performance Conditions on Self-Reported Expressivity Ratings for Etude "Noo"

	t	Sig. (2-tailed)
No Visual – Congruent Visual	-3.92	< .001
No Visual – Incongruent Visual	1.88	> .003
Congruent Visual – Incongruent Visual	6.44	< .001

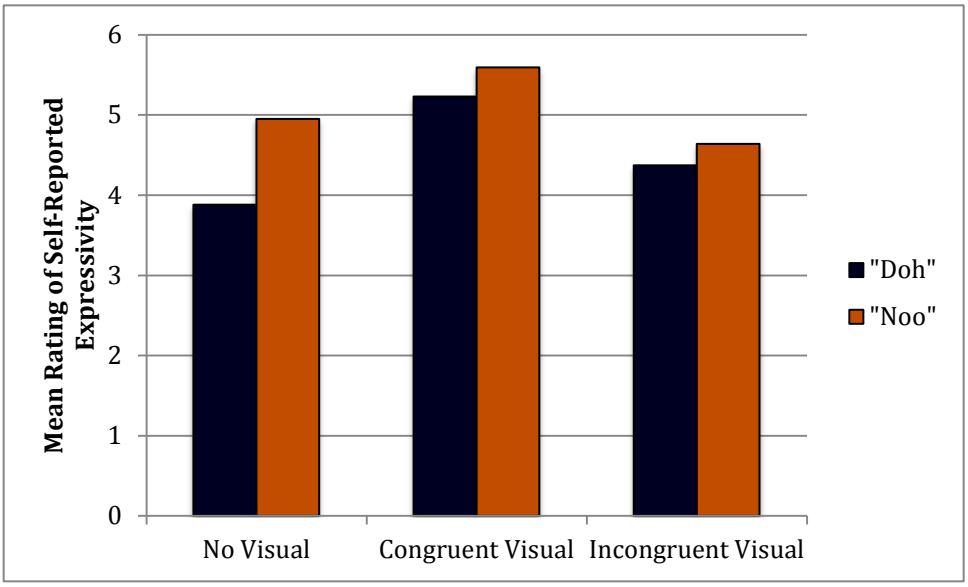


Figure 2. Mean Ratings of Self-Reported Expressivity by Performance Condition and Etude.

Performance Experience Preference – Self-Report

Research question three: *Will singing participants report a preference among no visual, congruent visual, and incongruent visual performance conditions?*

Participants were asked to report their most preferred and least preferred performance experiences after performing the set of three etudes under no visual, congruent visual, and incongruent visual conditions. Chi-square tests were administered for each of the preference ratings (most preferred and least preferred) to determine if there were significant differences in the distribution of participants' reported preferences. These chi-square tests were conducted twice: (1) Etude "Doh" and (2) Etude "Noo."

The tests for etude "Doh" indicated a significantly different response distribution for most preferred, $\chi^2(2) = 43.16$, $p < .001$, and least preferred, $\chi^2(2) = 30.33$, $p < .001$, performance experiences. Results (See Table 8) showed participants selected the congruent visual condition as the most preferred performance experience ($n = 72$), while the incongruent visual condition was the least preferred ($n = 56$).

Table 8

Participants' Selections of Most and Least Preferred Performance Experiences While Performing Etude "Doh"

		Least Preferred			Total
		No Visual	Congruent Visual	Incongruent Visual	
Most Preferred	No Visual	0	5	18	23
	Congruent Visual	34	0	38	72
	Incongruent Visual	15	6	0	21
Total		49	11	56	116

The tests for etude "Noo" indicated a significantly different response distribution for most preferred, $\chi^2(2) = 16.83$, $p < .001$, and least preferred, $\chi^2(2) = 7.47$, $p < .05$, performance experiences. Results (See Table 9) showed participants selected the congruent visual condition as the most preferred performance experience ($n = 56$), while the incongruent visual condition was the least preferred performance experience ($n = 51$).

Table 9

Participants Selections of Most and Least Preferred Performance Experiences While Performing Etude "Noo"

		Least Preferred			Total
		No Visual	Congruent Visual	Incongruent Visual	
Most Preferred	No Visual	0	16	24	40
	Congruent Visual	29	0	27	56
	Incongruent Visual	9	11	0	20
Total		38	27	51	116

Research question four: *Will there be an effect of self-reported expressivity ratings when performing in the varied conditions (no visual, congruent visual, and incongruent visual) on participants' most and least preferred conditions?*

Etude "Doh" Performance Condition Preference

A mixed analysis ANOVA with two between-subjects factors (most preferred and least preferred) and one within-subjects factors (performance condition) was used to determine the effect of participants' expressivity ratings across performance conditions on most preferred and least preferred performance experience categories while performing etude "Doh." The Greenhouse-Geiser adjustment was applied to adjust the degrees of freedom because Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2 = .929$, $p < .05$. Results indicated significant differences in self-reported expressivity ratings within each most preferred condition, $F(3.74, 205.50) = 10.23$, $p < .001$, and least preferred condition, $F(3.74, 205.50) = 4.99$, $p < .002$. No significant "most preferred" x "least preferred" interaction was found $F(1.87, 205.50) = .854$, $p > .05$. Furthermore, no significant differences in self-reported expressivity ratings were found among the three categories of most preferred conditions, $F(2, 110) = .478$, $p > .05$, and least preferred conditions, $F(2, 110) = .022$, $p > .05$. An alpha level of .003 (.05/15) was used to reduce Type I error rate in the following post hoc tests.

Most Preferred. Three repeated-measures ANOVA's were conducted to investigate the effect of performance condition on self-reported expressivity ratings within each "most preferred" performance experience category (no visual, congruent visual, and incongruent visual). The first test indicated that there was a significant difference, $F(2, 44) = 8.85$, $p < .001$, in expressivity ratings among participants who most preferred the no visual condition.

Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity in the no visual condition versus the incongruent visual condition ($p < .001$). As shown in Table 11, no significant differences were found between the no visual and congruent visual conditions ($p > .003$), or the congruent visual and incongruent visual conditions ($p > .003$). Participants who most preferred the no visual performance condition assigned higher expressivity ratings of expressivity when performing in the no visual condition (See Table 10).

Table 10

Mean Expressivity Ratings by Most Preferred Performance Conditions when Performing Etude "Doh"

Preference	Visual Stimulus	*M*	*SD*
No Visual	No Visual	5.35	1.58
	Congruent Visual	4.57	1.59
	Incongruent Visual	3.96	1.58
Congruent Visual	No Visual	3.54	1.51
	Congruent Visual	5.57	1.46
	Incongruent Visual	4.18	1.71
Incongruent Visual	No Visual	3.43	1.43
	Congruent Visual	4.81	1.12
	Incongruent Visual	5.48	1.50

Table 11

Paired-Samples t Test Results for Self-Reported Expressivity Ratings Within Most Preferred Performance Conditions Categories when Performing Etude "Doh"

Preference	Visual Stimulus Comparison	*t*	Sig. (2-tailed)
No Visual	No Visual – Congruent Visual	2.44	> .003
	No Visual – Incongruent Visual	4.20	< .001
	Congruent Visual – Incongruent Visual	1.78	> .003
Congruent Visual	No Visual – Congruent Visual	-13.02	<.001
	No Visual – Incongruent Visual	-2.97	>.003
	Congruent Visual – Incongruent Visual	7.00	<.001
Incongruent Visual	No Visual – Congruent Visual	-4.54	< .001
	No Visual – Incongruent Visual	-5.21	<.001
	Congruent Visual – Incongruent Visual	-2.65	>.003

The second test indicated that there was a significant difference, $F(2, 142) = 58.70$, $p < .001$, in expressivity ratings among participants who most preferred the congruent visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity when experiencing the congruent visual condition compared with the no visual condition ($p < .001$) or the incongruent visual condition ($p < .001$). No significant difference was found between the no visual and incongruent visual conditions ($p > .003$). Participants who most preferred the congruent visual condition reported higher expressivity ratings when performing in the congruent visual condition (See Table 10).

The third test indicated that there was a significant difference, $F(2, 40) = 29.07$, $p < .001$, in expressivity ratings among participants who most preferred the incongruent visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity when performing in the incongruent visual compared to the no visual ($p < .001$) or the congruent visual condition compared with the no visual condition ($p < .001$). No significant difference was found between the congruent visual and incongruent

visual conditions ($p > .003$). Participants who most preferred the incongruent visual condition reported higher expressivity ratings when performing in the incongruent visual condition (See Table 10).

Least Preferred. Three repeated-measures ANOVA's were conducted to investigate the effect of performance condition on self-reported expressivity ratings within each "least preferred" performance experience category (no visual, congruent visual, and incongruent visual). The first test indicated that there was a significant difference, $F(2, 96) = 58.30$, $p < .001$, in expressivity ratings among participants who least preferred the no visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity in the congruent visual condition versus the no visual condition ($p < .001$), and the incongruent condition versus the no visual condition ($p < .001$). As shown in Table 13, no significant differences were found between the congruent visual and incongruent visual conditions ($p > .003$). Participants who least preferred the no visual performance condition assigned higher expressivity ratings of expressivity when performing in the congruent and incongruent visual conditions (See Table 12).

Table 12

Mean Expressivity Ratings by Least Preferred Performance Conditions when Performing Etude "Doh"

Least Preferred	Visual Stimulus	*M*	*SD*
No Visual	No Visual	3.12	1.47
	Congruent Visual	5.23	1.56
	Incongruent Visual	4.81	1.52
Congruent Visual	No Visual	4.73	1.74
	Congruent Visual	4.18	1.08
	Incongruent Visual	4.73	1.56
Incongruent Visual	No Visual	4.38	1.58
	Congruent Visual	5.45	1.43
	Incongruent Visual	3.91	1.82

Table 13

Paired-Samples t Test Results for Self-Reported Expressivity Ratings within Least Preferred Performance Conditions Categories when Performing Etude "Doh"

Least Preferred	Visual Stimulus Comparison	*t*	Sig. (2-tailed)
No Visual	No Visual – Congruent Visual	-10.27	< .001
	No Visual – Incongruent Visual	-7.81	< .001
	Congruent Visual – Incongruent Visual	2.07	> .003
Congruent Visual	No Visual – Congruent Visual	.919	> .003
	No Visual – Incongruent Visual	.000	> .003
	Congruent Visual – Incongruent Visual	-1.32	> .003
Incongruent Visual	No Visual – Congruent Visual	-4.96	< .001
	No Visual – Incongruent Visual	1.78	> .003
	Congruent Visual – Incongruent Visual	6.18	< .001

The second test indicated that there was not a significant difference, $F(2, 20) = .633$, $p > .05$, in expressivity ratings among participants who least preferred the congruent visual condition.

The third test indicated that there was a significant difference, $F(2, 110) = 21.09$, $p < .001$, in expressivity ratings among participants who least preferred the incongruent visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity when performing in the congruent visual condition versus the no visual condition ($p < .001$) and incongruent visual ($p < .001$). No significant difference was found between the no visual and incongruent visual conditions ($p > .003$). Participants who least preferred the incongruent visual condition reported higher expressivity ratings when performing in the congruent visual condition (See Table 12).

Etude "Noo" Performance Condition Preference

A mixed analysis ANOVA with two between-subjects factors (most preferred and least preferred) and one within-subjects factors (performance condition) was used to

determine the effect of participants' expressivity ratings across performance conditions on most preferred and least preferred performance experience categories while performing etude "Noo." Results indicated that there was a significant difference in self-reported expressivity ratings between the film visual performance conditions within each most preferred, $F(4, 220) = 16.75$, $p < .001$, and least preferred categories, $F(4, 220) = 17.50$, $p < .001$. No significant "most preferred" x "least preferred" interaction was found $F(2, 220) = .133$, $p > .05$. Furthermore, no significant difference in self-reported expressivity ratings were found between the three categories of most preferred, $F(2, 110) = 2.87$, $p > .05$, least preferred, $F(2, 110) = .457$, $p > .05$. An alpha level of .003 (.05/15) was used to reduce Type I error rate in the following post hoc tests.

Most Preferred. Three repeated-measures ANOVA's were conducted to investigate the effect of performance condition on self-reported expressivity ratings within each "most preferred" performance experience category (no visual, congruent visual, and incongruent visual). The first test indicated that there was a significant difference, $F(2, 78) = 29.80$, $p < .001$, in expressivity ratings among participants who most preferred the no visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity in the no visual condition versus the congruent visual condition ($p < .001$) and incongruent visual condition ($p < .001$). As shown in Table 15, no significant differences were found between the congruent visual and incongruent visual conditions ($p > .003$). Participants who most preferred the no visual performance condition assigned higher expressivity ratings of expressivity when performing in the no visual condition (See Table 14).

Table 14

Mean Expressivity Ratings by Most Preferred Performance Conditions When Performing Etude "Noo"

Preference	Visual Stimulus	*M*	*SD*
No Visual	No Visual	6.18	1.04
	Congruent Visual	5.23	1.31
	Incongruent Visual	4.53	1.26
Congruent Visual	No Visual	4.25	1.31
	Congruent Visual	5.93	1.04
	Incongruent Visual	4.21	1.45
Incongruent Visual	No Visual	4.45	1.15
	Congruent Visual	5.35	1.27
	Incongruent Visual	6.05	1.05

Table 15

Paired-Samples t Tests Calculating the Effect of Visual Stimuli on Self-Reported Expressivity Ratings within Performance Experience Preference Categories when Performing Etude "Noo"

Preference	Visual Stimulus Comparison	*t*	Sig. (2-tailed)
No Visual	No Visual – Congruent Visual	4.49	< .001
	No Visual – Incongruent Visual	8.20	< .001
	Congruent Visual – Incongruent Visual	3.05	> .003
Congruent Visual	No Visual – Congruent Visual	-12.65	<.001
	No Visual – Incongruent Visual	.189	>.003
	Congruent Visual – Incongruent Visual	11.42	<.001
Incongruent Visual	No Visual – Congruent Visual	-2.16	>.003
	No Visual – Incongruent Visual	-4.88	<.001
	Congruent Visual – Incongruent Visual	-1.97	>.003

The second test indicated that there was a significant difference, $F(2, 110) = 75.92$, $p < .001$, in expressivity ratings among participants who most preferred the congruent visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity when experiencing the congruent visual condition compared with the no visual condition ($p < .001$) or the incongruent visual condition ($p < .001$). No

significant difference was found between the no visual and incongruent visual conditions ($p > .003$). Participants who most preferred the congruent visual condition reported higher expressivity ratings when performing in the congruent visual condition (See Table 14).

The third test indicated that there was a significant difference, $F(2, 38) = 9.48$, $p < .001$, in expressivity ratings among participants who most preferred the incongruent visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity when performing in the incongruent visual compared to the no visual condition ($p < .001$). No significant differences were found between the no visual and congruent visual conditions ($p > .003$), or congruent film visual and incongruent film visual conditions ($p > .003$). Participants who most preferred the incongruent visual condition reported higher expressivity ratings when performing in the incongruent visual condition (See Table 14).

Least Preferred. Three repeated-measures ANOVA's were conducted to investigate the effect of performance condition on self-reported expressivity ratings within each "least preferred" performance experience category (no visual, congruent visual, and incongruent visual). The first test indicated that there was a significant difference, $F(2, 74) = 52.37$, $p < .001$, in expressivity ratings among participants who least preferred the no visual condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity in the congruent visual condition versus the no visual ($p < .001$) and incongruent visual condition ($p < .001$), and the incongruent visual versus the no visual condition ($p < .001$). Participants who least preferred the no visual performance condition assigned higher expressivity ratings of expressivity when performing in the congruent visual conditions (See Table 16).

Table 16

Mean Expressivity Ratings by Least Preferred Performance Conditions When Performing Etude "Noo"

Least Preferred	Visual Stimulus	*M*	*SD*
No Visual	No Visual	3.95	1.25
	Congruent Visual	5.92	1.10
	Incongruent Visual	5.03	1.46
Congruent Visual	No Visual	5.56	1.28
	Congruent Visual	4.49	1.28
	Incongruent Visual	5.41	1.34
Incongruent Visual	No Visual	5.37	1.39
	Congruent Visual	5.86	.98
	Incongruent Visual	3.94	1.30

Table 17

Paired-Samples t Tests Results for Self-Reported Expressivity Ratings Within Least Preferred Performance Condition Categories When Performing Etude "Noo"

Least Preferred	Visual Stimulus Comparison	*t*	Sig. (2-tailed)
No Visual	No Visual – Congruent Visual	-11.86	< .001
	No Visual – Incongruent Visual	2.05	< .001
	Congruent Visual – Incongruent Visual	4.32	< .001
Congruent Visual	No Visual – Congruent Visual	2.80	> .003
	No Visual – Incongruent Visual	.46	> .003
	Congruent Visual – Incongruent Visual	-2.99	> .003
Incongruent Visual	No Visual – Congruent Visual	-2.57	> .003
	No Visual – Incongruent Visual	7.28	< .001
	Congruent Visual – Incongruent Visual	15.03	< .001

The second test indicated that there was not a significant difference, $F(2, 52) = 5.49$, $p > .003$, in expressivity ratings among participants who least preferred the congruent visual condition.

The third test indicated that there was a significant difference, $F(2, 100) = 65.48$, $p < .001$, in expressivity ratings among participants who least preferred the incongruent visual

condition. Paired-samples *t* tests indicated that these participants reported a significantly higher rating for expressivity when performing in the congruent visual condition versus the incongruent visual condition ($p < .001$), and the no visual versus the incongruent visual ($p < .001$). No significant difference was found between the no visual and congruent visual conditions ($p > .003$). Participants who least preferred the incongruent visual condition reported higher expressivity ratings when performing in the congruent visual and no visual conditions (See Table 16).

Expressivity Ratings for Audio-Recorded Performances

Research question five: *Will participants' ratings of expressivity in audio-recorded performances differ as a function of the performance conditions?*

Participants' singing performances were audio-recorded. Following performances in all film visual conditions, participants listened to each set of audio-recorded performances and rated the expressivity as they heard it after each performance using an 8-point Likert-type scale (1 = least expressive, 8 = most expressive).

A repeated-measures ANOVA was conducted to compare expressivity ratings of audio-recorded performances of etude "Doh" across the three performance conditions. Results indicated significant differences in expressivity ratings as a function of performance condition, $F(2, 230) = 4.73$, $p < .05$. Paired-samples *t* tests concluded that performances in the congruent film visual condition were rated as being more expressive than incongruent condition performances ($p < .001$). No significant differences were found between performances in congruent versus no film visual conditions ($p > .003$), or performances in incongruent versus no film visual conditions (See Table 18). As indicated in Table 19, performances in the congruent film visual condition showed higher mean expressivity ratings

than incongruent and no film visual conditions. Performances in the no film visual conditions showed higher expressivity ratings than incongruent film visual conditions.

Table 18

Paired-Samples t Test Results for Effect of Performance Condition on Expressivity Ratings for Audio-Recorded Performances of Etude "Doh"

	t	Sig. (2-tailed)
No Visual – Congruent Visual	-2.03	> .003
No Visual – Incongruent Visual	1.06	> .003
Congruent Visual – Incongruent Visual	3.28	< .001

Table 19

Mean Expressivity Ratings of Audio-Recorded Performances of "Doh" by Performance Condition

	M	*SD*
No Visual	4.41	1.95
Congruent Visual	4.79	1.62
Incongruent Visual	4.17	1.56

A repeated-measures ANOVA was conducted to compare expressivity ratings of audio-recorded performances of etude "Noo" across the three performance conditions. Results indicated no significant difference in expressivity ratings as a function of performance condition, $F(2, 230) = .732$, $p > .05$. As indicated in Table 20, performance in the incongruent film visual condition had a slightly higher expressivity rating compared with performances in the congruent and no film visual conditions. Performances in the no film visual condition had a slightly higher expressivity rating than performances in the congruent film condition.

Table 20

Mean Expressivity Ratings of Audio-recorded Performances of "Noo" by Performance Condition

	M	*SD*
No Visual	4.76	1.27
Congruent Visual	4.66	1.66
Incongruent Visual	4.87	1.27

A repeated-measures ANOVA was conducted to investigate etude effect on expressivity ratings for audio-recorded performances across the three performance conditions. Results indicated a significant difference in ratings as a function of etudes, $F(5, 575) = 3.83$, $p < .001$. Follow-up paired-samples *t* tests indicated a significant difference between etudes for performances in the incongruent film visual conditions, $t(115) = -.359$, $p < .001$. Participants rated performances of the etude "Noo" as significantly more expressive than etude "Doh" while listening to performances influenced by the incongruent film visual condition (See Figure 3). No significant differences were found between etudes "Doh" and "Noo" while listening to performances influenced by the no film visual and congruent film visual conditions ($p > .05$).

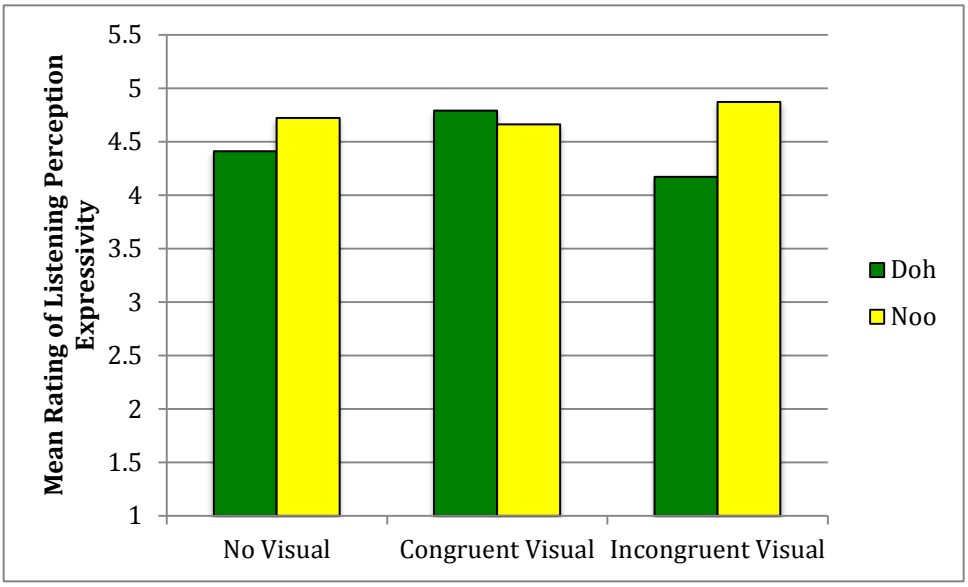


Figure 3. Mean Expressivity Ratings of Audio-Recorded Performances by Performance Condition and Etude.

Listening Perception Performance Preference

Research question six: *Will participants report a preference among the three audio-recorded performances?*

Participants reported their most preferred and least preferred audio-recorded performances after evaluating all three recordings separately. Two chi-square tests for each of the preference ratings (most preferred and least preferred) were performed to determine if there were significant differences in participants' listening perception expressivity ratings. Participants had the option to rate their most and least preferred performances between the no visual, congruent visual, or the incongruent visually influenced performances. These sets of chi-square tests were conducted twice, (1) Etude "Doh", and (2) Etude "Noo."

The tests for etude "Doh" indicated a significantly different response distribution for least preferred performances from audio-recorded playback, $\chi^2(2) = 17.81$, $p < .001$. Results (See Table 21) showed participants selected the performances influenced by the congruent

film visual condition as the most preferred listening performance (n = 47), while the performances influenced by the incongruent film visual condition were their least preferred (n = 58). No significant response distribution for most preferred performances were reported, $\chi^2(2) = 3.74$, $p < .05$.

Table 21

Most and Least Preferred Perceived Listening Performance of Etude "Doh"

		Least Preferred			
		No Visual	Congruent Visual	Incongruent Visual	Total
Most Preferred	No Visual	0	14	25	39
	Congruent Visual	14	0	33	47
	Incongruent Visual	23	7	0	30
Total		37	21	58	116

The tests for etude "Noo" indicated no significantly different response distribution for most preferred, $\chi^2(2) = .90$, $p > .05$, or least preferred, $\chi^2(2) = .48$, $p > .05$, performances from audio-recorded playback (See Table 22).

Table 22

Most and Least Preferred Perceived Listening Performance of Etude "Noo"

		Least Preferred			
		No Visual	Congruent Visual	Incongruent Visual	Total
Most Preferred	No Visual	0	15	19	34
	Congruent Visual	19	0	23	42
	Incongruent Visual	19	21	0	40
Total		38	36	42	116

Relationship Between Self-Report and Listening Perception Expressivity Ratings

Research question seven: *Will there be a relationship between singing participants' self-reported expressivity during performance and their ratings of expressivity for audio-recorded performances across all conditions?*

A series of nine Spearman *rho* correlation coefficient tests were conducted to investigate possible relationships between self-reported expressivity and expressivity ratings of audio-recorded performances of both etudes across all three conditions. Seven of the nine tests yielded significantly positive correlations (See Table 23). A moderate positive correlation was found in the self-reported rating for "Noo" in the congruent visual condition and the performances in the congruent film visual condition for "Noo," $rho(116) = .420$, $p < .001$, indicating a significant relationship between self-reported expressivity ratings and expressivity ratings for the audio-recorded performances within the same performance condition. No significant relationship was found for performances of etude "Noo" in the no visual condition, $rho(116) = .122$, $p > .05$.

Table 23

Correlations for Expressivity Ratings: Self-Reported Expressivity in Performance with Evaluations of Audio-Recorded Performance

	Visual Stimulus	Self-Reported Rating and Perceived Listening Rating
"Doh"	No Visual	.395**
	Congruent Visual	.243*
	Incongruent Visual	.384**
"Noo"	No Visual	.122
	Congruent Visual	.420**
	Incongruent Visual	.382**
Both Etudes Combined	No Visual	.269**
	Congruent Visual	.324**
	Incongruent Visual	.390**

**. Correlation is significant at the .001 level (2-tailed).
*. Correlation is significant at the .01 level (2-tailed).

Results – Phase Three: Choral Music Expert Judges' Evaluations of Expressivity in Audio-Recorded Performances

Research question eight: *Will choral expert judges' ratings of expressivity in audio-recorded performances differ as a function of the three performance conditions?*

Choral music experts listened to audio-recorded performances across the three the film visual conditions and rated the expressivity of each performance. Each judge listened to and rated either five or six sets of the 22 sets of performances. Two out of the eight judges rated each set of performances. The ratings for each visually influenced performance were averaged to calculate the mean ratings of expressivity for etudes "Doh" and "Noo."

Due to the small sample size of participant judges, data were not statistically treated or compared with singing participant responses. The descriptive results for etude "Doh" found a slightly higher expressivity rating for performances in the congruent film visual condition compared with performances in the incongruent and no film visual conditions (See Figure 4).

Participant judges indicated no noticeable difference between the performances in the congruent and no film visual conditions for etude "Noo" (See Figure 5). Performances generated in the incongruent film visual condition had a slightly lower expressivity rating compared with the other two performance conditions. The descriptive results show these expert judges heard little differentiation in expressivity among the three performances for both etudes.

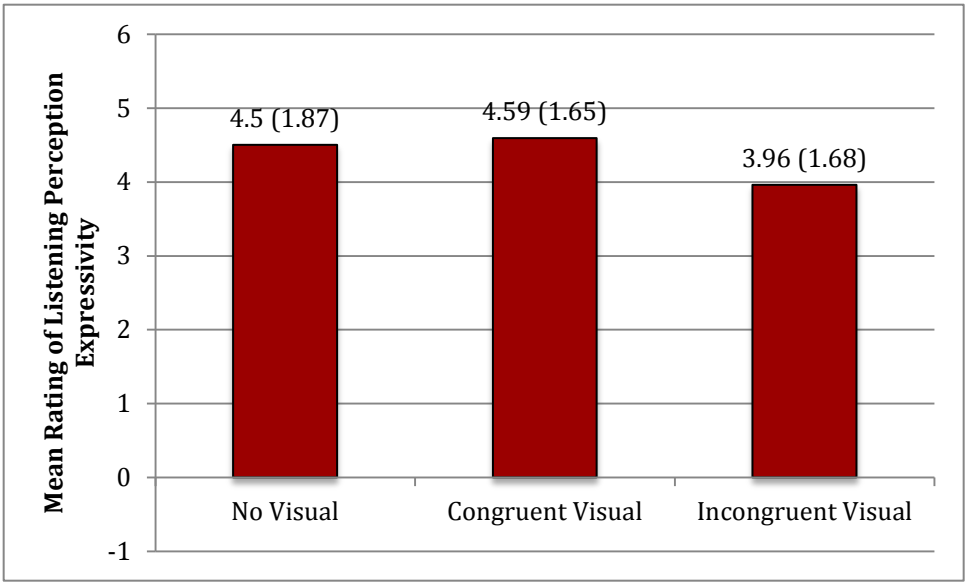


Figure 4. Choral Music Expert Judges' Mean Ratings of Expressivity in Audio-Recorded Performances by Performance Condition for Etude "Doh."

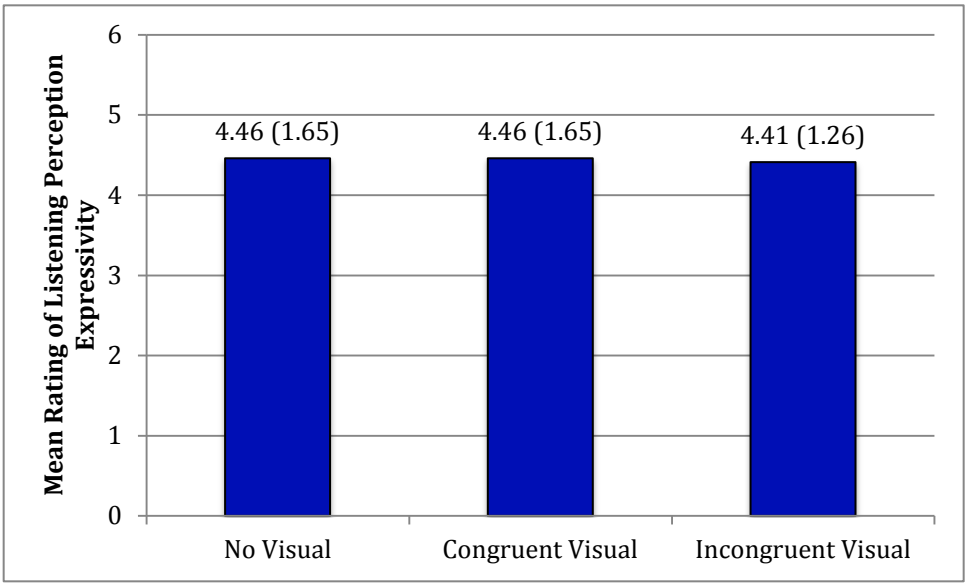


Figure 5. Choral Music Expert Judges' Mean Ratings of Expressivity in Audio-Recorded Performances by Performance Condition for Etude "Noo."

Choral Music Expert Judges' Preference

Research question nine: *Will choral expert judges report a preference among the audio-recorded performances across the three performance conditions?*

After rating expressivity of audio-recorded performances, judges reported their most and least preferred performances from the set. Some judges neglected to report preference for two sets of etude "Doh." In addition, one judge reported the same performance as both most preferred and least preferred for one set of etude "Doh" and one set of etude "Noo." Therefore, all four of these sets were eliminated from subsequent consideration. Due to the small sample size of participant judges, data were not statistically treated or compared with singing participant responses. The descriptive results indicate the performances in the no film visual condition for etude "Doh" were preferred over the performances in the congruent and incongruent film visual conditions. Performances in the incongruent film visual

condition for etude “Noo” were slightly preferred over performances in the congruent and no film visual conditions (See Tables 24 and 25).

Table 24

Choral Music Experts' Most and Least Preferred Audio-Recorded Performances of Etude “Doh”

		Least Preferred			Total
		No Visual	Congruent Visual	Incongruent Visual	
Most Preferred	No Visual	0	5	6	11
	Congruent Visual	3	0	1	4
	Incongruent Visual	1	3	0	4
Total		4	8	7	19

Table 25

Choral Music Experts' Most and Least Preferred Audio-Recorded Performances of Etude “Noo”

		Least Preferred			Total
		No Visual	Congruent Visual	Incongruent Visual	
Most Preferred	No Visual	0	1	4	5
	Congruent Visual	4	0	3	7
	Incongruent Visual	3	6	0	9
Total		7	7	7	21

CHAPTER 5

DISCUSSION

A growing body of empirical research has studied music's cognitive and psychological effect on the spectator's interpretation and perception of a film's narrative (Cohen, 2010). This research has stimulated questions about whether a film narrative can have an effect on spectators' cognitive (Boltz, Ebendorf, & Field, 2009) and emotional responses (Geringer, Cassidy, & Byo, 1996; Payri, 2009) to the music accompanying the film. These recent studies further support theories by filmmakers, critics, and scholars as it relates to the relationships between film and music. However, little is known about how a projected film visual could affect the performance of musicians responding simultaneously while viewing projected film visuals. The current study proposed to explore and present this area of research in order to contribute interdisciplinary ideas and approaches to filmmaking, rehearsal techniques and methods in music education, and composition and performance practice. Although the music used as part of this study could be perceived as non-diegetic film music, the setting of music could also be labeled as intra-diegetic where the non-diegetic music is being influenced by the narrative through time and space (Winters, 2010). Ultimately, the practice of performing music simultaneously in response to the projected film allowed performers to contribute to the filmic universe of the medium of film (Frampton, 2006).

The primary purpose of this study was to investigate the effects of congruent and incongruent projected film visuals on the expressivity of choral performance. In addition to studying the effects of visual congruency, participants also experienced a third performance condition with the absence of a projected film visual. Singing participants for the main study

were undergraduate and graduate university choir ensemble students from four choirs. Two forms of data were collected in measuring the level of expressivity in this study, (1) self-reported individualized expressivity ratings immediately following each performance and (2) listening evaluations of the expressivity heard in audio-recorded playbacks of each performance. Of additional interest were participants' preferences for varied performance experiences and preferences for audio-recorded performances.

Self-Reported Expressivity

Results indicated a main effect for performance conditions on self-reported expressivity ratings. Participants reported a significantly higher level of expressivity when performing in the congruent visual condition for both etudes. Interestingly, participants self-reported individual expressivity next highest during the incongruent visual condition while performing etude "Doh." When performing etude "Noo," the second highest expressivity rating was during the no visual performance condition suggesting either etude or an etude/performance condition relationship as an influential factor.

High expressivity ratings while performing music congruent with the film visual supports the theory that *cultural* and *cinematic codes*, familiar to American spectators, can have an effect on audiences' interpretation and response to the film narrative (Gorbman, 1987, Tagg, 1989). Due to the consistent filmmaking practice of incorporating congruency between sound and film to quickly and efficiently communicate to an audience, spectators naturally gravitate toward congruent relationships between music and film's visual (Tan, Spackman, & Wakefield, 2008). Based on performers' *cultural* and *cinematic codes* developed through past film experiences, it stands to reason that performers would be

inclined to rate their own expressivity higher when performing with a congruent film visual versus an incongruent film visual.

In the present study, data were generated by performing participants in response to visual stimuli. These results relate to Lipscomb and Kendall's (1994) overall notion that any music, regardless of congruency, can effect a viewer's interpretation of a film's visual. Results from the present study suggest that any projected film visual, regardless of congruency, may influence a music performer's perception of self-expressivity when performing the music simultaneously with the viewing of the film visual. Due to the significant variation in self-reported expressivity data between the three visual conditions in the current study, it could be assumed that the exposure of a film visual could have some measurable effect on an individual's self-interpreted rating of expressivity. These findings concur with previous research (Geringer et al.,1996) indicating an emotional enhancement to the music as perceived by the participant while viewing an animated video compared to listening to the audio alone. Similar to the perception of the viewer, the current study reaffirms that the film visual can also have an effect on the perception of the music performer.

When investigating the self-reported expressivity rating relationship between the two etudes, a significant correlation was discovered. Although participants reported a significantly higher rating under the no visual condition while performing etude "Noo" compared to etude "Doh," the significant correlation for all three visual conditions between the two etudes suggest a relative relationship. In general, etude "Noo" had a higher self-reported rating compared to etude "Doh." This indicates that various compositional factors could have contributed to the intrinsic perception of self-reported expressivity (Kendall &

Carterette, 1990). Although the symbolic and physical instructions of a notated score can be a resource of how to express the music (De Poli, 2004), it is unclear how a performer interprets these symbolic and physical instructions when delivering an expressive performance (Gabrielsson & Juslin, 1996).

With the etudes "Doh" and "Noo," compositional efforts were considered with regard to ensemble musicianship, tempo and mood congruency with the film, and opportunities for musical deviations contrasting in dynamics (Palmer, 1989), tempo (Friberg and Sundberg, 1999), and articulation (Juslin, 2001). In addition, interpretive expressive gestures could have been inspired by varied intervals, chromaticism, and dissonance/resolution factors in chord progressions (Bigand, Parncutt, & Lerdahl, 1996; Friberg, 1991). It was assumed that the collection of symbolic instructions, compositional framework, and performers' interpretation for etude "Noo" allowed for more intrinsically expressive opportunities among the singing participants. Perhaps the larger intervals, fermata (Friberg, Colombo, Frydén, & Sundberg, 2000), harmonic and melodic dissonance extended in length of time (Friberg, 1991), and the exchange of melody between multiple parts (Palmer, 1989) could have been compositional factors that prompted higher self-reported expressivity ratings for etude "Noo." Regardless, it seems inappropriate to measure specific factors in determining the cause for the contrast between the two etudes for this study due to the personal subjectivity that arises when determining expressivity (Juslin, 2003; Sloboda, 1996).

Self-Reported Preference

Results indicated that participants preferred the visually congruent performance experience the most for both etudes compared with no visual and incongruent visual performance experiences. Furthermore, participants reported the visually incongruent

performance experience to be the least preferred performance experience for both etudes. It is possible that when congruency between music and film occurred, an concomitant increase in preference for the overall performance experience occurred. While no known research exists studying preference of congruency between film and music, these responses could have been triggered by the *cultural* and *cinematic* codes previously cited (Gorbman, 1987, Tagg, 1989). Although certain situations can arise when an incongruent relationship between film and music may elicit a specific interpretive or intense response to the narrative of the visual (Tan, Spackman, & Wakefield, 2008), the current study suggests that singing performers prefer to interact with a film visual congruent with the music being performed.

Developmental psychologist Howard Gardner (1993) states that individuals possess different learning styles and approaches when absorbing, retaining, and applying information. When dividing participants into three groups dependent on their most preferred performance experience (no visual, congruent visual, and incongruent visual), participants' highest significant expressivity rating corresponded with their most preferred performance experience for both etudes. For example, participants who preferred the no visual performance experience reported the highest individual expressivity rating while experiencing the no visual condition. Similar relationships between the self-reported expressivity rating and the most preferred performance rating occurred for the congruent and incongruent film visual conditions. Therefore, it could be assumed that the preference between film visual conditions could be an indicator of one's strength in learning style; thus, a stronger preference in this mode of learning and experiencing occurs. In keeping with Gardner's theory of multiple intelligences, it could be understood why visual learners would feel more expressive in a performance involving film visuals, while other non-visual learners

(e.g. intrapersonal, verbal/linguistic) may feel more expressive in a performance involving the no visual condition.

Listening Perception Expressivity

Although significant differences in self-reported expressivity were discovered among the three visual conditions for both etudes, when participants listened to the audio-recorded performances, similar results were found only during performances of etude “Doh.” Listening participants considered performances in the congruent film visual condition to be more expressive than the performances in the incongruent and no film visual conditions. Correlation coefficient tests also indicated significant relationships between self-reported and listening expressivity ratings for etude “Doh.” These results for etude “Doh” could reaffirm the results of participants’ self-reported expressivity rating, indicating that the congruent film visual condition could have an improved impact on the aural expressivity of the music performance.

However, for etude “Noo”, no significant differences were discovered among the visually influenced performances. In fact, the mean expressivity ratings in etude "Noo" were slightly higher for performances in the incongruent and no film visual conditions while the performances in the congruent film visual conditions had the lowest mean expressivity ratings. Etude “Noo” may have offered the participant the opportunity to feel more expressive during the congruent visual condition, but the listening perception outcome realized no difference. Since etude “Doh” did result in a perceived difference in listening expressivity among the three visual stimuli, further research should be conducted on the interaction between various musical and visual elements when measuring perceived listening expressivity of visually influenced performances.

Discrepancy Between Self-Expression and Listening Evaluation Ratings

The discrepancy when comparing self-reported results to listening evaluation results could be a function of other factors. First, the visual presentation alone could have manipulated the performers' perception of individualized expression following each performance during Phase One of self-reporting expressivity. Recent research has discovered similar results when measuring participants' perception of tension and mood in music while simultaneously viewing projected film visuals (Payri, 2009). Payri's results indicated significant variations in perception of music's tension and liveliness as a function of the tension and liveliness of the film visual compared to an audio-alone stimulus. Therefore, the film visual condition could possibly have an effect on a performer's perception of individual performance without having a significant effect on the expressivity of the performance as a whole.

This discrepancy in the results could also be related to Cohen's (2010) Congruence-Associationist Model (C-A M). During the second phase of the current study, participants rated their individual performance expressivity greater when viewing the congruent film visuals. The exposure of the visual surface (film) and its contents assimilated into the top-down processes of the D domain, based on *cultural* and *cinematic* codes, showed an effect on the working narrative of the C domain as evidenced by the significant differences in perceived individual expressivityamong the three film visual conditions. It could be suggested that the perceptional grouping of visual and music sensory channels influenced participants' conscious response to individual expressivity. Disregarding the results for etude "Doh," the calculated data for etude "Noo's" performance experiences may be insufficient when measuring expressivity holistically. During the self-reporting phase of the study, the

film visual's effect on the brain to encode and decode multiple sensory information prior to processing within the working narrative of the C domain could have been "tricking" the brain into consciously perceiving a highly expressive performance during the congruent performing experience for etude "Noo." Instead, no perceivable difference in expression was noticed upon listening to the audio-recording of the performances. It would be interesting to have future participants listen to the performances while simultaneously viewing the same film visual as experienced during the original performances to see if the reported expressivity perception would differ with the self-reporting results. Overall, the current findings could contribute another perspective to Cohen's Congruence-Associationist Model from a performer's perspective.

During playback of the performances, participants listened only to the performance itself without the inclusion of a visual element. During self-reporting of individual expression, the interpretation of expressivity could have accounted for the acoustical music factors in addition to the visual/physical factors of participants' intrinsic perception of individualized performance. Since the visual elements of a performer's performance has been suggested as a primary indicator on perceiving expressivity from an audiences' perspective (Davidson, 1993), it is worth noting that participants could have been including their physical gestures such as facial expression (Aho, 2009) and body movement (Davidson, 1997; Thompson, Graham, & Russo, 2005) when referring to self-reported individual expressivity. A separate panel of eight choral judges, who rated the expressivity as they heard it during the audio-recorded playback, reported little difference among the three visually influenced performances. Moreover, judges commented that a need to see the performers perform could have could have supplied a better opportunity to reliably rate the

expressivity of the performances. This adjudicator expectation, that the visual representation of the performance can influence the perceived expressivity of a performance, seems to be a cultural phenomenon in defining and experiencing an expressive performance for both the performer and listener (McPherson & Schubert, 2004). By measuring expressivity in both audio and video-recorded playback, a more holistic approach to retrieving performance expressivity could be attained with enhanced reliability.

Another factor in reasoning the discrepancy between self-report and listening perception expressivity ratings could be consideration of the environment in which the performers performed. All participants were enrolled in a university choir where many of the students' studies may emphasize a more formal and cerebral approach to learning through the music theory, history, and technique. Based on differing missions and philosophies of other choir ensembles, it is possible that other ensembles could philosophically define or approach the expressive interpretation of the choral etudes differently than a university choir ensemble. For instance, a choir ensemble with the mission of building upon the identity and self-concept through music rather than focus on various academic musical factors could affect the manner in which a singer prioritizes and performs expressivity (Mills, 2008). It is suggested that similar studies exploring choir populations with an overall diverse philosophy and approach to performing music investigating projected film visual's effect on expressivity in choir performances could add depth to the research.

The methods and pedagogical approaches during the rehearsal process influence the degree of expressivity produced by an ensemble. Opportunities to experience the rehearsal process of a choral piece from an holistic, Macro-Micro approach compared to the Micro-Macro approach within high school choir rehearsals (Ganschow, 2012) is an example of

varied opportunities interpreting music expressively across ability and experience levels. To minimize rehearsal method bias during the rehearsal process among participating choirs in the current study, singers were instructed to base interpretation on the musical notation. Future studies could explore varied rehearsal methods and pedagogical strategies during the rehearsal process prior to Phase Two in an attempt to prepare singers to comfortably sing expressively in response to a film visual. Studies should investigate self-reported expressivity responses of differing ability level, age, gender, social status, and cultural identity among elementary, secondary, community, church, intergenerational, and extra-curricular choir ensemble performances as heard by audiences. (Balkwill, Thompson, & Matsunage, 2004; Davis, et al., 2012; Meerrum-Terwogt & Grinsven, 1991). Studying these populations in the context of solo performance (Ternström & Kalin, 2007) and within multiple acoustical environments (Daughtery, 1999: Zabriskie, 2011) are other variables that should be observed and considered.

Since the lyric of a vocal work is often central to delivering an expressive performance among singers, the etudes' elimination of lyrics in the current study may have affected the perceived internal and external expressivity of the performance. In addition, the elimination of discussion or instruction about intrapersonal meaning or expressive interpretation during the process of rehearsing the two etudes could have impacted the expressivity of performances. Further, the immediacy of stepping into a room other than the rehearsal room, and the act of performing while simultaneously viewing various film segments could have influenced participants' ability to comfortably create an audibly expressive performance.

Although the choral expert judges' ratings were not treated statistically due to a small sample size, judges were informally interviewed about the study process. They indicated that it was difficult to determine a greater difference among the three visually influenced performances. A relationship seemed present between singer and expert judges' listening evaluation responses with a slight elevation in expressivity ratings for the performances in the congruent film visual condition of etude "Doh." There were few differences evident in judges' ratings among visually influenced performances for etude "Noo." A separate study could collect data from a larger sample of choral music expert judges to investigate differences among visually influenced performances for etude "Doh." Based on past research suggesting little difference in perception of performance expressivity as a function of spectator's, age, gender, and experience (Hevner, 1936; Meerrum-Terwogt & Grinsven, 1991), and considering a possible relationship between singers' and expert judges' ratings of of expressivity, such a study has merit. However, results also indicate that depending on the etude and the mechanical structure and semantic information within the narrative of a film, variations in performance expressivity could be imperceptible by an audience. Regardless, due to the subjective nature of perceived expressivity and other research discovering differences between participants' interpretation of emotion in music based on gender, race, and culture (Davis, et. al, 2012; Gabrielsson & Juslin, 1996; Juslin, 2003; Sloboda, 1996), attempts should be made to focus future studies to isolate these variables.

Listening Evaluation Preference

In most cases, statistical examination did not result in significantly different preference choices among the performance conditions in either etude. One exception was that singing participants reported that performances in the incongruent film visual condition

for etude “Doh” were the least preferred audio-recorded performance. This suggests that a film visual incongruently associated with certain music could yield a non-preferred product. While not statistically significant, most preferred performances were performances in the congruent film visual conditions for both etudes. It would seem that the presence of a congruent film visual during a performance does not diminish the listener's preference. By contrast, the small panel of expert judges reported most preferred performances as those in the no film visual conditions of etude “Doh” and in the incongruent film visual conditions of etude “Noo.” Expert judges noted other factors such as intonation, accuracy, blend, balance, diction, and tone quality as influences in their preference decisions. In fact, two of the eight judges commented that intonation problems in some performances distracted them from focusing on the expressivity of the performance. Interestingly, the expert judges’ focus on intonation is consistent with previous research citing intonation as a key element for adjudicators when judging choral performance (Stutheit, 1994). Results of the current study suggest that singing participants and expert judges may have applied different evaluative hierarchies to determine preference among performances. Other research has found one’s preference of music to be influenced by past experiences through familiarity (Fung, 1996), maturation (LeBlanc, 1982), or one’s ‘open-earedness’ tolerance (Hargreaves, 1982). Further investigation in this area seems warranted. These studies may consider application of other modes and tools for collecting data such as the incorporation of a detailed survey tool such as Broomhead’s (2001) Expressive Performance Achievement Measure (EPAM) survey or a continuous data collecting method that could accept more than one line of data simultaneously such as the 2D CRDI technology (Geringer, Madsen, & Gregory, 2004) in order to measure multiple music factors leading to a preference decision.

Relationship and Interaction of Film and Music

Film Segment 1 from *Koyaanisqatsi* and Film Segment 2 from *Oceans* were chosen for this study based on both similarities and differences. Both represent the documentary style of filmmaking and did not need a narrative plot explanation for a participant to understand what they were viewing. Each shot had a smooth transition to next shot, characteristic of mimicking the human mind and viewer's conception of reality (Arnheim, 1957; Fischer, 1999; Gerbner, Gross, Morgan, & Signorielli, 1980). In addition, both films were shot at relatively the same camera angle and were both in color as compared to black and white. For this study, what made each film differ in congruency when accompanied by music were the films' mechanical manipulation in tempo and color, and the narrative content and environment of the visual. Film Segment 1 consisted of people walking in an urban downtown subway station with a hint of discoloration to the overall tint of the visual. The filmmakers manipulated the film's tempo, offering an unnatural fast pace to the visual motion. Film Segment 2 depicted dolphins dashing out of the crashing waves of the ocean in slow motion. The overall color of the visual tended to have a brighter emphasis to the color blue. Therefore, the elements of the films could be considered contrasting in visual tempo (fast vs. slow), color (diminished vs. emboldened), narrative objects (people vs. animals), and narrative environment (urban city vs. nature).

Participants reported a higher mean rating of self-reported expressivity under the Film Segment 2 condition during the congruent etude. This response could be influenced by the film segment's emboldened colors. As theorists (Zettl, 1990) and researchers (Garcia & Stark, 1991; Detenber, Simons, & Reiss, 2000) suggest color to have a strong impact on emotional reaction, the current finds may support the notion that the emboldened colors of

Film Segment 2 engaged participants' intrinsic sense of self-expressivity compared with the discoloration of Film Segment 1. Another possible cause for the heighten level of self-reported expression during the performance of etude "Noo" under the congruent film visual condition could have been related to the slow motion mechanical effect of the segment. As an attempt to gravitate an audience emotionally, theorists and critics have noted the slow motion effect to immerse a spectator in time of the action. This, they suggest, may emotionally intensifying the interpretation of the scene (Price, 1998). The elevated self-reported results during Film Segment 2 support these theories.

The combination of the film visual's tempo, color, and the semantic objects and environments depicted in the films could have stimulated a particular valence or arousal for the participants. (Detender & Simmons, 1998). The valence and arousal, often calculating perceived emotional tension, could be another element to be considered, albeit somewhat ephemeral and difficult to quantify. Due to the jerky and jagged representation of people walking at an unusually fast pace, Film Segment 1 could be interpreted as a stressful, anxious, and unpredictable environment. These particular moods could have been the main influential element in participants' expressivity responses compared to the lush and majestic visual depicted in the slow motion scene of dolphins catapulting out of the ocean's water in Film Segment 2.

Studies incorporating the use of projected film visuals should pay careful attention to the various mechanical and semantic elements of this form of stimuli. Film often depends on the viewer to perceive, interpret, and process as much information in gathering a coherent understanding of what the film is offering in time (Neisser, 1967). Continued exploration into the projected film visual's effect on performance expressivity should consider

substituting other mechanical and semantic elements of film. For instance, it would be interesting to study the effects of moving images captured at different distances and angles (Dmytryk, 1984; Kuleshov, 1987). In an attempt to explore Zettl's theory of color's ability to extinguish emotion from certain intimate scenes, further research could contribute to monochrome film visual's influence on performance expressivity. Furthermore, familiarity in both the film and objects/characters from films other than documentaries could be of particular interest for further exploration. Even the use of abstract reality and animated films encapsulated with continuity errors used in such a study could offer other perspectives on the film visual's influence (Levin & Simons, 1997). Moreover, the inclusion of the aural dialogue and sound effects from the narrative's diegesis could be one more sensory variable to consider when presenting a film visual stimulus to performers.

While film was the focused stimulus in the current study, other on-screen moving images could be considered. In addition to the device in which the visual is being projected, differing frame rates that occur in replicating the visual images within television, film, and videos are other variables from a projected visual moving image that should not be ignored.

Music's Function in Film

Considerable empirical research is yet to be conducted in the field of film music. The current study's treatment of the non-diegetic music was intended to function as a non-accented narrative cue to the images. Based on the relationship between the film segment and music performed, the music could be considered congruent or incongruent to the film. In some cases, through the phenomenon of *synchresis*, the incongruent performance could function anempathetically, causing a higher degree of emotional impact based on the interaction of the contrasting art forms (Chion, 1994). Based on the lower mean ratings of

self-reported expressivity reported, it is considered that an anempathetic relationship did not occur during the incongruent performances. Interestingly, singing participants reported higher levels of overall expressivity when listening to audio-recorded playback of etude "Noo" performances in the incongruent film visual condition compared with the "Doh" performances in the incongruent film visual condition. This may suggest that certain influential aspects of Film Segment 1 (*Koyaanisqatsi*) and/or Etude "Noo" could have directed the listener to a higher-level expressivity in the performance. For instance, the fast visual tempo of Film Segment 1 could have instigated a visual internal subdivision, often internalized by singers to rhythmically synchronize and establish contour in phrasing for longer, legato passages in choral performance. The visual exposure of various accents of the visual moving faster than the metered beats of etude "Noo" could have given the singers the illusive support to sing with an added contour of expressivity, similar to having singers feel the subdivision underneath the longer, legato passages. Further studies are needed to explore in more depth these incongruent relationships between the visual stimuli and performer.

Filmmakers, scholars, critics, composers, and researchers have cast multiple functions on music in film. Future studies, similar to the current one, should explore music's impact on performance expressivity. Multiple considerations seem worthy of study, including time/geographic location/culture, unity, communication of unspoken thoughts, focus brought towards the semantics of the narrative, narrative accent cueing, emotional tension, genre, and fusing the diegetic and non-diegetic worlds of the film narrative (Brown, 1994; Gorbman, 1987; Kalinak, 1992; Karlin, 1994; Prendergast, 1992, Timm, 2003). Participants in the current study were American university students, already acculturated with certain biases towards these multiple functions of music in film. It would be interesting to conduct similar

research with participants who do not have the same familiarity with American filmmaking and music's multiple functions within the consumption of film (Tagg, 2006). Based on film music's need to be immediately recognizable in order to expressively emote what the narrative is trying to communicate (Karlin, 1994), it is surprising that there wasn't a larger difference in perceived listening expressivity among the three visual performance conditions for both etudes. University student participants may have responded differently if the music had depended on a *pure musical code* in relation to the film segments instead of a *cultural* or *cinematic code*. It could be that the university choir participants find more success in producing a perceptually expressive performance in response to traditional methods including a conductor's physical gesture. However, in a traditional university music curriculum, a course studying music and film is a rare offering (Walker, 2012). Perhaps the reason for an insignificant perceptual response in expressivity could be due to the infrequency of film music courses offering students formal training and practice on how music functions in film. In this case, students would be less able to fully understand how music can formally function emotionally and expressively in the context of a film. In a world of "rapidly changing priorities" some believe that the current college music curriculum is outdated in the way music is experienced and practiced in society (Kratus, 2007, p. 43). Therefore, by allowing music students from all areas of music the opportunity to take courses in film/multimedia music, students will develop a better understanding, skill, and appreciation of how music functions with the moving image through all three film music codes (Gorbman, 1987).

In relation to the visual of film, further studies similar to the current study should investigate altering etudes contrasting in style, genre, form, voicing, and instrumentation.

Since the current study had singers perform without instrumental accompaniment, it would be interesting to see if the inclusion of instruments could influence the singers' response when viewing the film visuals. Using further investigations, it would be interesting to discover whether any contrasting results could be found between self-reporting and physiological measurement tools as indicated in previous studies (Detenber & Simmons, 1998).

Limitations

Five 10-minute rehearsals were used to prepare for Phase Two of the study. The goal was to present students with an authentic, yet unbiased rehearsal where students would experience only basic rehearsal techniques while being asked to focus on interpreting the written notation symbols and instructions to achieve a masterful and memorized performance. The current study used only a short amount of time (two-week period) to prepare singers to perform the two etudes from memory, future studies may look to other pedagogical methods or add more rehearsal time. Although the participants for this study ultimately performed both etudes from memory as a whole choir by the fifth rehearsal, more rehearsal time would have allowed for singers to rehearse the etudes within smaller chamber ensembles, rehearsing in the size of the performance ensemble during the second phase of the study. The experience of performing the two etudes in a smaller chamber ensemble for the first time during the actual study procedure may have influenced anxiety or reservation. This may have influenced individual and ensemble spontaneous response to the visual stimuli during performance in comparison to achieving confidence when performing with the choir as a whole. Due to the imperfections of all choir rehearsals, other studies have often reported the need for more time in preparing a music ensemble for a music performance study

(Vasconcellos, 2002). In this study, no singing participant comments expressed concerns about being underprepared for the performance.

Future studies may want to extend the length of time in both the etudes and film segments in order to give singing participants the opportunity to immerse themselves into the performance. Due to the short time length of the etudes and film segments, duration could have had an effect on the expressivity of the performance. By allowing participants the opportunity to experience the film segment at least once without performing, the familiarity of the film's narrative alone could have a major influence on both the individual and the expressivity of the performance. The structure of the newly composed etudes could be an issue for debate. There may not have been enough opportunities to deviate from the musical notation in a manner that could be expressively interpreted. Also, one could argue that an extended length in time would allow the performer time to further develop a deviation scheme to create an expressive performance. Previous research exploring the effect on pain perception of film type and film length to induce mood to counter participant pain, discovered an increase in pain tolerance for the longer lengthened films (Weisenberg, Raz, & Hener, 1998). It seems plausible that participants immersed in a film for a longer length in time could strengthen the immersive attentiveness to the emotional and semantic information communicated from the film. Also, exposure to a film visual or etude with a longer extension in time could yield more reliable results concerning choral performance's aural expressivity as a function of the film visual.

In selecting the two contrasting film segments for this study, the mechanical structure of the film (i.e. editing, color and hue, movement tempo) and objects captured on the film took precedence over the semantic information of the narrative. Whether studying the

mechanics or narrative content from film, many studies have measured the effect of these variables through the perceived emotion of the spectator (Bradley, Codispoti, Cuthbert, & Lang, 2001; Detenber, Simons, & Reese, 2000). Using a two dimensional approach, emotion has been gauged by arousal (excited/energized vs. calm/peaceful) and hedonic valence (postive/pleasant vs. negative/unpleasant) (Lang, 1995; Osgood, Suci, & Tannenbaum, 1957). While the mechanical structure can contribute to the emotional effect of a film's narrative content, further studies should incorporate film visual stimuli contrasting in the arousal and valence dimensional approaches when measuring music performance expressivity.

Implications

Music Performance and Recording Practices for Filmmakers

A film director's main purpose is to direct the team of other filmmakers (i.e. actors, cinematographers, editors, costume designers, music composers) to shape the overall artistic vision of the film. Through this direction, directors will often allow filmmakers the creative freedom in their specialized areas to contribute to the artistic vision of the film work (Coleman, 2012b). The music performer's expressive responses in the current study suggest ways should be found for the performing musicians can respond intrinsically to the film image in place of the communicative gestures of a conductor during the music recording process in studio. Obviously, meticulous and accurate timing to a single frame is essential when synchronizing music to film. Moreover, the absence of a conductor to conduct a massive collection of musicians could be catastrophic, and conflict could arise in expressive interpretation among the varied performers. Such an approach in capturing music for a film would be impossible since many of the performers are sight-reading the extant amount of

music for a film score during the recording process. The effect of expressive response while viewing the film could be enhanced if the performers were familiar with the music to the extent of performing the music from memory. However, by asking musicians in a large ensemble to practice and memorize the music prior to performing could be detrimental to the music quality and accuracy of the performance within the filmmaking time frame.

Under unique circumstances, a film director or composer may choose other ways to include the performing musicians in the filmmaking process by having them interact with the film visual in producing an intrinsically expressive performance. For instance, a projection of the film in close proximity to the conductor or presenting the performers with a viewing of the film segment prior to performing each cue could be viable options. By separating a full performing ensemble into groupings of instruments, interpretation conflicts that could occur within a large ensemble setting could be reduced through an isolated recording process of overdubbing with audible click tracks. Nevertheless, depending on the performer, compositional elements of composed music, and various mechanical and semantic elements of a film, filmmakers may choose a more ideal circumstance of using this approach for solo instrument or small ensemble scores. Future research should investigate the effect of projected film visual's on the self-reporting and listening perception of solo performances for both voice and instruments.

With regards to the congruency relationship between the film and performing music, caution is recommended before presenting musicians with a film that relates incongruently with the performing music. Although an incongruent, or anempatheic relationship between film and music could contribute to a perceptual sensation of irony or tension to the film's narrative as interpreted by a spectator, often times it is the sincerity of the music's expressive

performance that further alienates it from the incongruent film in a juxtaposed fashion; thus, adding to the appropriate irony or tension to the narrative (Chion, 1994; Karlin, 1994). Based on the current study's results, the process of having performers view a film segment while performing an incongruent music cue could result towards an expressively empathetic relationship for some musicians. This may diminish the anempathetic impact between film and music for the spectator. It is also possible that some musicians may inherently gravitate towards an intensive sense of irony or tension when exposed to an incongruent film visual. As the results indicated, while the performers did not feel more expressive when performing an etude with an incongruent relationship to the film shown during the performance, certain performances (Etude "Noo") in the incongruent film visual condition were perceived as being more expressive when listening to the audio-recorded playback of the performance compared to other performances in the incongruent film visual conditions (Etude "Doh"). Filmmakers should account for the types of musicians and how they respond to varying modes of visual stimuli before deciding on a performance approach to a film score.

Choral Music Education Pedagogical Practices and Curriculum Design

Both the methods used and the results of the current study have interdisciplinary implications to music education and curriculum design. As choral music education continues to find success in reaching multiple learners through the use of varied pedagogical techniques such as the use of kinesthetics, metaphors, and guided imagery in rehearsal settings at all levels (Bailey, 2007; Broomhead, 2006; Sheldon, 2004; Woody, 2002, 2006a, 2006b), music educators continue to seek other methods for learners to develop the skills and understanding of content with more relevancy. Although the current study did not expose participants to the various projected film visual segments during the process of rehearsing the two etudes, it is

suggested that the implementation of presenting a projected film visual as a relevant 'extramusical' pedagogical tool could assist in the expressivity of a choral musicians' performance. Therefore, this approach could be an effective and viable option for student musicians to gain a deeper understanding of expressivity through another mode of 'extramusical' approaches (Sloboda, 1996).

The immediacy of experiencing the projected film presented to singers without any prior information regarding content, structure, mood, or expressivity was indicated as a limitation to the study. However, significant differences among the three visual conditions on self-reported individual expressivity suggest that if performers feel they are performing with more expression when viewing the congruent visual, they may be more prone to produce a more expressive performance. This pedagogical approach could be effective for performers who are visual learners. For instance, a student who struggles in understanding and relating poetry for a particular choral work because of limitations in verbal/linguistic learning may benefit from use of a visual stimulus. The addition of a projected film visual related to the music and text may assist this student in drawing transfers and associations between the text of the music in a manner they can understand, retain, and apply to their music making experiences.

One goal for teaching expression should be to provide music students with the skills and experiences to understand, develop, and perform an appropriately expressive performance without the influence of instruction (Broomhead, 2009; Juslin, Friberg, Schoonderwaldt, & Karlsson, 2004). To guide music students toward this outcome, educators must strategically implement opportunities for music students to receive informative feedback from both the instructor and classmates, encouraging them to self-

initiate discussion regarding relationships between self-expressivity and aspects transferred from life experiences. As the current study's results indicated, although singers felt they were singing more expressively while viewing the congruent film visuals, it was difficult for the students to hear a difference in the expressivity of the performance during audio-recorded playback. The teacher must carefully implement various opportunities for the students to verbalize, synthesize, and evaluate specific moments or objects in the film in association with specific music factors and performance trials to develop their interpretation of the music. The music instructor should act as a facilitator in the classroom by allowing students to contribute to the learning experience. For example, students could be asked to perform a musical figure that crescendos toward a fermata rest in association with a film segment projecting an ocean wave crashing into another wave with no other instruction beyond singing in response to the film visual. Besides instructing students to crescendo in synchronization with the wave, an instructor may ask students to contribute words that describe the wave and its impact within the film's narrative. Some students may describe the two waves crashing as a symbolic gesture of turmoil or excitement. Throughout this discussion, the instructor could direct the discussion by allowing the students to inform the class how their symbolic gesture of the waves could be transferred sonically in the performed crescendo. While some students may suggest timbre changes to the singing voice during the performance of the crescendo, others may suggest tempo variations leading up the fermata rest. Students informed suggestions should be trialed throughout the rehearsal process in an attempt to formulate an appropriate expressive gesture when performing the crescendo passage. This particular method of incorporating the projected film visual approach within the choral rehearsal process allows knowledge and experiences not to be received, but to be

constructed (Bain, 2004). This allows students to contribute their own experiences and perspectives to the learning environment. Ultimately, this interaction shapes how the student constructs meaning within the learning experience by stimulating the multiple senses by way of how one thinks, acts, or feels instead of simply directing students on how to sing the crescendo passage.

In addition to accepting student-initiated learning within the music-learning environment, music instructors should include cognitive feedback as another approach to allow singers to compare their level of self-expression to the level of expression as a listener (Juslin, et al., 2004). Based on Juslin's (2003) lens model, the relationships between the performer's intention, performance expressive cues, and the listener's judgment are essential in acquiring an expressively emotive understanding of a music performance. The current study's results indicated that the listener's judgments of expressivity were not similarly comparable of the singers' self-expressivity levels. This emphasizes the importance of including opportunities for cognitive feedback throughout the process of performing expressively while viewing a projected film visual. The cognitive feedback method has been found to be highly effective after a single feedback session (Juslin & Laukka, 2000). While it can be useful for teachers and fellow students to supply constructive feedback, it is essential that the student performer has the opportunity to listen to her/his performance in order to self-assess and determine how to appropriately modify the next performance. In a choral setting, an ensemble can listen to the performance, assess, formulate a plan to appropriately modify the performance, and implement the goals toward the next performance. It is suggested that the inclusion of student-initiated contributions toward the rehearsal process and the opportunity for cognitive feedback are essential components toward

the development of music students' understanding and delivery of an expressive performance in conjunction with the projected film visual 'extramusical' approach during the choral rehearsal process.

Currently, educators are seeking ways to encourage students to approach academic tasks with more rigor. In order to prepare public school students to compete after graduation, the International Center for Leadership in Education (ICLE) stresses that academic learning experiences must have relevancy with real-world applications and experiences. Willard Daggett, CEO of ICLE asserts "relevance makes rigor possible" (Creaven, 2011). The Rigor/Relevance Framework model (International Center for Leadership in Education, 2010) is a tool used to assist schools and communities to boost higher standards in the school curriculum and student achievement. Two continuums encompass the Rigor/Relevance Framework model: (1) Knowledge Taxonomy continuum, which describes the ways students think by acquiring and organizing knowledge from one or more disciplines; (2) Application Model continuum, which describes the multiple levels in which students apply knowledge to problem solve real-world problems and design and create work for use in real-world situations. Versatile in the development of instructional strategies and assessment, higher achievement goals can be directed towards a competence in students to think in creative and complex ways, gravitating towards multiple disciplines in an attempt to problem-solve and create. Educator and philosopher, John Dewey (1938) stressed that the primary responsibility of educators was to "not only be aware of the general principle of the shaping of actual experience by environing conditions, [but] also recognize in the concrete what surroundings are conducive to having experiences that lead to growth" (p. 35). By furnishing relevant, real-world applications to the development of a concept or skill, a more rigorous

effort could be brought forth by the student. As described by Dewey, the utilization of the relevant physical and social surroundings towards the extraction of information can contribute to more worthwhile experiences for all learners.

The implication of incorporating projected film visuals to the rehearsing and expressivity practice of a choral ensemble could align with the relevancy of inducing an increase in student rigor. For example, a choral music educator interested in introducing the concept of *leitmotif* to a class probably would be inclined to incorporate a discussion on the use and development of character themes appearing in Richard Wagner's *Der Ring des Nibelungen* cycle or John Williams' film score to *Star Wars*. However, by incorporating the framework of storytelling, technology, and filmmaking practices, a music educator could have the students compose or improvise a theme for a given character to be performed in synchronization with a projected film visual. With the task of continuing to develop the theme through the manipulation of the themes' tempo, mode, voicing, ornamentation, and other acoustical music factors associated with expressivity to assist in telling the film's story, students could take a praxial approach to developing an understanding of the *leitmotif* concept by approaching it from a standpoint of a musician, storyteller, filmmaker, or character actor in a relevant and influential manner. Therefore, students can apply and synthesize relevant concepts and knowledge from multiple disciplines through the process of understanding the objective of the *leitmotif* concept.

The inclusion of projected film visuals within choral rehearsing/performing practices could produce opportunities in developing the understanding and skills of an expressive performance. However, as in the *leitmotif* example, this pedagogical practice could also be incorporated to meet other musical and non-musical objectives within the choral performance

course curriculum. Furthermore, supplying these types of learning experiences within a school music curriculum could stimulate interest in the non-traditional music student to actively participate in school organized music programs. Based on data from four states, current performance-based music programs in secondary schools serve less than 20% of the total number of students in grades 6-12 (Edwards, 2006). Williams (2007) has termed the other 80% of students as the "non-traditional music student." Though these students don't participate in a school's traditional performing ensemble, they could be music performers, learners, and consumers outside of the classroom walls. Music education advocates believe that more students should be exposed to and partake in formal school music programs in either performance or non-performance classes. However, some believe that due to the narrow offerings of primarily traditional Western classical music to students of elite status within a school music program, many students are often discouraged to attempt enrolling in a school music class (Reimer, 2012). Reimer realizes that by moving attention towards other music and approaches to music generally consumed by society outside of school, the depth that has been achieved in attaining excellence within the school music ensemble (i.e. chorus, band, orchestra) could be compromised. By offering students other formal music education options in place of performing ensemble performances, such as music technology classes, a stimulated interest from the non-traditional music student in experiencing formal music training could arise within schools. Though the traditional music student enrolled in a performance ensemble could participate in both performance and non-performance courses, the non-ensemble music courses could diminish the performance-based enrollment due to students choosing another music course that produces more relevancy in a students' overall education.

Instead of struggling with this conflict, a performance-based music educator may want to re-evaluate what other academic and social opportunities their performance ensemble can offer in the attempt of retaining the traditional music student and encourage and invite enrollment from the non-traditional music student. The incorporation of the projected film visual pedagogical practice within an ensemble classroom could be a viable option in offering a more relevant and engaging music performance opportunity to students. Recent research has found that rural adolescent students consume almost as much music from within an on-screen audiovisual medium as they do from an audio-alone medium (Keown, Belgrave, & Robinson, 2013). Other studies have discovered that a third of all music heard by the Western population is consumed from television (Tagg, 2006), and that over 90% of International television commercials includes embedded music (Bullerhahn, 2006). This could suggest that music educators who strive to incorporate the music consumed by students outside of class as a method of allowing students to develop an understanding of various musical objectives with success, may be inclined to the process and incorporation of performing music partnered with a projected film visual as another viable means of targeting students who thrive in relevant educational experiences.

A music educator who adopts the practice of allowing students to use multiple sensory modes during the learning process could find many advantages of using the visual of film during the music making process. While much has been documented on the process of how music is composed to film (Davis, 2010), little has been explored on the processes of improvising to film. Through the music teacher's structured guidance and instruction on the art of improvisation, elementary, secondary, and post-secondary students could further their development through the process of improvising while simultaneously viewing a film

segment. Whether singing, playing a music instrument, using a music making application on a computer tablet, or manipulating other acoustical and electronic sounds with the assistance of signal processing effects, students could demonstrate a deeper level of structure and understanding of improvisation and oneself when incorporating a visual element to the improvisation experience.

Ultimately, the process of incorporating film into musical improvising can have a positive impact on students' development while meeting a higher achievement through a relevant course curriculum. In addition to stimulating rigor and relevance and taking a multicultural perspective by offering all students the opportunity to explore music through formal training all the while empowering students to develop as better musicians and individuals, such exposure to this pedagogical philosophy could offer students the roll of fostering artistic and social leadership in society. This process could strengthen the breadth and depth of the music experience for a student by subscribing them to the adopted national music standard #8: "Understanding relationships between music, the other arts, and disciplines outside the arts" (National Association for Music Educators, 1994). By guiding students through the experiences of storytelling and multiple forms and techniques of filmmaking in association with music, new pathways for students to explore, synthesize, and assimilate these experiences can further their development as learners, musicians, and citizens.

Furthermore, the functional development of students could be broadened through the incorporation of a collaborative environment with other students involved in the visual production of filmmaking within a school's curriculum. There are opportunities for student filmmakers to write, direct, and produce audiovisual works in association with music

students who could compose and perform the musical score for these audiovisual works. Beyond the traditional methods of recording a music score only to be heard in association with the audiovisual work, these collaborations could extend to the performance hall as another mode of extending student accomplishments beyond those individuals who would only experience the music when viewing an audiovisual work on their personal television or in a local movie theater. For instance, if various departments within a school worked together in producing a student-led short film, the exposure of these students' accomplishments could be broadened by public presentations. This could include a premiere of the final product of the film on one night and another premiere of the film on another night, only to be accompanied by a live musical performance at a music hall or auditorium. The framework of such a project could have lasting benefits for the students involved, the school, and the entire community in attendance.

Newly Composed Choral Film Scores – Effects on Distribution and Performance

Using projected film visuals within the rehearsal process could also inspire a new approach into how composers compose and music publishers publish and distribute music for performers and audiences. Most recently, some symphony orchestras have filed for bankruptcy, going out of business due to a decline in interest and sales. This is caused in part by a disconnection with a new generation of music listeners, lack of education, and the ease and convenience of accessing music from other media outlets and the Internet (Lebrecht, 2011; National Association for the Arts, 2008). American symphony orchestras have needed to adjust the framework and mission of their organizations in order to thrive in a diverse and changing nation. Stanford Thompson (2012), musician and CEO of the El Sistema-inspired program Play On, Philly!, stresses that these performing arts organizations must think

collaboratively instead of competitively. In an effort to offer diverse concert going experiences for patrons of concert halls, symphonies such as the Chicago Symphony Orchestra have branched out to diverse populations through outreach programs in public schools, free concerts in public forums, collaboration with other arts organizations, and performances of a diverse collection of music in the form of specialized concert series within the concert halls. "Friday Night at the Movies" is one such concert series where the symphony performs live in synchronization with the projection of a film on an overhead screen. This concert series offers an outlet for audiences to learn and experience film music and its function in a medium that so many consume in American culture. Other organizations such at the 21st Century Orchestra based in Lucerne, Switzerland dedicates itself solely to the performance of film music ranging from the silent era to the most recent Hollywood blockbuster films. Led by conductor Ludwig Wicki, many of the performances are performed in synchronization with the entire featured length film. Realizing an immanent desire for this genre of music throughout the entire world, Wicki and composer Howard Shore have most recently toured together, offering live performances from all three films of Peter Jackson's *The Lord of the Rings* trilogy. These serve as examples of how symphony orchestras are supplying audiences with another approach to experiencing live performances through the medium of projected film.

In choral performance, however, few opportunities seem present for choral performers and audiences the means to interact with film in performance. This could be partly due to a lack of film music dedicated solely to the choral performance. In another case, vocal music in general is often short in length due to the inclusion of text and therefore can seem impractical to present a choral work and retain an effect upon the audience in such a

short period of time. Composer Richard Einhorn's film score set to the silent film, *The Passion of Joan of Arc* (1928), is one of the few examples of choral music associated with the projection of film in a live performance. Consisting of several movements, the entire work is almost always performed as a whole throughout the entire film.

In an effort to meet the artistic needs and desires of performers, audiences, and communities, more projected film visual choral performances should be considered. Not only could the results of the current study suggest film's influence on the expressivity of a choral performance, they also imply the assumed interest and desire in incorporating the collaboration of both disciplines into an artistic work for audience consumption. Similar to how composers collaborate with lyricists during the compositional process in choral music, composers and publishers of choral music could also direct efforts in collaborating with filmmakers to form these opportunities for performers. This could result in the commission of composers and filmmakers for a particular choral work.

In reference to the manner in which choral sheet music publishing companies structure and organize printed octavos, a companion DVD embedded with a film could accompany the purchase a choral work, granting the right to perform the musical work in conjunction with the projection of the film during performances. As often the case is for printing publishers and composers to document rehearsal and pedagogical suggestions pertaining to the specific piece of printed music, instructions could be directed towards specific segments of the film to be used in conjunction with the rehearsal process in order to affect change in any number of acoustical music factors associated with the perception of expressivity. Choral works could be technically and musically composed in a manner that would allow choirs to perform the work successfully without the need a conductor's ictus or

gesture. This would allow the choir to respond musically to the projected film visual rather than a conductor. The accompanying film could be designed to assist the choir pedagogically and be projected on an overhead screen during a live performance of the piece, exposing the audience to the final culmination of the choral/film work. Based on the level of the choir, technical and musical aspects of the music, the composition's precision in relation to the film, performance venue, and the accessibility of technology, a conductor may choose to have the choir respond to the conducting gestures of a conductor or respond to a projection of the film on a second screen located behind an audience. The latter could be another outlet for visual learners to gain the immediate stimulation needed to produce an appropriately expression performance in conjunction with the film visual for all in attendance.

Conclusion

If one accepts the philosophy that we are all teachers and learners, and that education is not what occurs within school walls, but within the everyday experiences and interactions one has within a democratic society (Dewey, 1916), then it could be suggested that the process of engaging performers to respond with an appropriate expressive response to a projected film visual could lead musicians, filmmakers, and audiences towards a more profound sense of artistry. Whether incorporating the discipline of projected film visuals to develop a better understanding of the music, film, community, culture, or oneself, this interdisciplinary process of music collaborating with other art forms can be another factor in an individual's continuing evolution of becoming whole. "Wholeness" in music education can be defined as the "active engagement in and support of all or at least most of the many ways people in our culture and others around the world actually interact with music" (Reimer, 2012, p. 25). As important as it is for one to develop empathy, compassion, and

tolerance of other people through music, the intrapersonal comfort and ability to understand and express oneself seems essential in the wholeness construction of all humans in society. Hopefully this research lends itself to future inquiry and practical applications to explore relationships among music, film, and other arts. This may help diversify our understanding of art in society, striving for relevant applications, and add depth while broadening the perspective of how all these experiences can develop wholeness through musical expressivity.

APPENDIX A

PHASE ONE – RECRUITMENT SCRIPT

Hello,

My name is Daniel Keown, a graduate student in choral music education at the University of Missouri-Kansas City. I need your help in answering a question. Many of us have noticed music's effect on our emotions when we watch a movie. Some music can pump us up when we experience a car chase scene. Some music can tell us what is about to happen in a film. What I'm interested in finding out from you is how well certain music matches the visual images in a movie.

I'm asking you to take 12 minutes out of your day to help me answer this question. I will be coming to the University Phase One on Thursday, September 13th to show you eight short film clips and ask you to rate how closely the music matches each clip. I'm interested in hearing University choir singers' thoughts on this subject. Your participation in this study is completely voluntary and would not affect your academic standing in choir or at the University Phase One.

Your professor has been kind enough to connect me with you and he will be presenting a sign-up sheet to the entire choir. Your participation would occur in the music library, but outside your regular choir rehearsal time. Again, this will only take 12 minutes to complete on Thursday, September 13th. If you have any questions prior to or after the study, please feel free to contact me at 219.718.0344.

I look forward to meeting you in person.

Thank you for your time.

APPENDIX B

FILM SEGMENTS ONE AND TWO - SNAPSHOT IMAGES

Visual 1 – 30 second clip
***Koyaanisqatsi* (33:40 – 34:10)**

Visual 1 – 45 second clip
***Koyaanisqatsi* (33:25 – 34:10)**

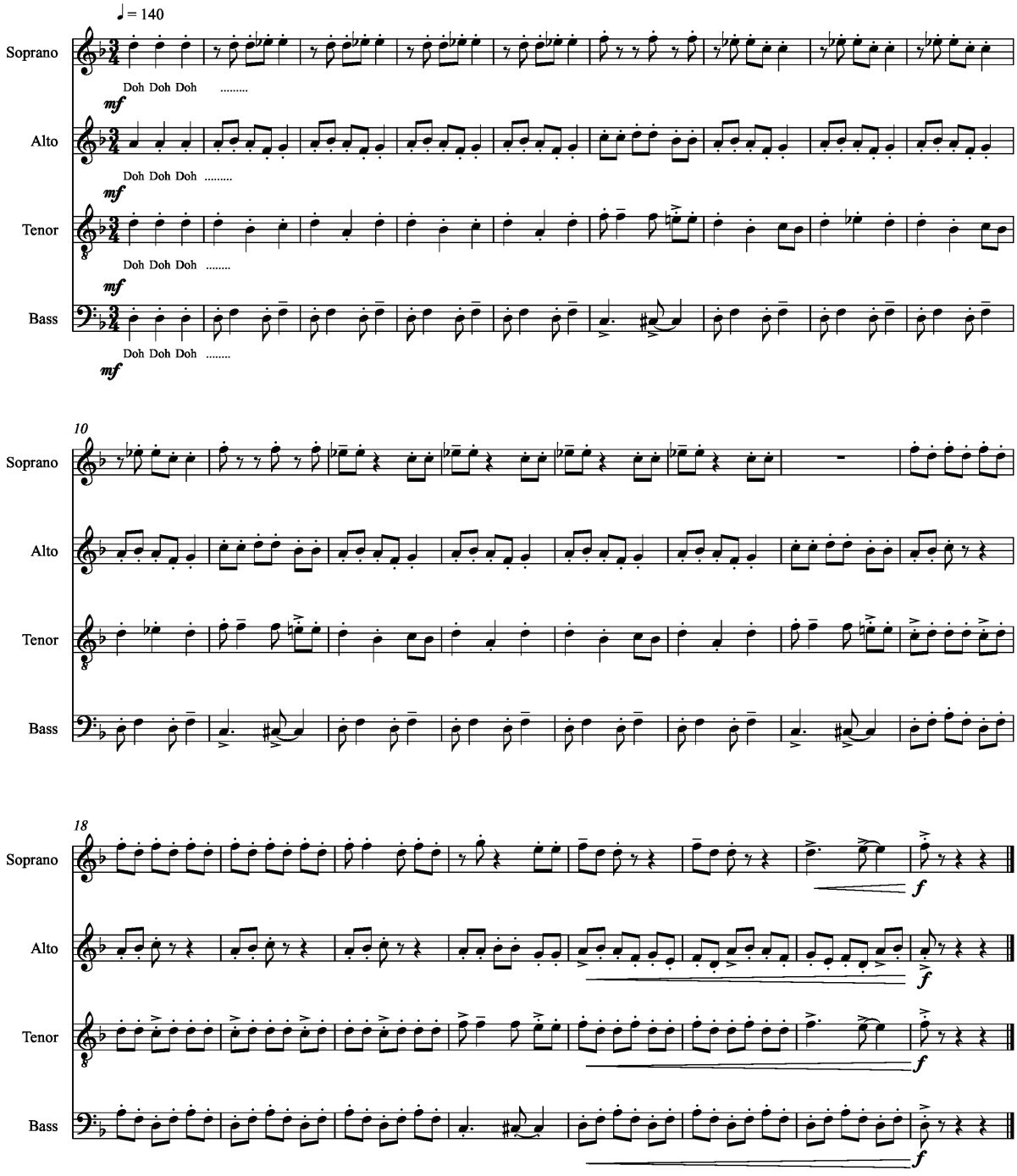
Visual 2 – 30 second clip
***Oceans* (33:40 – 34:10)**

Visual 2 – 45 second clip
***Oceans* (33:25 – 34:10)**

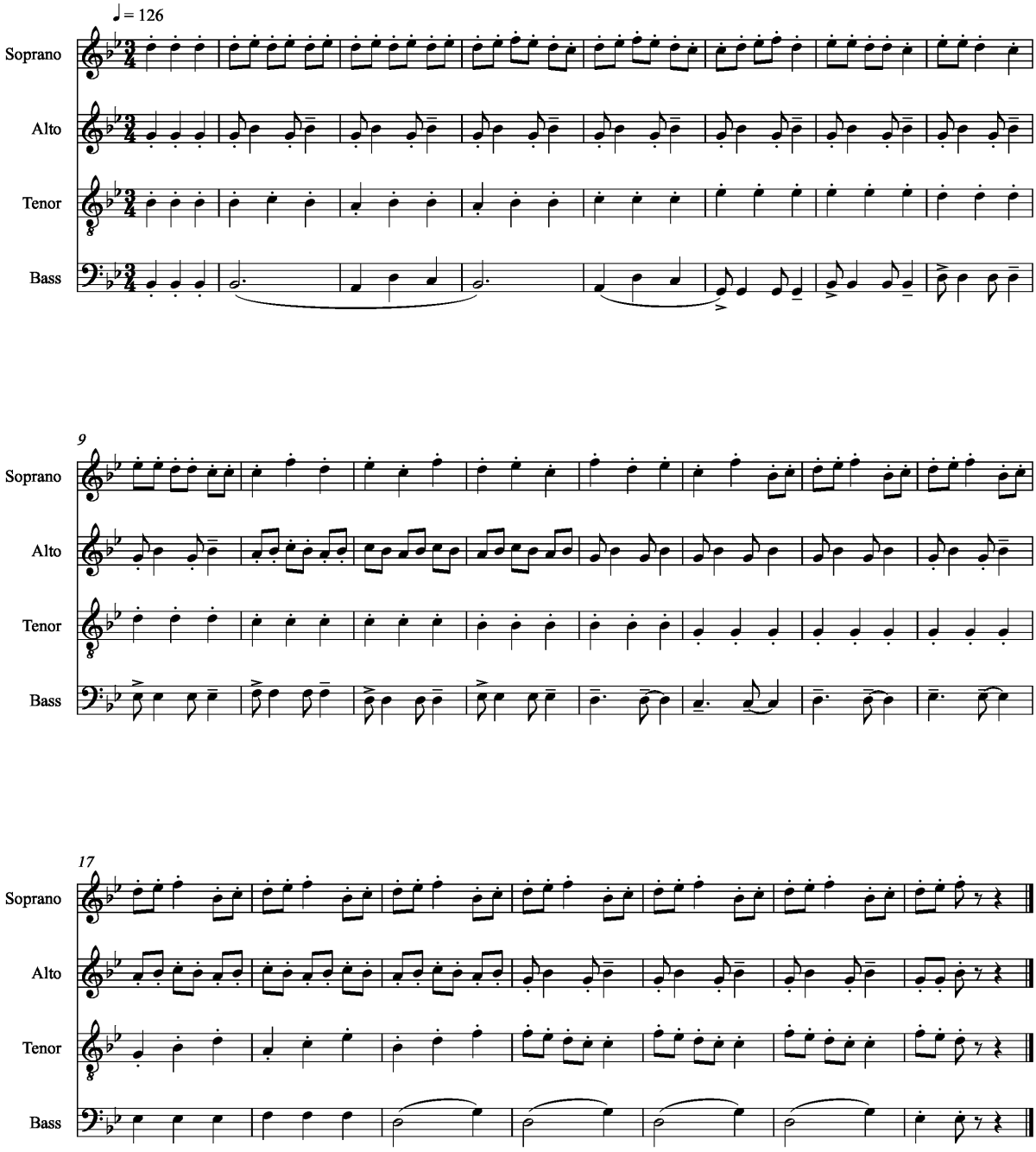
APPENDIX C

FOUR CHORAL ETUDES

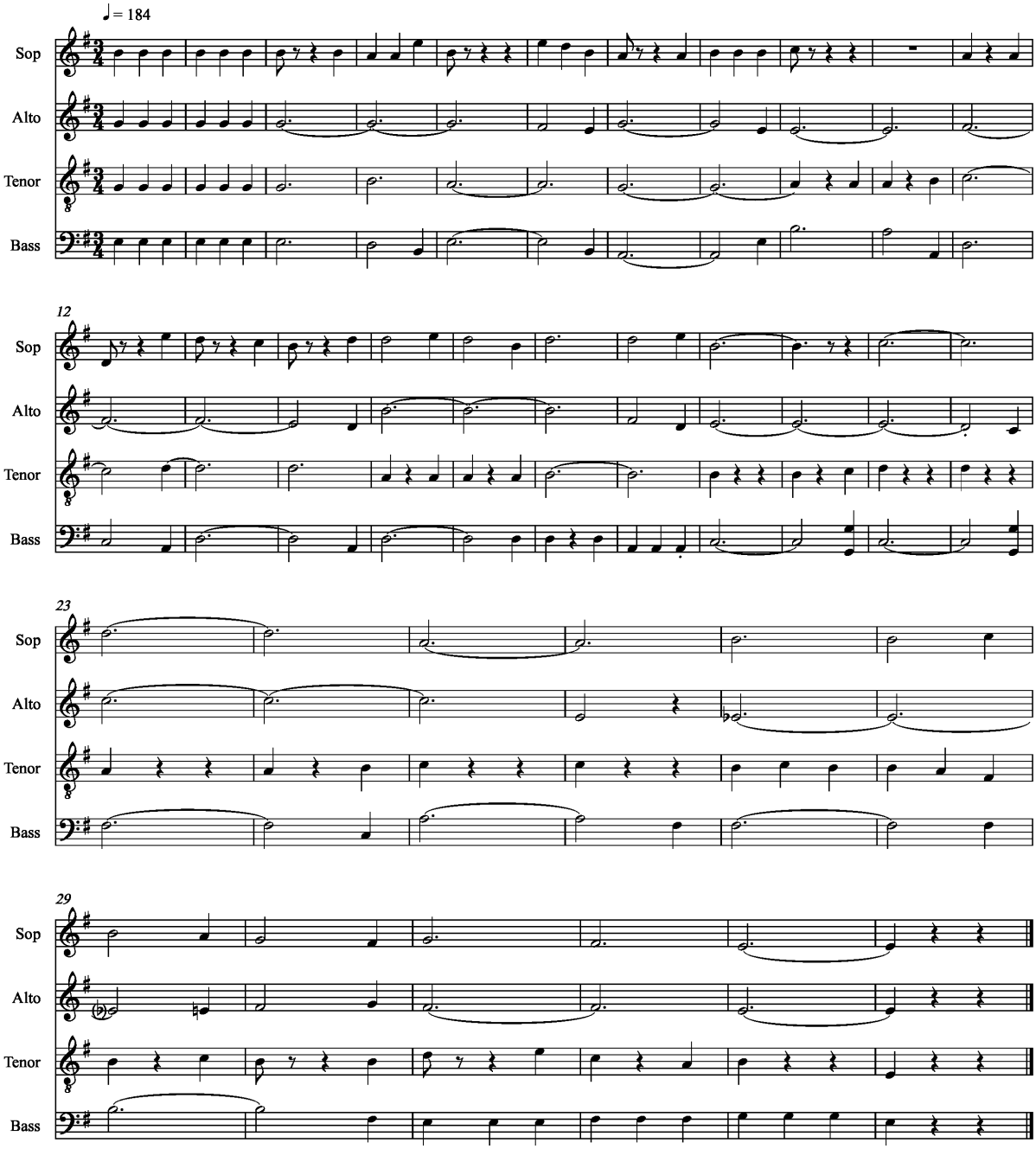
Etude A



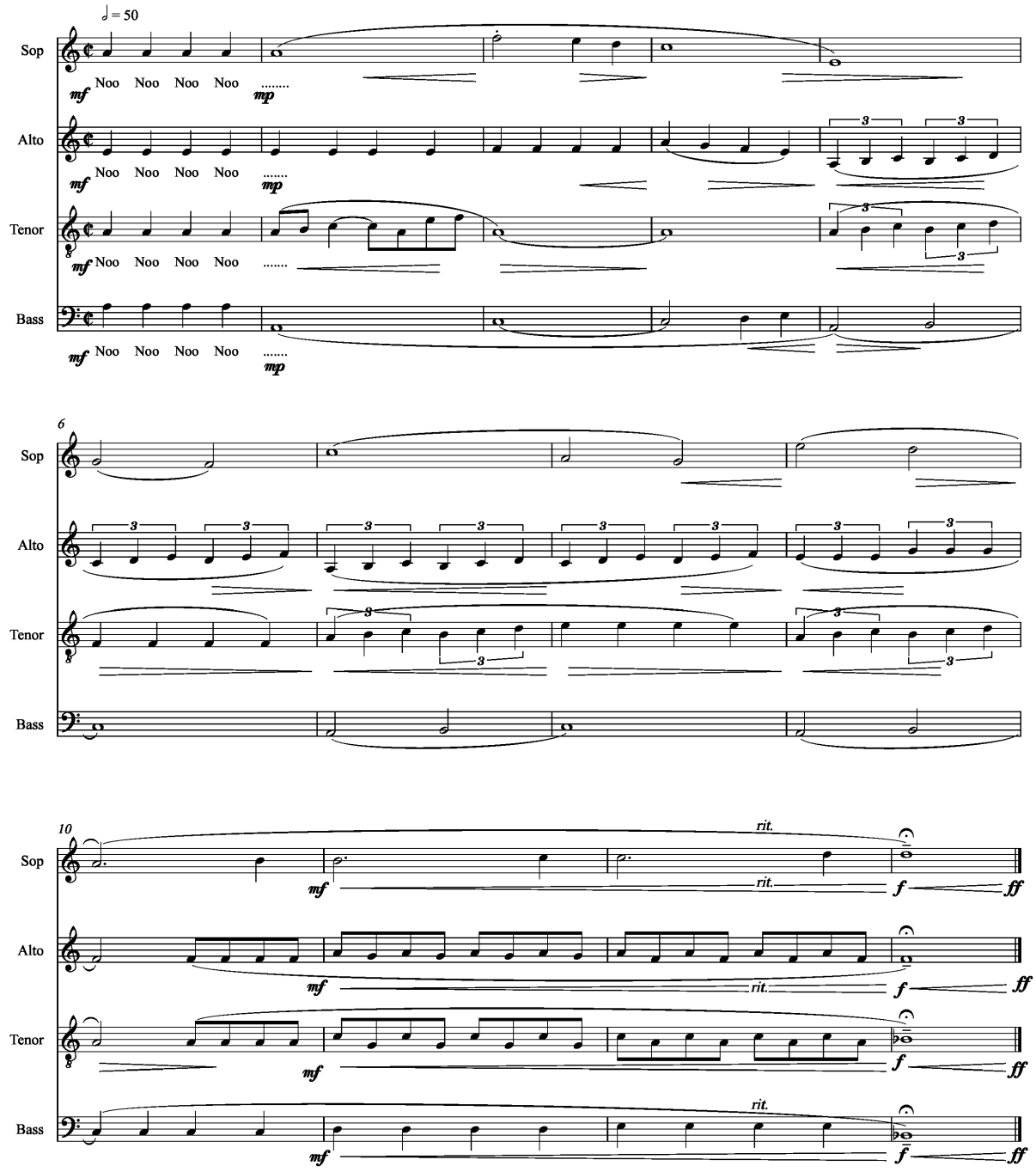
Fast Etude B


♩= 126
Soprano
Alto
Tenor
Bass
9
Soprano
Alto
Tenor
Bass
17
Soprano
Alto
Tenor
Bass

Slow Etude C



Etude D



APPENDIX D

PHASE ONE – SCRIPT

Preliminary Study Instruction Script

Script prior to experiencing audiovisual clips.

Today you will be experiencing eight audiovisual clips on the computer in front of you. Each clip will be 30 seconds in length. You will notice that two different on-screen video clips will be accompanied by one of four music excerpts played back through electronic virtual instruments resembling a choir singing 'ooh.' You will be asked to experience the audiovisual clip once and then rate how congruent the music is to the visual before moving on to the next audiovisual clip.

As seen on your questionnaire, you may perceive the music to be most congruent with the visual, meaning the music fits the visual or you may perceive the music to be incongruent, meaning the music does not fit the visual. You will be rating your perception of congruency between music and visual using the 8-point Likert-type scale on your questionnaire in front of you. Notice that 8, for "most congruent" is the highest mark available, signifying that the music and visual are a best fit, while rating a 1, for "least congruent" is the lowest mark available. Please rate each audiovisual excerpt honestly and how you see fit using any part of the scale.

Please refrain from writing on the questionnaire until the audiovisual clip has been experienced in its entirety. You will then have 5 seconds to report congruency for the audiovisual clip before moving to the next clip. At no time should you pause the video on the computer in front of you during this study. Please be sure to circle only one rating number for each audiovisual clip. Please raise your hand if you have any questions at this time.

All participants should refrain from talking or making eye contact with other participants during this study. Your perception of congruency between music and video for all eight clips is the focus of this study. Please understand that there are no right or wrong answers to these questions.

So now we will begin. Please remember to experience the entire clip before answering the questionnaire.

Script after experiencing all eight audiovisual clips and reporting data.

Please be sure that you have circled only one number rating for each question. Now, take the last minute to complete the background information on the last page of the survey. Once you've completed all of the questions on the survey, the study is over. When you are done, please give your survey to the investigator.

APPENDIX E

PHASE ONE – CONSENT FORM

Consent for Participation in a Research Study

The Effect of Congruent and Non-Congruent On-Screen Film Narrative Visuals on the Expressivity of Choral Performances

Daniel Keown, IPh.D. Music Education
University of Missouri-Kansas City, Conservatory of Music and Dance
Grant Hall, 5100 Rockhill Road, Kansas City, MO 64110-2249
Phone: 219.718.0344; email djkvwf@mail.umkc.edu

Request to Participate

You are being asked to take part in a research study. This study is being conducted at the Univerisity Phase One.

The researcher in charge of this study is Daniel Keown**.** While he will run the study, the investigator's primary advisor will be Dr. Charles Robinson.

The investigator is asking you to take part in this research study because you are currently a choir singer at a university. Research studies only include people who choose to take part. This document is called a consent form. Please read this consent form carefully and take your time making your decision. The researcher or study staff will go over this consent form with you. Ask him/her to explain anything that you do not understand. Think about it before you decide if you want to take part in this research study. This consent form explains what to expect: the risks, discomforts, and benefits, if any, if you consent to be in the study.

Background

You have been recruited to participate in this study because you are an active member of a choral ensemble. This is a preliminary study, which is a study where the results will be used in establishing the tools and conditions for a main study. You will not be a part of the main study.

You will be one of about 35 choir participants in the study.

Purpose

The purpose of this study is to determine songs that will best fit two on-screen films. The entire study should take approximately 10 minutes to complete. Out of four different 30 second music excerpts, the investigator is interested which two songs you think best fits each of the two film clips.

Procedures

For this study, you will be rating how well each song fits when played simultaneously with each film clip. You will be exposed to four songs and two film clips, both 30 seconds in length, for a total of eight audiovisual clips. You will be asked to experience each audiovisual clip and rate how well the music fit within each clip using a personal computer and headphones. All materials will be included for you. Your ratings will be reported on a hard copy questionnaire. All film clips do not consist of disturbing or graphic images

according to the Motion Picture Association of America. At the end of the questionnaire, you will be asked to report your gender, grade level in college, major, and how many years you have performed in a choir throughout your lifetime.

Your participation in this research is voluntary. You may choose to participate or to withdraw your participation at any time. Deciding not to participate or choosing to discontinue participation in the study will not result in any penalty or affect your academic standing in choir or at school. If you decide to leave the study the information you have already provided will be discarded and not used.

Risks and Inconveniences

This research is considered to be minimal risk. That means that the risks of taking part in this research study are not expected to be more than the risks in your daily life. There are no other known risks to you if you choose to take part in this study.

Benefits

You will not benefit directly by participating in this study. The main benefit will be to help researchers better understand which songs fit better when played simultaneously with the two film clips.

Fees and Expenses

You are not responsible for any costs or expenses associated with this study.

Compensation

Participants will not be compensated for their participation in this study.

Alternatives to Study Participation

You can choose not to participate in this study. Your decision to not participate will not affect your relationship or academic standing with the choir and the school.

Confidentiality

While we will do our best to keep the information you share with us confidential, it cannot be absolutely guaranteed. Individuals from the University of Missouri-Kansas City Institutional Review Board (a committee that reviews and approves research studies), Research Protections Program, and Federal regulatory agencies may look at records related to this study to make sure we are doing proper, safe research and protecting human subjects. The results of this research may be published or presented to others. You will not be named in any reports of the results.

Every effort will be made to keep all information confidential. The only identifiable information will include the names on the sign-up sheet. No identifiable information will be included on the questionnaires or audio recording. All data and materials will be kept in a lock filing cabinet in a locked office or a password protected hard drive for 10 years. No identifiable information will be used in any part of this study, publications, or presentations.

In Case of Injury

The University of Missouri-Kansas City appreciates people who help it gain knowledge by being in research studies. It is not the University's policy to pay for or provide medical treatment for persons who are in studies. If you think you have been harmed because you were in this study, please call the researcher, Daniel Keown at 219.718.0344.

Contacts for Questions about the Study

You should contact the Office of UMKC's Social Sciences Institutional Review Board at 816-235-5927 if you have any questions, concerns or complaints about your rights as a research subject. You may call the researcher Daniel Keown at 219.718.0344 if you have any questions about this study. You may also call him if any problems come up.

Voluntary Participation

Taking part in this research study is voluntary. If you choose to be in the study, you are free to stop participating at any time and for any reason. If you choose not to be in the study or decide to stop participating, your decision will not affect any care or benefits you are entitled to. The researchers, doctors or sponsors may stop the study or take you out of the study at any time if they decide that it is in your best interest to do so. They may do this for medical or administrative reasons or if you no longer meet the study criteria. You will be told of any important findings developed during the course of this research.

You have read this Consent Form or it has been read to you. You have been told why this research is being done and what will happen if you take part in the study, including the risks and benefits. You have had the chance to ask questions, and you may ask questions at any time in the future by calling Daniel Keown at 219.718.0344. By signing this consent form, you volunteer and consent to take part in this research study. Study staff will give you a copy of this consent form.

_____ _____

Signature (Volunteer Subject) **Date**

_____

Printed Name (Volunteer Subject)

_____ _____

Signature of Person Obtaining Consent **Date**

_____

Printed Name of Person Obtaining Consent

APPENDIX F

PHASE ONE – SURVEY TOOL

Please <u>circle</u> only one response for each question

<u>Audiovisual Clip A</u>

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1 2 3 4 5 6 7 8

(least congruent) (most congruent)

<u>Audiovisual Clip B</u>

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1 2 3 4 5 6 7 8

(least congruent) (most congruent)

<u>Audiovisual Clip C</u>

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1 2 3 4 5 6 7 8

(least congruent) (most congruent)

Audiovisual Clip D

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1 2 3 4 5 6 7 8

(least congruent) (most congruent)

Audiovisual Clip E

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1 2 3 4 5 6 7 8

(least congruent) (most congruent)

Audiovisual Clip F

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1 2 3 4 5 6 7 8

(least congruent) (most congruent)

Audiovisual Clip G

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1 2 3 4 5 6 7 8

(least congruent) (most congruent)

Audiovisual Clip H

Please rate your overall perception of how congruent the music is with the on-screen visual. How well does the music fit with the on-screen visual?

1	2	3	4	5	6	7	8
(least congruent)							(most congruent)

Background Information

Please circle one

3. Gender: Male Female

4. Grade Level: Freshman Sophomore Junior Senior Graduate

Please fill in the blank.

5. Major: _____

6. During your lifetime, how many years have you performed in any choir?

_____

7. Comments:

Thank you for taking the time to answer these questions. Your contribution is valued and appreciated.

Sincerely,

Daniel Keown

APPENDIX G

PHASE TWO – SINGERS RECRUITMENT SCRIPT

Hello,

My name is Daniel Keown and I am conducting research on the effects of congruent and non-congruent on-screen film visuals on the expressivity of choral performance as part of a doctoral program in music education at the University of Missouri-Kansas City. The reason why I'm here today is to recruit students from your choir to participate in my study. Over the past five rehearsals you have been rehearsing two choral etudes titled "Doh" and "Noo" that will be part of the study.

This study will involve members of this choir to form chamber choirs of twelve singers to perform these two etudes three times each outside of the rehearsal space. At the start of our next rehearsal, singers who volunteer to participate in this study will perform these pieces in another room outside the rehearsal room. Participants in the study will sing both etudes and answer a few questions about each performance. This is a one-time process and should only take approximately 15 minutes to complete.

Participation is anonymous and voluntary. Choosing to participate or not participate will not influence your grade in choir in any way.

If you choose to participate I will need you to fill out a consent form agreeing to your participation. You must be 18 years or older in order to participate in this study.

The singers of each chamber choir will be have been randomly chosen and selected a time slot to participate in this study. I will be available after class to answer questions regarding this study.

I would appreciate your participation in this study and hope as many of you as possible will consent to do so. Thank you for your time.

APPENDIX H

REHEARSAL LESSON PLAN

Rehearsal 1

We are going to have 5 rehearsals to practice, master, and memorize these two choral pieces for an upcoming ***performance.*** Due to the small amount of rehearsal time, I ask that you save your questions and do your very best in interpreting the score as you see fit. Please do whatever you need to do in order to learn and memorize these two pieces. Details regarding the performance of these two pieces will be announced later next week.

Let's begin with "Doh"

"Doh" Lesson

1. Instruct students to focus on the rhythm of their parts. Altos count speak (demonstrate 1 and 2 and 3). All other parts speak using a tah.
2. Have students physically establish a beat slower than 140.
3. Everyone count speak once (beginning-end)
4. Bass and Alto – sight read using either solfege or neutral doh. Model entrances for both bass and alto. Ten and Sop keep count speaking. (piano only plays bass and alto)
5. Tenors, circle your E flats and E naturals. Be aware of these accidentals. Think of your part in Bb major starting on "Mi." Model measure 1-8. Bass, Tenor, and A lot sing- sop speak rhythm. (piano plays only the tenor line)
6. Run it again, but this time lets add the soprano line. (piano only plays the soprano line)
7. Sing again, and circle any problem spots. Try to get more notes correct and keep doing something physical to assist in knowing where the beat is. (piano plays soprano and tenor only).

"Noo" Lesson

1. Alto and Tenors focus on the difference in the duple and triple feel starting on measure 5. We will begin with the sopranos and basses singing, but tenor and alto speak rhythm on a ta.
2. Soprano and Basses count sing. We are in a minor.
3. Soprano and Basses continue to count sing during these other singing attempts and work to get more of the notes
4. Begin at measure 10, write in solfege. Think of C major. Bass – Do, Tenor – La, Alto- Fa, Sop – La.
5. Sing on the solfedge from measure 10. Watch the rit.
6. Begin on measure 2. Tenors, you have the melody. (Sing tenor measure two).
7. Have altos and tenors sight read from measure 2.. (piano plays alto and tenor parts only).
8. Focus on measure 5-9 rhythm for alto and tenor. Speak rhythm.
9. Alto and tenor – sing measures 5-9.
10. Beginning, all parts sing – beginning to end. (piano helps out trouble parts).

Rehearsal 2

"Noo"

1. Count sing and conduct m. 1-4 --- Hold downbeat of m. 5 (piano tenor and alto)
2. Feel and conduct in 2 – run through. SB –count sing; AT sing on 'noo'
3. All speak rhythm, m. 5-9, tenor part on takida or ta
4. SA speak alto, TB speak tenor, m. 5-9
5. SA sing alto, TB sing tenor, m. 5-9 on takida
6. Inform singers of breath marks (AT breath after m. 4 and m. 8; SB breath after m. 6. Stagger breath as needed)
7. All sing at beginning, run through – focus on dynamics
8. All sing run through again – more dynamic contrast needed in m. 5-9 for alto and tenor, and all singers m. 10 to the end. Sopranos, m.10- end, be stronger and more assertive on the ascending steps.

"Doh"

1. All sing on "Doh" (piano for sop and tenor)
2. m. 17- end, basses spell out d minor triad, then have them sing it in tempo staccato until they've mastered it.
3. m. 17 - end, tenors sing, focus on accents.
4. m. 17- end, T B.
5. m. 17 – end, S A; focus on the accents altos
6. m. 17 – end, all sing; focus on articulation and the crescendo at the end.
7. Tenors write in solfege m. 1 – 17
8. SAB sing m. 1-17 (sop in piano). Sopranos, be assertive with rhythm and pitches especially during changes in rhythmic patterns.
9. Tenors sing m. 1-17 on solfege alone; other parts lip sync your part.
10. All parts run through (sop and tenor piano); focus on articulation and dynamics.

For next time, be ready to start working both pieces from memory. All notes, rhythms, dynamics, and articulations must be learned.

Rehearsl 3

Tell choir to work towards memory of the two pieces.

"Doh"

1. Sing all together from beginning to end (piano plays tenor and bass part).
2. Sing all together again (piano plays sop and alto part).
3. Fix any trouble spots within a 30 second time frame.
4. Sing all together at 140 (Tenor part on piano).
5. Sing all together from memory.
6. Sing all together from memory (may keep folder up in case they need to look), but this time without a conductor. (Conductor preps them and then puts arms down).

"Noo"

1. Beginning to end, just tenors and basses; ladies quietly speak rhythm on Noo.
2. Beginning to end, just altos and sopranos; men quietly speak rhythm on Noo.
3. Beginning to end, everyone (piano plays tenor and soprano parts)
4. Alto and Tenor sing m. 5-10. Encourage them to conduct in two, focus on dynamic contrast and the triple against the duple. Tenors need to feel this change.
5. All parts from m5-end.
6. Run through from beginning to end (piano plays whatever part needs help, conductor makes this choice).

Rehearsal 4

For today's rehearsal, an audiovisual system must be set up in order for singers to experience the numerical click-track.

"Doh"

1. Begin with the click-track. Instruct: instead of having a conductor, you will be given a numerical count off. For instance, you will see and hear 3 . ., 2. ., 1. ., SING! And then you will sing. Before the click-track appears, you will hear your pitches starting with the bass and ending with the soprano's notes.
2. Practice this once. Once they enter, after two measures, stop them and try again.
3. This time let them sing throughout.
4. Sing one more time, but this time from memory.

You will spend less time on "Doh" today in order to give "Noo" more practice. 3.5 minutes on "Doh" and 6.5 on "Noo."

"Noo"

1. Speak "Noo" and conduct at m. 9 to end at half note = 50. All parts on own part.
2. M. 9 – end sing all parts while conducting.
3. Tenors and sopranos sing m. 2-3. Notice tenors start melody in m. 2 and sopranos take over in ms. 3.
4. Ten and sop sing again, but altos join in. Altos must bring their quarter notes out with a marcato feel to establish the sense of beat. When instructing, include basses in this discussion as they have a similar section in measure 10.
5. Beginning to end, all parts sing and conduct. Last time singing with music. Interpret Dynamics.
6. From memory (put folders down), sing all parts from beginning to end.
7. From memory, sing all parts from beginning to end; focus on the crescendo from m.10 to the end, more contrast and through the fermata; you can have folders up, but sing from memory. You are only allowed one time during the performance to look down at your music.
8. This time with the click track. Have them conduct with the click-track into their singing of the first two measures. Stop them after two measures of singing.
9. Try the click track again, sing throughout to the end.

Rehearsal 5

Use the click-track every time to prepare the singers for their entrance.
Work towards memory and dynamic/articulation marking interpretations. Keep stressing this to the singers by including these instructions through the rehearsal. You will have 3 minutes to run through "Noo" from memory, 3 minutes for "Doh," then take them through singing "Noo" and "Doh" back to back twice without interruption.

"Noo" (3.5 min.)

1. Sing through once from memory.
2. Fix anything that needs to be fixed.
3. Sing through once from memory.
4. If time allows, sing once again.

* The tricky part for the singers is to start in tempo with the click-track. You may want to revert to conducting and count-sing the subdivision at the beginning once during the fixing section.

"Doh" (3.5 min)

1. Sing through once from memory.
2. Fix anything that needs fixing. (Sopranos will struggle with memory between the first three ostinatos. They want to go from ostinato one to ostinato three. This might need to be addressed).
3. Sing through once from memory.

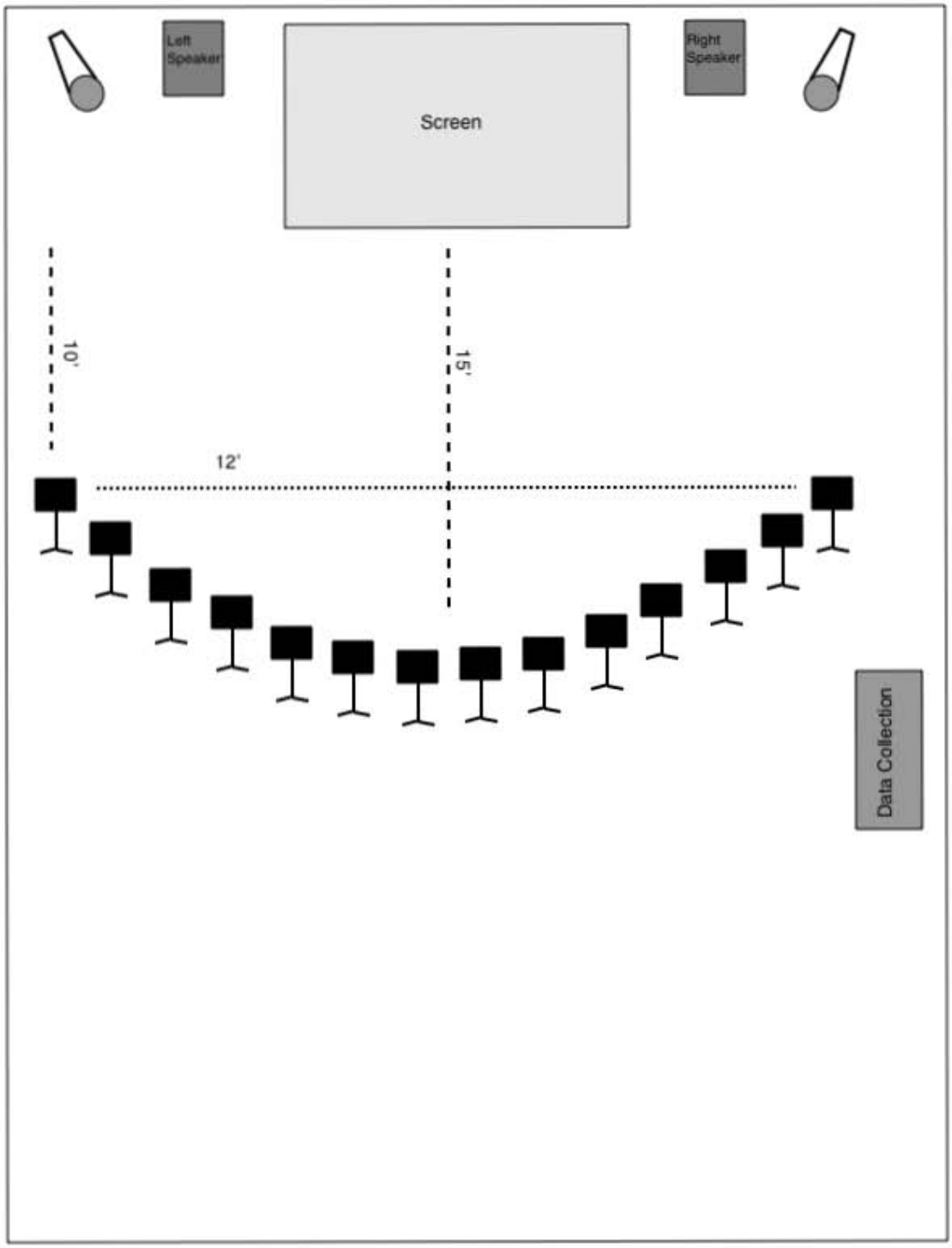
Now sing back to back (3 min)

"Noo" then "Doh" then "Noo" then "Doh" without any talking

Immediately following this 10-minute rehearsal, hand out the commitment forms to all of the singers. Once they received this form, informing the choir what they've been working on and invite them to participate in this study.

APPENDIX I

ROOM AND MATERIAL DIMENSIONS


Left Speaker
Screen
Right Speaker
10'
15'
12'
Data Collection

APPENDIX J

PHASE TWO – SINGER CONSENT FORM

Consent for Participation in a Research Study

The Effect of Congruent and Non-Congruent On-Screen Film Narrative Visuals on the Expressivity of Choral Performances

Daniel Keown, IPh.D. Music Education
University of Missouri-Kansas City, Conservatory of Music and Dance
Grant Hall, 5100 Rockhill Road, Kansas City, MO 64110-2249
Phone: 219.718.0344; email djkvwf@mail.umkc.edu

Request to Participate

You are being asked to take part in a research study. This study is being conducted at University A or B.

The researcher in charge of this study is Daniel Keown**.** While he will run the study, the investigator's primary advisor will be Dr. Charles Robinson.

The investigator is asking you to take part in this research study because you have been a choir ensemble member rehearsing two songs that will be a part of this study. Research studies only include people who choose to take part. This document is called a consent form. Please read this consent form carefully and take your time making your decision. The researcher or study staff will go over this consent form with you. Ask him/her to explain anything that you do not understand. Think about it before you decide if you want to take part in this research study. This consent form explains what to expect: the risks, discomforts, and benefits, if any, if you consent to be in the study.

Background

You have been recruited to participate in this study because you are an active member of a choral ensemble at University A or B that has been preparing two pieces of music where the performances of these pieces will be a part of this study.

You will be one of about 120 subjects in the study at University A or B.
The purpose of this study is to investigate the effects of visual and non-visual images on the expressivity of a choir performance. The entire study should take approximately 15 minutes to complete. The investigator is interested in whether a choir's expression is effected by other factors outside of singing besides watching a conductor conduct a choir. This study does not include deception and informs the participants that expressivity will be measured.

Procedures

For this study 12 to 16 singers from your choir will be randomly chosen, such as picking a name out of a hat, to form a chamber choir where you will sing together and rate the expressivity of your performance. Singing participants will perform Song A three times and Song B three times while simultaneously viewing visual 1, visual 2, or no visual at all. All film clips do not consist of disturbing or graphic images according to the Motion Picture Association of America. After each performance, singers will be asked to rate their own expressivity onto a questionnaire. After performing three times, participants will be asked to

listen to their three performances and rate the choir's expressivity as they hear it. This will occur twice. Participants' audio will be recorded in order to play back during this study and for a group judges to listen to at a later date. At no time will there be any identifiable information transferable on these audio recordings in this study. These audio recordings will only be used for this study and saved on a password protected hard drive for 10 years. At which time these recordings will be destroyed. This will be a one-time study and participants will not have to report back for a second investigation under this study. If you agree to take part in this study, you will be involved in this study for about 15 minutes.

Your participation in this research is voluntary. You may choose to participate or to withdraw your participation at any time. Deciding not to participate or choosing to discontinue participation in the study will not result in any penalty or affect your academic standing in choir or at school. If you decide to leave the study the information you have already provided will be discarded and not used.

Risks and Inconveniences

This research is considered to be minimal risk. That means that the risks of taking part in this research study are not expected to be more than the risks in your daily life. There are no other known risks to you if you choose to take part in this study.

Benefits

You will not benefit directly by participating in this study other than the benefits of experiencing music through performance. The main benefit will be to help researchers better understand the relationship between the experiences of watching films and videos on the expressivity of choral performance.

Fees and Expenses

You are not responsible for any costs or expenses associated with this study.

Compensation

Participants will not be compensated for their participation in this study.

Alternatives to Study Participation

You can choose not to participate in this study. Your decision to not participate will not affect your relationship or academic standing with the choir and the school.

Confidentiality

While we will do our best to keep the information you share with us confidential, it cannot be absolutely guaranteed. Individuals from the University of Missouri-Kansas City Institutional Review Board (a committee that reviews and approves research studies), Research Protections Program, and Federal regulatory agencies may look at records related to this study to make sure we are doing proper, safe research and protecting human subjects. The

results of this research may be published or presented to others. You will not be named in any reports of the results.

Every effort will be made to keep all information confidential. The only identifiable information will include the names on the sign-up sheet. No identifiable information will be included on the questionnaires or audio recording. All data and materials will be kept in a lock filing cabinet in a locked office or a password protected hard drive for 10 years. No identifiable information will be used in any part of this study, publications, or presentations.

In Case of Injury

The University of Missouri-Kansas City appreciates people who help it gain knowledge by being in research studies. It is not the University's policy to pay for or provide medical treatment for persons who are in studies. If you think you have been harmed because you were in this study, please call the researcher, Daniel Keown at 219.718.0344.

Contacts for Questions about the Study

You should contact the Office of UMKC's Social Sciences Institutional Review Board at 816-235-5927 if you have any questions, concerns or complaints about your rights as a research subject. You may call the researcher Daniel Keown at 219.718.0344 if you have any questions about this study. You may also call him if any problems come up.

Voluntary Participation

Taking part in this research study is voluntary. If you choose to be in the study, you are free to stop participating at any time and for any reason. If you choose not to be in the study or decide to stop participating, your decision will not affect any care or benefits you are entitled to. The researchers, doctors or sponsors may stop the study or take you out of the study at any time if they decide that it is in your best interest to do so. They may do this for medical or administrative reasons or if you no longer meet the study criteria. You will be told of any important findings developed during the course of this research.

You have read this Consent Form or it has been read to you. You have been told why this research is being done and what will happen if you take part in the study, including the risks and benefits. You have had the chance to ask questions, and you may ask questions at any time in the future by calling Daniel Keown at 219.718.0344. By signing this consent form, you volunteer and consent to take part in this research study. Study staff will give you a copy of this consent form.

_____ _____

Signature (Volunteer Subject) **Date**

_____

Printed Name (Volunteer Subject)

_____ **_____**

Signature of Person Obtaining Consent **Date**

_____

Printed Name of Person Obtaining Consent

APPENDIX K

PHASE TWO – SCRIPT

Script

Introduction

Today you have the opportunity to take part in a research study. This study will take approximately 15 minutes to complete. Please understand that participation in this study is completely voluntary. You may choose to not participate or to withdraw your participation at any time. Deciding not to participate or choosing to leave the study will not influence your academic standing in school or this course.

In addition, reported data will be collected anonymously. At no time will the reported data be connected to a specific individual. Again, participation and reported data for this study will not affect your academic standing in this course.

First Part of Main Study

Today, you will sing 'Doh' three times and 'Noo' three times while simultaneously watching the visual of a film on the screen in front of you. At the end of each performance you will be asked to rate how expressive you felt your own performance was while singing with the choir. Expression can be defined by any aspect or aspects of music that you consider to be expressive. For each performance, you are asked to perform with the most adequate level of expression you see fit according to what you see on the film. You will see on the questionnaire in front of you that you will be rating your perception of expressivity once after each performance. You have the opportunity to rate your own expressivity from least expressive to most expressive using the 8-point scale. You will have 5 seconds after each performance to rate your individual expressivity on each the performance. You will be singing both songs from memory with no conductor and asked to bring your best effort in performing the piece as if you were in a live performance. During the singing of each performance, you are asked to focus on the over head screen in front of you at all times. At no time should you take your eyes off of the screen during the performance. Before each performance, you will be given your starting pitches and informed when to begin singing by the use of the numerical click track that you practiced using during your last two rehearsals. Understand, that sometimes you will be singing while a film is being projected on the screen and sometimes there won't be a film projected on the screen after once you begin singing. I will inform you whether you will be singing with or without a visual film in front of you before each performance. Are there any questions?

From this point on, you are to refrain from talking and/or making eye contact with your fellow choir singers.

Visual Conditions

You are about to perform Etude "Doh" (or "Noo") while viewing a short video clip. Prior to the clip, you will receive your pitches. You will view the first 15 seconds of the video before you sing. At which point, a numerical countdown will appear on the screen. This will act as your indicator to begin singing. You will start singing after one as practiced during our last two rehearsals

You will sing continuously along with the video clip until the end of the song. Please keep your eyes forward on the screen. Once you have finished the song, you will have 5 seconds to rate your expressivity on the questionnaire.

After Each Condition – Report Data - (Repeated after each performance)

Please rate your expressivity for under Performance ____.

After completing all three performances for one song. – Report Data

Please turn the questionnaire over. Out of the three performances on Etude "Doh" (or "Noo"), please mark the performance you preferred the most and the least. Please take 10 seconds to report.

*After performing and reporting data for Etude "Doh" (or "Noo), have the singers perform and rate for the other etude and repeat this process before moving to the second part of the experiement.

Second Part of Experiment

Next, you will be listening to all six performances through these speakers and rating the expressivity of each performance as you hear it through playback. The listening order has been randomly chosen for today's study. You will hear each performance once. During the listening, please do not mark the form. You may begin marking the form immediately after the recording of the performance has finished. You will have 5 seconds to rate. Please rate the overall expression of the listening performance as your hear it. Expression can be defined by any aspect or aspects of music that you consider to be expressive. Are there any questions?

From this point on, you are to refrain from talking and/or making eye contact with you fellow choir singers.
[Play Performance 1]

Please rate under Performance 1.

Now we will listen to Performance 2.
[Play Performance 2]

Please rate under Performance 2.

Now we will listen to Performance 3.
[Play Performance 3]

Please rate under Performance 3.
Once you have finished rating Performance 3, please turn the questionnaire over and report the performance you preferred the most and least as you heard it in the recorded performance for Song A (or B).

Now we will listen to Performance 4.
[Play Performance 4]

Please rate under Performance 4.

Now we will listen to Performance 5.
[Play Performance 5]

Please rate under Performance 5.

Now we will listen to Performance 6.
[Play Performance 6]

Please rate under Performance 6.
Once you have finished rating Performance 6, please turn the questionnaire over and report the performance you preferred the most and least as you heard it in the recorded performance for Etude "Doh" (or "Noo"). In addition, please fill out the background information at the end of the questionnaire. Please take a minute to complete.

End of Study

Thank you for volunteering to be a part of this study. Please leave your questionnaire and pencil on the stand. I will be explaining the purpose of your participation and answer any questions you may have during your next rehearsal. Your insight is very much appreciated.

APPENDIX L

PHASE TWO – SELF-REPORT SURVEY TOOL

Code: _____

Please <u>circle only one</u> response for each question

<u>Performance 1:</u>

Please rate your overall expression while singing with the choir during the first performance.

1 2 3 4 5 6 7 8

(No expression) (Extremely Expressive)

<u>Performance 2:</u>

Please rate your overall expression while singing with the choir during the second performance.

1 2 3 4 5 6 7 8

(No expression) (Extremely Expressive)

<u>Performance 3:</u>

Please rate your overall expression while singing with the choir during the third performance.

1 2 3 4 5 6 7 8

(No expression) (Extremely Expressive)

Please <u>circle only one</u> response for each question

1. Out of the three performance experiences, which did you prefer the <u>*most*</u>?

Performance 1 Performance 2 Performance 3

2. Out of the three performance experiences, which did you prefer the <u>*least*</u>?

Performance 1 Performance 2 Performance 3

Code: _____

Please <u>circle only one</u> response for each question

<u>Performance 4:</u>

Please rate your overall expression while singing with the choir during the fourth performance.

1	2	3	4	5	6	7	8
(No expression)							(Extremely Expressive)

<u>Performance 5:</u>

Please rate your overall expression while singing with the choir during the fifth performance.

1	2	3	4	5	6	7	8
(No expression)							(Extremely Expressive)

<u>Performance 6:</u>

Please rate your overall expression while singing with the choir during the sixth performance.

1	2	3	4	5	6	7	8
(No expression)							(Extremely Expressive)

Please <u>circle only one</u> response for each question

3. Out of the three performance experiences, which did you prefer the <u>*most*</u>?

Performance 4 Performance 5 Performance 6

4. Out of the three performance experiences, which did you prefer the <u>*least*</u>?

Performance 4 Performance 5 Performance 6

APPENDIX M

PHASE TWO – LISTENING PERCEPTION SURVEY TOOL

Code: _____

Please indicate your perception of the *recorded performances' expressivity* as you hear it. Please circle only one rating per question.

Performance 1:

Please rate the *overall expression* of the recorded performance

1	2	3	4	5	6	7	8
(No expression)							(Extremely Expressive)

Performance 2:

Please rate the *overall expression* of the recorded performance

1	2	3	4	5	6	7	8
(No expression)							(Extremely Expressive)

Performance 3:

Please rate the *overall expression* of the recorded performance

1	2	3	4	5	6	7	8
(No expression)							(Extremely Expressive)

Please circle only one response for each question

1. Out of the three performances that you just listened to, which did you prefer the *most*?

Performance 1 Performance 2 Performance 3

2. Out of the three performances that you just listened to, which did you prefer the *least*?

Performance 1 Performance 2 Performance 3

Please indicate your perception of the *recorded performances' expressivity* as you hear it. Please circle only one rating per question.

Performance 4:

Please rate the *overall expression* of the recorded performance

1	2	3	4	5	6	7	8
(No expression)						(Extremely Expressive)	

Performance 5:

Please rate the *overall expression* of the recorded performance

1	2	3	4	5	6	7	8
(No expression)						(Extremely Expressive)	

Performance 6:

Please rate the *overall expression* of the recorded performance

1	2	3	4	5	6	7	8
(No expression)						(Extremely Expressive)	

Please circle only one response for each question

4. Out of the three performances that you just listened to, which did you prefer the *most*?

Performance 4 Performance 5 Performance 6

5. Out of the three performances that you just listened to, which did you prefer the *least*?

Performance 4 Performance 5 Performance 6

Background Information

Please <u>circle one:</u>

6. Gender: Male Female

7. Grade Level: Freshman Sophomore Junior Senior Graduate

8. Voice Part for these Performances: Soprano Alto Tenor Bass

Please fill in the blank.

9. Major: _____

10. During your lifetime, how many years have you performed in any choir?

_____ years

11. <u>Comments:</u>

APPENDIX N

PHASE THREE – CHORAL EXPERTS RECRUITMENT SCRIPT

SUBJECT HEADING: What if a scene in a film assisted the singer in telling the story through their instrument?

Hello,

My name is Daniel Keown and I am conducting research on the effects of projected film visuals on the expressivity of choral performance as part of a doctoral program in music education at the University of Missouri-Kansas City. You are receiving this email because you are considered an expert in the field of music. I need your help in rating the expressivity of several choir performances that were performed in synchronization with on-screen film visuals. Would you be able and willing to be a participant in this study?

This study will be conducted at your workplace after school hours.

The study would entail the listening and rating of expressivity of 18 choir performances, each 30 seconds in length. All materials would be supplied for you during the study. This is a one-time process and should take approximately 12 minutes to complete.

Participation is anonymous and confidential. If you choose to participate you will need to fill out a consent form agreeing to your participation.

I appreciate the opportunity to answer any further questions to better inform you of the purpose and commitment associated in this study to help you formulate a decision on whether to participate.

Thank you for your time.

APPENDIX O

PHASE THREE – CHORAL EXPERT CONSENT FORM

Consent for Participation in a Research Study

The Effect of Congruent and Non-Congruent On-Screen Film Narrative Visuals on the Expressivity of Choral Performances

Daniel Keown, IPh.D. Music Education
University of Missouri-Kansas City, Conservatory of Music and Dance
Grant Hall, 5100 Rockhill Road, Kansas City, MO 64110-2249
Phone: 219.718.0344; email djkvwf@mail.umkc.edu

Request to Participate

You are being asked to take part in a research study. The study will occur at participants' place of work. The investigator will be present during the study.

The researcher in charge of this study is Daniel Keown**.** While he will run the study, the investigator's primary advisor will be Dr. Charles Robinson.

The investigator is asking you to take part in this research study because you have been working in the field of choral music for more than three years. Research studies only include people who choose to take part. This document is called a consent form. Please read this consent form carefully and take your time making your decision. The researcher or study staff will go over this consent form with you. Ask him/her to explain anything that you do not understand. Think about it before you decide if you want to take part in this research study. This consent form explains what to expect: the risks, discomforts, and benefits, if any, if you consent to be in the study.

Background

You have been recruited to participate in this study because you are considered a choral music expert who has been working in the field of music for more than three years. Today you will be listening to approximately 15-18 different performances, each 30 seconds in length, and the overall expressivity of each performance.

You will be one of about 8 subjects in the study.

Purpose

The purpose of this study is to investigate the degree of expressivity of each recorded choral performance. The entire study should take approximately 15-18 minutes to complete. The investigator is interested in whether a choir's expression is effected by other factors outside of singing besides watching a conductor conduct a choir. You will be listening to only the audio from each recorded performance through headphones. This study does not include deception and informs the participants that expressivity will be measured.

Procedures

For this study you will be asked to listen to three different recorded performances of one song from one choir and rate each performance's overall expressivity of the performance. All listening and rating will occur sitting down in front of a playback device. Recorded

performances will be played back from the playback device through headphones. You will report your ratings on to a hard copy questionnaire. After rating all three performances from the same choir, you will then mark your preference between the three performances. Once you've reported your preference, you will be asked to write down comments on any aspect(s) of the three recorded performances. The next three performances from a different choir will be played and reported on. At the conclusion of the study, you will be asked to report background information – gender, music related occupation, and how many years you've been involved in music. This will be a one-time study and participants will not have to report back for a second investigation under this study. If you agree to take part in this study, you will be involved in this study for about 15-18 minutes..

Your participation in this research is voluntary. You may choose to participate or to withdraw your participation at any time. Deciding not to participate or choosing to discontinue participation in the study will not result in any penalty or affect your academic standing in choir or at school. If you decide to leave the study the information you have already provided will be discarded and not used.

Risks and Inconveniences

This research is considered to be minimal risk. That means that the risks of taking part in this research study are not expected to be more than the risks in your daily life. There are no other known risks to you if you choose to take part in this study.

Benefits

You will not benefit directly by participating in this study. The main benefit will be to help researchers better understand the relationship between the experiences of watching films and videos on the expressivity of choral performance.

Fees and Expenses

You are not responsible for any costs or expenses associated with this study.

Compensation

Participants will not be compensated for their participation in this study.

Alternatives to Study Participation

You can choose not to participate in this study.

Confidentiality

While we will do our best to keep the information you share with us confidential, it cannot be absolutely guaranteed. Individuals from the University of Missouri-Kansas City Institutional Review Board (a committee that reviews and approves research studies), Research Protections Program, and Federal regulatory agencies may look at records related to this study to make sure we are doing proper, safe research and protecting human subjects. The results of this research may be published or presented to others. You will not be named in any reports of the results.

Every effort will be made to keep all information confidential. The only identifiable information will include the names on the sign-up sheet. No identifiable information will be included on the questionnaires or audio recording. All data and materials will be kept in a lock filing cabinet in a locked office or a password protected hard drive for 10 years. No identifiable information will be used in any part of this study, publications, or presentations.

In Case of Injury

The University of Missouri-Kansas City appreciates people who help it gain knowledge by being in research studies. It is not the University's policy to pay for or provide medical treatment for persons who are in studies. If you think you have been harmed because you were in this study, please call the researcher, Daniel Keown at 219.718.0344.

Contacts for Questions about the Study

You should contact the Office of UMKC's Social Sciences Institutional Review Board at 816-235-5927 if you have any questions, concerns or complaints about your rights as a research subject. You may call the researcher Daniel Keown at 219.718.0344 if you have any questions about this study. You may also call him if any problems come up.

Voluntary Participation

Taking part in this research study is voluntary. If you choose to be in the study, you are free to stop participating at any time and for any reason. If you choose not to be in the study or decide to stop participating, your decision will not affect any care or benefits you are entitled to. The researchers, doctors or sponsors may stop the study or take you out of the study at any time if they decide that it is in your best interest to do so. You will be told of any important findings developed during the course of this research.

You have read this Consent Form or it has been read to you. You have been told why this research is being done and what will happen if you take part in the study, including the risks and benefits. You have had the chance to ask questions, and you may ask questions at any time in the future by calling Daniel Keown at 219.718.0344. By signing this consent form, you volunteer and consent to take part in this research study. Study staff will give you a copy of this consent form.

_____ _____

Signature (Volunteer Subject) **Date**

_____

Printed Name (Volunteer Subject)

_____ **_____**

Signature of Person Obtaining Consent **Date**

_____

Printed Name of Person Obtaining Consent

APPENDIX P

PHASE THREE - SCRIPT

Script

Today you have the opportunity to take part in a research study. Please understand that participation in this study is completely voluntary. You may choose to not participate or to withdraw your participation at any time. This study will take approximately 12 minutes to complete. If you choose to leave the room for any reason, you will not be able to return to complete the study and your reported data will be eliminated from this study.

In addition, reported data will be collected anonymously. At no time will the reported data be connected to a specific individual.

Thank you for participating in this study. You will be listening to a set of three choir performances of the same piece by the same chamber choir and rating each performance's overall expressivity as you hear it. During this study, you will be listening to a total of five (or six) sets from multiple chamber choir ensembles. This study is interested in your perception of expressivity for each performance as you hear it. You will begin by pressing "Play" on your computer using *Quicktime*, which is already up on your screen. Identification of the performance number and next instructions will be the only visual information that you will receive during this study. You will be listening to the music and rating its expressivity only through what you hear. You will hear the performance once. Once you have listened to the first performance example, you will be given five seconds to rate the level expressivity from the performance as you heard it. At no time should you stop or pause the audio during this study. Please take a moment at look at the questionnaire in order to familiarize yourself with the questions and rating scale. You will begin by listening to Choir 1. Choir 1 will perform the same song three times. After the first performance, you are to rate the expressiveness of the listening performance. Expression can be defined by any aspect or aspects of music that you consider to be expressive. After 5 seconds, the second performance from Choir 1 will begin playing. Once you have listened to and rated the expressivity of all three performances, you are asked to turn your questionnaire over, and provide your preference between the three performances. You will be given 10 seconds to report your preference for all three performances before moving on to listen to Choir 2. Once you have listened to and reported for all five (or six) choirs, you will be asked to complete the background information before concluding the study. Are there any questions?

Please refrain from making eye contact or talking to anyone during this study. At no time should you press pause or stop during playback. Once you are ready, you may begin by pressing Play.

End of Study

Thank you for volunteering to be a part of this study. Your insight is very much appreciated.

APPENDIX Q

PHASE THREE – LISTENING PERCEPTION SURVEY TOOL

Please indicate your perception of the performances' *expressivity of music elements* and *overall expressivity.*

Performance 1:

Please rate the *overall expression* of the performance

1 2 3 4 5 6 7 8
(Not Expressive) (Extremely Expressive)

Performance 2:

Please rate the *overall expression* of the performance

1 2 3 4 5 6 7 8
(Not Expressive) (Extremely Expressive)

Performance 3:

Please rate the *overall expression* of the performance

1 2 3 4 5 6 7 8
(Not Expressive) (Extremely Expressive)

Please circle only one response for each question

1. Out of the three performances that you just listened to, which did you prefer the *most*?

Performance 1 Performance 2 Performance 3

2. Out of the three performances that you just listened to, which did you prefer the *least*?

Performance 1 Performance 2 Performance 3

Comments on any aspect(s) of these three performances:

Please circle.

3. Gender: Male Female

Please fill in the blank.

4. Music Occupation: _____

5. How many years have you been involved in music as a professional career?

_____ years

6. Comments:

REFERENCES

Aho, M. (2009). Gestures in vocal performance and the experience of the listener: A case study of extra-semantic meaning-making in the singing of Olavi Virta. *Popular Music, 28*(1), 33-51.

Arnheim, R. (1957). *Film as art.* Berkeley: University of California Press.

Baars, B. J., & Gage, N. M. (2010). *Cognition, brain, and consciousness: Introduction to cognitive neuroscience*. Oxford, UK: Elsevier.

Bailey, B. (2007). *Movement in the choral rehearsal.* Teaching Music, 14(5), 22-26.

Bain, K. (2004). *What the best college teachers do*. Cambridge, MA: Harvard University Press.

Balkwill, L. L., & Thompson, W. F. (1999). A cross-cultural investigation of the perception of emotion in music: Psychophysical and cultural cues. *Music Perception, 17,* 43-64.

Balkwill, L. L., Thompson, W. F., & Matsunaga, R. (2004). Recognition of emotion in Japanese, Western, and Hindustani music by Japanese listeners. *Japanese Psychological Research, 46,* 337-349.

Ballantine, J. H. (2001). *The sociology of education*. Upper Saddle River, NJ: Prentice-Hall.

Barenboim, D. (2006). In the beginning was sound [BBC Radio Reith lecture]. Retrieved 23 July 2012, from http://www.bbc.co.uk/radio4/reith2006/lecture1.shtml

Barten, S. (1998). The use of motor-affective metaphors in music instruction. *Journal of Aesthetic Education, 32*(2), 89-97.

Barten, S., Brins, B., & Ronch, J. (1971). Individual differences in the visual pursuit behavior of neonates. *Child Development, 42,* 313-319.

Barthet, M., Depalle, P., Kronland-Martinet, R., & Ystad, S. (2010). Acoustical correlates of timbre and expressiveness in clarinet performance. *Music Perception, 28*(2), 135-153.

Basabe, N., Paez, D., Valencia, J., Gonzalez, J. L., & Rimé, B. (2002). Cultural dimensions, socioeconomic development, climate, and emotional hedonic level. *Cognition and Emotion, 16*(1), 103-125.

Belton, J. (2012). Introduction: Digital cinema. *Film History: An International Journal, 24*(2), 131-134.

Bergson, H. (1944). *Creative evolution* (A. Mitchell, Trans.). New York, NY: Modern Library.

Bernstein, E. (1978). *Film music notebook: A complete collection of the quarterly journal, 1974-1978.* Sherman Oaks: Film Music Society.

Bigand, E., Parncutt, R., & Lerdahl, F. (1996). Perception of musical tension in short chord sequences: The influence of harmonic function, sensory dissonance, horizontal motion, and musical training. *Perception & Psychophysics, 58*(1), 125-141.

Block, D. G. (2012). Making the connection between hearing and seeing. *Teaching Music, 20(*2), 50.

Bolivar, V., Cohen, A., & Fentress, J. (1994). Semantic and formal congruency in music and motion pictures: Effects on the interpretation of visual action. *Psychomusicology - A Journal of Research in Music Cognition, 13*, 28-59.

Boltz, M. G. (2001). Musical soundtracks as a schematic influence on the cognitive processing of filmed events. *Music Perception, 18*(4), 427-454.

Boltz, M. G. (2004). The cognitive processing of film and musical soundtracks.

Memory and Cognition, 32, 1194-1205.

Boltz, M. G., Ebendorf, B., & Field, B. (2009). Audiovisual interactions: The impact of visual information on music perception and memory. *Music Perception, 27*(1), 43-59.

Boltz, M. G., Schulkind, M., & Kantra, S. (1991). Effects of background music on the remembering of filmed events. *Memory & Cognition, 19*, 595-606.

Bordwell, D., & Thompson, K. (1990). *Film art: An introduction.* New York: McGraw Hill.

Bos, A. L., van Doorn, B. W., & Smanik, A. C. (2012). The effects of HDTV on perceptions of Obama and McCain in a 2008 presidential debate. *Communication Research Reports, 29*(2), 161-168.

Bradley, M. M., Codispoti, M., Cuthbert, B. N., & Lang, P. J. (2001). Emotion and motivation I: Defensive and appetitive reactions in picture processing. *Emotion, 1*(3), 276-298.

Bregman, A. (1990). *Auditory scene analysis*. Cambridge, MA: MIT Press.

Bresin, R. (2000). *Virtual virtuosity: Studies in automatic music performance.* (Doctoral Dissertation). Royal Institute of Technology, Stockholm.

Bresin, R., & Battel, G. U. (2000). Articulation strategies in expressive piano performance. Analysis of legato, staccato, and repeated notes in performances of the Andante movement of Mozart's Sonata in G major (K 545). *Journal of New Music Research, 29*, 211-244.

Broomhead, P. (2001). Individual expressive performance: Its relationship to ensemble achievement, technical achievement, and musical background. *Journal of Research in Music Education, 49*, 71-85.

Broomhead, P. (2006). A study of instructional strategies for teaching expressive performance in the choral rehearsal. *Bulletin of the Council for Research in Music Education, 167*, 7-20.

Broomhead, P. (2009). An individualized problem solving approach for teaching choral phrase shaping: An experimental study. *Update*, *27*, 52-61.

Broomhead, P., Skidmore, J. B., Eggett, D. L., & Mills, M. M. (2012). The effects of a positive mindset trigger word pre-performance routine on the expressive performance of junior high age singers. *Journal of Research in Music Education, 60*(1), 62-80.

Broughton, M., & Stevens, C. (2009). Music, movement and marimba: An investigation of the role of movement and gesture in communicating musical expression to an audience. *Psychology of Music*, *37*(2), 137-153.

Brown, R. S. (1994). *Overtones and undertones: Reading film music.* University of California Press.

Bullerhahn, C. (2006). The effectiveness of music in television commercials: A comparison of theoretical approaches. In S. Brown & U. Volgsten (Eds.), *Music and manipulation: On the social uses and social control of music* (pp. 207-238). New York, NY: Berghahn Books.

Bullerhahn, C., & Güldenring, M. (1994). An empirical investigation of effects of film music using qualitative content analysis. *Psychomusicology - A Journal of Research in Music Cognition*, *13*, 99-118.

Brunswik, E. (1956). *Perception and the representative design of experiments.* Berkeley: University of California Press.

Bunch, M. (1995). *Dynamics of the singing voice.* Wien: Springer Verlag.

Burt, G. (1994). *The art of film music*. Boston: Northeastern University Press.

Byo, J. (1990). Recognition of intensity contrasts in the gestures of beginning conductors. *Journal of Research in Music Education, 38,* 157-163.

Cambouropoulos, E., Dixon, S. E., Goebl, W., & Widmer, G. (2001). Human preferences for tempo smoothness. In: H. Lappalainen (Ed.), *Proceedings of the seventh international symposium on systematic and comparative musicology, third international conference on cognitive musicology*, Jyväskylä, Finland: University of Jyväskylä, pp. 18-26.

Canazza, S., De Poli, G., Rodà, A., & Vidolin, A. (1997). Analysis by synthesis of the expressive intentions in music performance. *International Computer Music Conference Proceedings, 1997*, Retrieve from International Computer Music Association Website on July, 19, 2012.

Cantor, J. (2002). Fright reactions to mass media. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 287-306). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Carpenter, R. A. (1988). A descriptive analysis of relationships between verbal behaviors of teacher-conductors and rating of selected junior and senior high school band rehearsals. *Update: Applications of Research in Music Education, 7,* 37-40.

Castellano, G., Mortillaro, M., Camurri, A., Volpe, G., & Scherer, K. (2008). Automated analysis of body movement in emotionally expressive piano performances. *Music Perception, 26,* 103-120.

Chaffin, R. & Imreh, G. (2001). A comparison of practice and self-report as sources of

information about the goals of expert practice. *Psychology of Music*, *29*(1), 39-69.

Chion, M. (1994). *Audio-Vision: Sound on screen* (C. Gorbman, Trans.). New York, NY: Columbia University Press.

Chute, A. G. (1980). The effect of color and monochrome versions of a film on incidental and task-relevant learning. *Educational Communication and Technology, 28*(1), 10-18.

Clynes, M. (1977). *Sentics: The touch of emotions.* New York: Anchor Press.

Codispoti, M. & De Cesarei, A. (2007). Arousal and attention: Picture size and emotional reactions. Psychophysiology, 44, 680-686.

Cohen, A. J. (1993). Associationism and musical soundtrack phenomena. *Contemporary Music Review, 9*, 163-178.

Cohen, A. J. (2010). Music as a source of emotion in film. In P. N. Juslin & J. A. Sloboda (Eds.), *Handbook of music and emotion: Theory, research, applications* (pp. 879-908). Oxford: Oxford University Press.

Cohen A. J., MacMillan, K. A., & Drew, R. (2006). The role of music, sound effects, & speech on absorption in a film: The congruence-associationist model of media cognition. *Canadian Acoustics, 34*, 40-41.

Collier, G. L., & Collier, J. L. (2002). A study of timing in two Louis Armstrong solos. *Music Perception, 19,* 463-483.

Coleman, M. (2012a). *The sound and music for Dark Knight Rises* [Video file]. United States: Soundworks Collection. Retrieved from http://soundworkscollection.com/darkknightrises on September 14, 2012.

Coleman, M. (2012b). *The sound for Watchmen* [Video file]. United

States: Soundworks Collection. Retrieved from http://soundworkscollection.com/videos/watchmen on January 4, 2013.

Cook, N. (1998). *Analyzing musical multimedia.* Oxford: Clarendon Press.

Cooke, D. (1959). *The language of music.* Oxford: Oxford University Press.

Cooksey, J. M. (1977). A facet-factorial approach to rating high school choral music performance. *Journal of Research in Music Education, 25*(2), 100-114.

Copland, A. (1985). *What to listen for in music*. McGraw-Hill Inc.

Cottrell, N. B. (1972). Social facilitation. In C. G. McClintock (Ed.), *Experimental social psychology* (pp. 185-235). New York: Holt, Rinehart & Winston.

Creaven, P. (2011). Education expert stresses relevance in public schools. Retrieved from ConcordPatch website, http://concord-ca.patch.com/articles/daggett-relevance-needed-in-us-schools, on January, 3, 2013.

Cubitt, S. (2004). *The cinema effect.* Cambridge, MA: The MIT Press. http://quod.lib.umich.edu/cgi/p/pod/dod-idx?c=icmc;idno=bbp2372.1997.036.

Dahl, S., & Friberg, A. (2007). Visual perception of expressiveness in musicians' body movements. *Music Perception*, *24*(5), 433-454.

Dalla Bella, S., Peretz, I., Rousseasu, L., & Gosselin, N. (2001). A developmental study of the affective value of tempo and mode in music. *Cognition, 80,* B1-B10.

Daugherty, J. F. (1999). Spacing, formation, and choral sound: Preferences and perceptions of auditors and choristers. *Journal of Research in Music Education, 47*(3), 224-238.

Davies, S. (1980). The expression of emotion in music. *Mind, 89,* 67-86.

Davidson, J. W. (1993). Visual perception of performance manner in the movement of solo

musicians. *Psychology of Music, 21,* 103-113.

Davidson, J. W. (1997). The social in musical performance. In D. J. Hargreaves and A. C. North (Eds.), *The social psychology of music* (pp. 209-228). Oxford: Oxford University Press.

Davidson, J. W. (2009). Movement and collaboration in musical performance. In S. Hallam, I. Cross, & M. Thaut (Eds.), *The Oxford handbook of music psychology* (pp. 364-376). Oxford: Oxford University Press.

Davis, E., Greenberger, E., Charles, S., Chen, C., Zhao, L., & Dong, Q. (2012). Emotion experience and regulation in China and the United States: How do culture and gender shape emotion responding? *International Journal of Psychology, 47*(3), 230-239.

Davis, R. (2010). *Complete guide to film scoring*. Boston, MA: Berklee Press.

De Cesarei, A., & Codispoti, M. (2008). Fuzzy picture processing: Effects of size reduction and blurring on emotional processing. *Emotion, 8*(3), 352-363.

De Poli, G. (2004). Methodologies for expressiveness modeling of and for music performance. *Journal of New Music Research, 33*(3), 189-202.

De La Motte-Haber, H. (1968). *Ein Beitrag zur Klassifkation musikalischer Rhythmen.* Köln, Germany: Arno Volk Verlag.

DesJardins, C. (2006). *Inside film music: Composers speak.* Los Angeles: Silman-James Press.

Detenber, B. H., & Reeves, B. (1996). A bio-informational theory of emotion: Motion and image size effects on viewers. *Journal of Communication, 46*(3), 66-84.

Detenber, B. H., & Simons, R. F. (1998). Roll 'em!: The effects of picture motion on emotional responses. *Journal of Broadcasting & Electronic Media, 42*(1), 113-128.

Detenber, B. H., Simons, R. F., & Reiss, J. E. (2000). The emotional significance of color in television presentations. *Mediapsychology, 2,* 331-355.

Dewey, J. (1916). *Democracy and education.* New York, NY: The Macmillan Company.

Dewey, J. (1938). *Experience and education*. New York, NY: The Macmillan Company.

Dickey, M. R. (1992). A review of research on modeling in music teaching and learning. *Bulletin of the Council for Research in Music Education, 113,* 27-40.

Dmytryk, E. (1984). *On film editing: An introduction to the art of film construction.* Woburn, MA: Focal Press.

Donohue, T. R. (1973). Viewer perceptions of color and black-and-white paid political advertising. *Journalism Quarterly, 50,* 660-665.

Dowling, W. J., & Harwood, D. L. (1986). *Music cognition.* New York: Academic Press.

Downey, J. E. (1897). A musical experiment. *American Journal of Psychology, 9,* 63-69.

Ebie, B. D. (2004). The effects of verbal, vocally modeled, kinesthetic, and audio-visual treatment conditions on male an female middle-school vocal music students' abilities to expressively sing melodies. *Psychology of Music, 32*(4), 405-417.

Edmundson, D. D. (1996). An examination of the effects of mental practice on performance, attention, and arousal. *Dissertation Abstracts International, 59,* 3507.

Edwards, N. (2006). Non-traditional music students: A new population of music student for the 21st Century. Unpublished research paper, Illinois State University.

Eisenstein, S. (1957). *Film form: Essays in film theory and the film sense.* Meridian Books.

Eisler H., & Adorno, T. (1947). *Composing for the films.* New York: Oxford University Press.

Elliot, D. J. (1995). *Music matters.* New York: Oxford University Press.

Elliot, D. J. (2005). Musical understanding, musical works, and emotional expression: Implications for music education. *Educational Philosophy and Theory, 37*, 93-103.

Finney, S. A. (1997). Auditory feedback and musical keyboard performance. *Music Perception, 15,* 153-174.

Fischer, L. (1999). Film editing. In T. Miller & R. Stam (Eds.), *A companion to film theory*. Malden, MA: Blackwell Publishing (pp. 64-83).

Flowers, P. J. (2000). The match between music excerpts and written descriptions by fifth and sixth graders. *Journal of Research in Music Education, 48*, 262-277.

Fox, R., & McDaniel, C. (1982). The perception of biological motion by human infants. *Science, 218,* 486-487.

Frakes, L. (1986). Differences in music achievement, academic achievement, and attitude among participants, dropouts, and nonparticipants in secondary school music. *Bulletin of the Council for Research in Music Education, 89*, 45-49.

Frampton, D. (2006). *Filmosophy*. London: Wallflower Press.

Frego, R. J. D. (1999). Effects of aural and visual conditions on response to perceived artistic tension in music and dance. *Journal of Research in Music Education, 47*(1), 31-43.

Friberg, A. (1991). Generative rules offer music performance: A formal description of a rule system. *Computer Music Journal, 15*(2), 56-71.

Friberg, A. (1995). Matching the rule parameters of Phrase arch to performances of "Träumerei": A preliminary study. In A. Friberg and J. Sundberg (Eds.), *Proceedings of the KTH Symposium on Grammars for Music Performance* (pp. 37-

44). Stockholm: Royal Institute of Technology.

Friberg, A., Colombo, V., Frydén, L., & Sundberg, J. (2000). Generating musical performances with Director Musices. *Computer Music Journal, 24*(3), 23-29.

Friberg, A., & Sundberg, J. (1999). Does music performance allude to locomotion? A model of final ritardandi derived from measurements of stopping runners. *Journal of the Acoustical Society of America, 105*(3), 1469-1484.

Fridja, N. (1988). The laws of emotion. *American Psychologist, 43*(5), 349-358.

Fung, C. V. (1996). Musicians' and nonmusicians' preferences for world musics: Relation to musical characteristics and familiarity. *Journal of Research in Music Education, 44*(1), 60-83.

Funk, G. D. (1982). *Verbal imagery: Illuminator of the expressive content in choral music.* (Doctoral Dissertation). Arizona State University, Tempe, AZ.

Gabrielsson, A. (1974). Performance of rhythm patterns. *Scandinavian Journal of Psychology, 15*, 63-71.

Gabrielsson, A. (2002). Emotion perceived and emotion felt: Same or different? *Musicae Scientiae, Special Issue, 2001-2002*, 123-147.

Gabrelsson, A. (2003). Music performance research at the millennium. *Psychology of Music, 31*, 221-272.

Gabrielsson, A. (2011). *Strong experience with music: Music is much more than just music.* Oxford: Oxford University Press.

Gabrielsson, A., & Juslin, P. N. (1996). Emotional expression in music performance: Between the performer's intention and the listener's experience. *Psychology of Music, 24*, 68-91.

Gabrielsson, A., & Wik, S. (2003). Strong experiences related to music: A descriptive system. *Musicae Scientiae, 7*(2), 157-217.

Ganschow, C. M. (2012). *Secondary school choral conductors' self-reported beliefs and behaviors regarding fundamental choral elements and rehearsal approaches.* (Doctoral Dissertation). University of Missouri-Kansas City, Kansas City, Missouri.

Garcia, M. R., & Stark, P. (1991). *Eyes on the news.* St. Petersburg, FL: The Poynter Institute for Media Studies.

Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Garnett, L. (2005). Research report: Gesture, style and communication. *Master Singer, 55,* 14-15.

Gerbner, G., Gross, L., Morgan, M., & Signorielli, N. (1980). The "mainstreaming" of America: Violence profile no. 11. *Journal of Communication, 30*(3), 10-29.

Geringer, J., Cassidy, J., & Byo, J. (1996). Effects of music with video on responses of nonmusic majors: An exploratory study. *Journal of Research in Music Education, 44*(3), 240-251.

Geringer, J., Madsen, C. K., & Gregory, D. (2004). A fifteen-year history of the continuous response digital interface: Issues relating to validity and reliability. *Bulletin of the Council for Research in Music Education, 160,* 1-15.

Giacchino, M. (2009, June). Interview by S. Pincus [Audio file]. Giacchino's endless summer; Part 2, Film Score Monthly Online. Retrieved from http://www.filmscoremonthly.com/fsmonline/story.cfm?maID=1937&issueID=52 on September 14, 2012.

Giannetti, L. D. (2002). *Understanding movies.* Englewood Cliffs, NJ: Prentice-Hall.

Gibson, J. (1979). *The ecological approach to visual perception.* Boston: Houghton Mifflin.

Gilman, B. I. (1891). Report on an experimental test of musical expressiveness. *American Journal of Psychology, 4,* 558-576.

Ginsborg, J., & Chaffin, R. (2011). Preparation and spontaneity in performance: A singer's thoughts while singing Schoenberg. *Psychomuiscology – A Journal of Research in Music Cognition, 21*(1-2), 137-158.

Goldberg, H. D. (1951). The role of "cutting" in the perception of motion pictures. *Journal of Applied Psychology, 35*, 70-71.

Goldstein, E. B. (1989) *Sensation and perception.* Belmont, CA: Wadsworth Publishing.

Goodwin, A. W. (1980). An acoustical study of individual voices in choral blend. *Journal of Research in Music Education*, 119-128.

Gorbman, C. (1987). *Unheard melodies: narrative film music*. Bloomington & Indianapolis: Indiana University Press.

Grechesky, R. N. (1985). *An analysis of nonverbal and verbal conducting behaviors and their relationship to expressive music performance.* (Doctoral Dissertation). University of Wisconsin-Madison, Madison, Wisconsin.

Gross, J. J., Sutton, S. K., & Ketelaar, T. (1998) Relations between affect and personality: Support for the affect-level and affective-reactivity views. *Personality and Social Psychology Bulletin, 24*, 279-288.

Guhn, M., Hamm, A., & Zentner, M. (2007). Physiological and musico-acoustic correlates of the chill response. *Music Perception, 24,* 473-483.

Gundlach, R. H. (1935). Factors determining the characterization of musical phrases.

American Journal of Psychology, 47, 624-644.

Hallam, S. (2010). Music education: The role of affect. In P. N. Juslin & J. A. Sloboda (Eds.), *Handbook of music and emotion: Theory, research, applications* (pp. 791-818). Oxford: Oxford University Press.

Hamann, K. L. (2003). Identification of expressiveness in small ensemble performances by middle school students. *Bulletin of the Council for Research in Music Education, 155,* 24-32.

Hargreaves, D. J. (1982). The development of aesthetic reactions to music. *Psychology of Music,* Special Issue, 51-54.

Harrington, J. (1973). *The rhetoric of film.* New York: Holt, Rinehart & Winston.

Hatzigeorgiadis, A., Zourbanos, N., Mpoumpaki, S., & Theodorakis, Y. (2009). Mechanisms underlying the self-talk-performance relationship: The effects of motivational self-talk on self-confidence and anxiety. *Psychology of Sport and Exercise, 10,* 185-192.

Hevner, K. (1936). Experimental studies of the elements of expression in music. *American Journal of Psychology, 48,* 246-268.

Hoffren, J. (1964). A test of musical expression. *Council for Research in Music Education, 2,* 32-35.

Hoover, T. (2009). *Keeping score: Interviews with today's top film, television, and game music composers.* Course Technology PTR.

Hortacsu, N., & Ekinci, B. (1992). Children's reliance on situational and vocal expression of emotion; Consistent and conflicting theories. *Journal of Nonverbal Behavior, 16*(4), 231-247.

House, R. E. (2000) *Effects of expressive and nonexpressive conducting on advanced instrumentalists.* Paper presented at the Nation MENC In-Service Conference, Washington, DC.

Howell, P., Powell, D. J., & Khan, I. (1983). Amplitude contour of the delayed signal and interference in delayed auditory feedback tasks. *Journal of Experimental Psychology: Human Perception and Performance, 9,* 772-784.

Hunsberger, D., & Ernst R. E. (1992). *The art of conducting.* New York: McGraw-Hill, Inc.

Imagawa, H., Sakakibara, K. I., Tayama, N., & Niimi, S. (2003, August). The effect of the hypopharyngeal and supra-glottic shapes on the singing voice. In *Proc. SMAC* (Vol. 3, pp. 471-474).

International Center for Leadership in Education. (2010). *Rigor and relevance handbook.* Rexford, NY: International Center for Leadership in Education, Inc.

Iwamiya, S. (1994). Interaction between auditory and visual processing when listening to music in an audio visual context. *Psychomusicology - A Journal of Research in Music Cognition, 13,* 133-153.

Jansens, S., Bloothooft, F., & de Krom, G. (1997). Perception and acoustics of emotions in singing. *Proceedings of the Fifth European conference on speech communication and technology, IV,* 2155-2158. Rhodes, Greece: ESCA.

Johannsen, G., & Nakra, T. M. (2010). Conductors' gestures and their mapping to sound synthesis. In R. I. Godøy & M. Leman (Eds.), *Musical gestures: Sound, movement, and meaning* (pp. 264-298). New York: Routledge, Taylor & Francis Group.

Johnson, C. M. (1996). The performance of Mozart: Study of rhythmic timing by

skilled musicians. *Psychomusicology - A Journal of Research in Music Cognition, 15*, 87-109.

Johnson, C. M. (1998). Effect of instruction in appropriate rubato usage on the onset timings and perceived musicianship of musical performances. *Journal of Research in Music Education, 46*(3), 436-445.

Juchniewicz, J. (2008). The influence of physical movement on the perception of musical performance. *Psychology of Music, 36*(4), 417-427.

Juslin, P. N. (1997). Emotional communication in music performance: A functionalist perspective and some data. *Music Perception, 14*, 383-418.

Juslin, P. N. (2000). Cue utilization in communication of emotion in music performance: Relating performance to perception. *Journal of Experimental Psychology: Human Perception and Performance, 26*, 1797-1813.

Juslin, P. N. (2001). Communicating emotion in music performance: A review and a theoretical framework. In P. N. Juslin and J. A. Sloboda (Eds.), *Music and emotion: Theory and Research (pp. 309-337).* New York: Oxford University Press.

Juslin, P. N. (2003). Five facets of musical expression, A psychologist's perspective on music performance. *Psychology of Music, 31,* 273-302.

Juslin, P. N. (2011). Communicating emotion in music performance: A review and theoretical framework. In P. N. Juslin & J. A. Sloboda (Eds.), *Music and Emotion: Theory and Research* (pp. 309-340). Oxford: Oxford University Press.

Juslin, P. N. & Laukka, P. (2000). Improving emotional communication in music performance through cognitive feedback. *Musicae Scientiae, 4*, 151-183.

Juslin, P. N., & Laukka, P. (2003). Communication of emotions in vocal expression

and music performance: Different channels, came code? *Psychological Bulletin, 129*(5), 770-814.

Juslin, P. N., & Laukka, P. (2004). Expression, perception, and induction of musical emotions: A review and a questionnaire study of everyday listening. *Journal of New Music Research, 33*(3), 217-238.

Juslin, P. N., & Madison, G. (1999). The role of timing patterns in recognition of emotional expression from musical performance. *Music Perception: An Interdisciplinary Journal, 17*(2), 197-221.

Juslin, P. N., & Persson, R. S. (2002). Emotional communication. In R. Parncutt & G. McPherson (Eds.), *The science and psychology of music performance: Creative strategies for teaching and learning* (pp. 219-236). Oxford: Oxford Press.

Juslin, P. N., & Sloboda, J. A. (2010). *Handbook of music and emotion: Theory, research, applications*. Oxford: Oxford University Press.

Juslin, P. N., & Västfjäll, D. (2008). Emotional responses to music: The need to consider underlying mechanisms. *Behavioral and Brain Sciences, 31*(5), 559-575.

Juslin, P. N., Friberg, A., Schoonderwaldt, E., & Karlsson, J. (2004). Feedback learning of musical expressivity. In A. Williamon (Eds.), *Musical excellence: Strategies and techniques to enhance performance* (pp. 247-270). New York, NY: Oxford.

Kalinak, K. (1992). *Settling the score.* Madison, WI: University of Wisconsin Press.

Karlin, F. (1994). *Listening to movies: The film lover's guide to film music.* New York: Schirmer Books.

Karlsson, J., & Juslin, P. N. (2008). Emotional responses to music: The need to consider

underlying mechanisms. *Behavioral and Brain Sciences, 31,* 559-575.

Kassabian, A. (2001). *Hearing film: Tracking identifications in contemporary Hollywood film music.* New York: Routledge.

Katz, E. (1994). *The film encyclopedia.* NewYork: Harper Collins.

Kendall, F. A., & Carterette, E. C. (1990). The communication of musical expression. *Music Perception, 8*(2), 129-164.

Keown, D. J., Belgrave, M. J., & Robinson, C. R. (2013). A descriptive study on adolescents' music consumption within on-screen audiovisual media compared to audio alone media. Unpublished research paper, University of Missouri-Kansas City.

Kerins, M. (2011). *Beyond Dolby (stereo): Cinema in the digital sound age*. Bloomington & Indianapolis: Indiana University Press.

Kipper, P. (1986). Television camera movement as a source of perceptual information. *Journal of Broadcasting & Electronic Media, 30*(3), 295-307.

Kirchner, J. M., Bloom, A. J., & Skutnick-Henley, P. (2008). The relationship between performance anxiety and flow. *Medical Problems of Performing Artists, 23*(2), 59-65.

Kohut, D. L., & Grant, J. W. (1990). *Learning to conduct and rehearse.* Englewood Cliffs, NJ: Prentice-Hall.

Kompanek, S. (2004). *From score to screen: Sequencers, scores, & second thoughts – The new film scoring process.* New York, NY: Schirmer Trade Books.

Kratus, J. (2007). Centennial series: Music education at the tipping point. *Music Educators Journal, 94*(2), 42-48.

Krumhansl, C. L. (1997). An exploratory study of musical emotions and psycho

physiology. *Canadian Journal of Experimental Psychology, 51,* 336-353.

Kubey, R., & Csikszentmihalyi, M. (1990). *Television and the quality of life: How viewing shapes everyday experience.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Kuleshov, L. (1974). *Kuleshov on film* (R. Levaco, Trans.). Los Angeles, CA: University of California Press.

Kveraga, R. K., Ghuman, A. S., & Bar, M. (2007). Top-down predictions in the cognitive brain. *Brain and Cognition, 65,* 145-168.

Lang, P. J. (1995). The network model of emotion: Motivational connections. In R. S. Wyer & T. K. Srull (Eds.), *Advances in social cognition.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Lang, P. J., Bradley, M. M., & Buthbert, B. N. (1990). Emotion, attention, and the startle reflex. *Psychological Review, 97,* 377-395.

Langer, S. (1953). *Feeling and form.* London: Routledge and Kegan Paul.

Laukka, P. (2004). Instrumental music teachers' views on expressivity: Preliminary evidence from music conservatoires. *Music Education Research, 8,* 45-56.

Laukka, P., & Juslin P. N. (2005). A dimensional approach to vocal expression of emotion. *Cognition and Emotion, 19*(5), 633-653.

Lazarus, R., Speisman, J., Mordkoff, A., & Davison, L. (1962). A laboratory study of psychological stress produced by a motion picture film. *Psychological Monographs, 76*(34), 1-35.

LeBlanc, A. (1982). An interactive theory of music preference. *Journal of Music Therapy, 19,* 28-45.

Lebrecht, N. (2011, June 13). Another US orchestra shuts down. [Web log post].

Retrieved from http://www.artsjournal.com/slippeddisc/2011/06/another-us-orchestra-shuts-down.html

Levin, D. T., & Simons, D. J. (1997). Failure to detect changes to attended objects in motion pictures. *Psychonomic Bulletin and Review, 4*, 501-506.

Levin, D. T., & Simons, D. J. (2000). Perceiving stability in a changing world: Combining shots and integrating views in motion pictures and the real world. *Media Psychology, 2*, 357-380.

Levitin, D. J. (2006). *This is your brain on music: The science of a human obsession.* New York: Penguin.

Lindström, E., Juslin, P. N., Bresin, R., & Williamon, A. (2003). "Expressivity comes from within your soul": A questionnaire study of music students' perspectives on expressivity. *Research Studies in Music Education, 20*, 23-47.

Link, S. (2004). Nor the eye filled with seeing: The sound of vision in film. *American Music, 22*(1), 76-90.

Lipscomb, S. D. (2005). The perception of audio-visual composites: Accent structure alignment of simple stimuli. *Selected Reports in Ethnomusicology, 12*, 37-67.

Lipscomb, S.D., & Kendall, R.A. (1994). Perceptual judgment of the relationship between musical and visual components in film. *Psychomusicology - A Journal of Research in Music Cognition, 13*, 60-98.

Loehr, J. D., & Palmer, C. (2007). Cognitive and biomechanical influences in pianists' finger tapping. *Experimental Brain Research, 178*, 518-528.

Lombard, M. (1995). Direct responses to people on the screen: Television and personal space. *Communication Research, 22*, 288-324.

Lychner, J. A. (2002). A comparison of aesthetic response to audio with video and audio alone. *Missouri Journal of Research in Music Education, 39,* 41-54.

Madsen, C. K. (1997a). Emotional responses to music. *Psychomusicology - A Journal of Research in Music Cognition, 16,* 59-67.

Madsen, C. K. (1997b). *Research in music behavior.* Paper presented at the Research in Music Behavior Twelfth National Symposium, Minneapolis, MN.

Madsen, C. K. (Ed.). (2000). *Vision 2020: The Housewright symposium on the future o music education*. Reston, VA: MENC – The National Association for Music Education.

Madsen, C. K., & Fredrickson, W. E. (1993). The experience of musical tension: A replication of Nielsen's research using the continuous response digital interface. *Journal of Music Therapy, 30*(1), 46-63.

Madsen, C. K., & Geringer, J. M. (2008). Reflections on Puccini's "La Bohème: Investigating a model for listening. *Journal of Research in Music Education, 56*(1), 33-42.

Madsen, C. K., Geringer, J. M., & Madsen, K. (2009). Adolescent musicians' perceptions of conductors within musical context. *Journal of Research in Music Education, 57*(1), 16-25.

Madsen, C. K., & Madsen, C. H. (1997). *Experimental research in music.* Raleigh, NC: Contemporary Publishing Company of Raleigh, Inc.

Manternach, J. N. (2012). The effect of nonverbal conductor lip rounding and eyebrow lifting on singers' lip and eyebrow postures: A motion capture study. *International Journal of Research in Choral Singing 4*(1), 36-46.

Marchand, D. J. (1970). *A study of two approaches to the development of expressive performance within the context of a college music fundamentals class.* (Doctoral Dissertation). University of Wisconsin-Madison, Madison, Wisconsin.

Marshall, S. K., & Cohen, A. J. (1988). Effects of musical soundtracks on attitudes toward animated geometric figures. *Music Perception: An Interdisciplinary Journal*, *6*(1), 95-112.

Mast, G. (1971). *A short history of the movies*. New York, NY: Pegasus.

Mauvemay, N. (Producer), Cluzaud, J., & Perrin, J., P. (Directors). (2009). *Oceans* [motion picture]. United States: Disneynature.

Mazzola, G., & Göller, S. (2002). Performance and interpretation. *Journal of New Music Research, 3*, 221-231.

McDonald, M. (2012). Mountains, music, and murder: Scoring the American west in 'there will be blood' and 'no country for old men'. In K. Kalinak (Eds.), *Music in the western: Notes from the frontier* (pp. 214-227). New York, NY: Routledge Taylor & Francis Group.

McPherson, G., & Schubert, E. (2004). Measuring performance enhancement in music. In A. Williamon (Ed.), *Musical excellence* (pp. 61-82). Oxford: Oxford University Press.

Meerum-Terwogt, M., & Van Grinsven, F. (1991). Musical expression of moodstates. *Psychology of Music, 19*(2), 99-109.

Messaris, P. (1994). *Visual literacy, image, mind, and reality*. Boulder, CO: Westview Press.

Meyer, L. B. (1956). *Emotion and meaning in music.* Chicago: University of Chicago Press.

Mills, M. M. (2008). *The effects of participation in a community children's choir on*

participants' identity: An ethnographic case study. (Doctoral Dissertation). Michigan State University, East Lansing, Michigan.

Mitchell, H. F., & Kenny, D. T. (2008). Open throat: Acoustic and perceptual support for pedagogic practice. *Journal of Singing – The Official Journal of the National Association of Teachers of Singing, 64*(4), 429-441.

Mitry, J. (1990). *The aesthetics and psychology of the cinema.* Bloomington and Indianapolis, IN: Indiana University Press.

Morgan, D. (2000). *Knowing the score: Film composers talk about the art, craft, blood, sweat, and tears of writing for cinema.* New York NY: Harper Entertainment.

Morrison, S. J., Price, H. E. Geiger, C. G., & Cornacchio, R. A. (2009). The effect of conductor expressivity on ensemble performance evaluation. *Journal of Research in Music Education, 57*(1), 37-49.

Morrison, S. J., & Silvey, J. D. (2012, March). *The effect of conductor expressivity on choral ensemble evaluation.* Poster session presented at the meeting of the NAFME Biennial Conference, St. Louis, Missouri.

Munsterberg, J. (1970). *The film: A psychological study (The silent photoplay in 1916).* New York: Dover.

Mürbe, D., Pabst, F., Hofmann, G., & Sundberg, J. (2003). Effects of a professional solo singer education on auditory and kinesthetic feedback – A longitudinal study of singers' pitch control. *Journal of Voice, 18,* 236-241.

Murnighan, J. K., & Conlon, D. E. (1991). The dynamic of intense work groups: A study of British string quartets. *Administrative Science Quarterly, 36,* 165-186.

Myers-Levy, J., & Peracchio, L. A. (1995). Understanding the effects of color: How the

correspondence between available and required resources affects attitudes. *The Journal of Consumer Research, 22*(2), 121-138.

National Association for Music Educators. (1994). *The school music program: A new vision.* Reston, VA: National Association for Music Educators (NAfME).

National Endowment for the Arts. (2008). *National endowment for the arts announces highlights from 2008 survey of public participation in the arts.* Retrieved from http://arts.endow.gov/news/news09/SPPA-highlights.html

Nattiez, J. J. (1999). Inuit throat-games and Siberian throat singing: A comparative, historical, and semiological approach. *Ethnomusicology, 43*(3), 399-418.

Neisser, U. (1967). *Cognitive psychology.* New York: Appleton-Century-Crofts.

Olwage, G. (2004). The class and colour of tone: An essay on the social history of vocal timbre. *Ethnomusicology Forum, 13*(2), 203-226.

Osborne, M. S., & Kenny, D. T. (2008). The role of sensitizing experiences in music performance anxiety in adolescent musicians. *Psychology of Music, 36,* 447-462.

Osgood, C., Suci, G., & Tannenbaum, P. (1957). *The measurement of meaning*. Urbana, IL: University of Illinois Press.

Palmer, C. (1989). Mapping musical thought to musical performance. *Journal of Experimental Psychology: Human Perception and Performance, 15,* 31-346.

Palmer, C. (1997). Music performance. *Annual Review of Psychology, 48,* 115-138.

Parfitt, D., Weinstein, B. (Producers) & Curtis, S. (Director). (2011). *Behind the scenes of the motion picture "My Week With Marilyn"* [DVD]. The Weinstein Company.

Paulin, S. D. (2000). Richard Wagner and the fantasy of cinematic unity: The idea of the

gesamtkunstwerk in the history and theory of film music. In J. Buhler, C. Flinn, and D. Neumeyer (Eds.), *Music and cinema* (pp. 58-84). Hanover, NE: Wesleyan University Press.

Payri, B. (2009). Variations of the perception of mood and tension of music excerpts depending on the visual context. In: J. Louhivuouri, T. Eerola, S. Saarikallio, T. Himberg, & P. Eerola (Ed.), *Proceedings of the seventh triennial conference of European society for the cognitive sciences of music*, Jyväskylä, Finland, pp. 401-408.

Penel, A., & Drake, C. (1999). Seeking "one" explanation for expressive timing. In S. W. Yi (Ed.), *Music, Mind, and Science,* pp. 271-297. Seoul: Seoul National University Press.

Persson, R. S. (1993). *The subjectivity of musical performances: An exploratory music psychological real world enquiry in to the determinants and education of musical reality.* (Doctoral Dissertation). University of Huddersfield, Huddersfield, UK.

Persson, R. S. (1995). Musical reality: Exploring the subjective world of performers. In R. Monelle, & C. T. Gray (Eds.), *Song and signification: Studies in music semiotics* (pp. 58-63). Edinburgh, UK: University of Edinburgh, Faculty of Music.

Persson, R. S. (1996). Concert musicians as teachers: On good intentions falling short. In A. J. Cropley & D. Dehn (Eds.), *Fostering the growth of high ability: European perspectives* (pp. 303-320). Norwood, NJ: Ablex.

Poggi, I. (2002). The lexicon of the conductor's face. In P. McKevitt, S. O. Nulláin, & C.

Mulvihill (Eds.), *Language, vision, and music: Selected papers from the 8th International Workshop on the Cognitive Science of Natural Language Processing, Galway, Ireland 1999. Advances in consciousness research* (pp. 271-284). Amsterdam: John Benjamin.

Price, H. E., & Chang, E. C. (2001). Conductor expressivity and ensemble performance: An exploratory investigation. *Contributions to Music Education, 28*(2), 9-20.

Price, H. E., & Chang, E. C. (2005). Conductor and ensemble performance expressivity, and state festival ratings. *Journal of Research in Music Education 53*(1), 66-77.

Price, H. E., & Winters, S. (1991). Effect of strict and expressive conducting on performances and opinions of eighth grade students. *Journal of Band Research, 27*(1), 30-43.

Prince, S. (1998). *Savage cinema: Sam Peckinpah and the rise of ultraviolent movies.* Austin, TX: University of Texas Press.

Prendergast, R. M. (1992). *Film music: A neglected art.* New York, NY: Norton & Company.

Pudovkin, V. I. (1970). *Film technique and film acting* (I. Montagu, Trans.). New York: Grove Press.

Ramirez, R., Hazan, A., Maestre, E., & Serra, X. (2008). A genetic rule-based model of expressive performance for jazz saxophone. *Computer Music Journal, 31*(1), 38-50.

Rapée, E. (1924). *Motion picture moods for pianists and organist: A rapid-reference collection of selected pieces.* New York, NY: G. Schirmer.

Reggio, G (Producer & Director). (1982). *Koyaanisqatsi* [motion picture]. MGM/UA

Home Entertainment.

Reimer, B. (1970). *A philosophy of music education.* Englewood Cliffs, NJ: Prentice Hall.

Reimer, B. (2012). Struggling towards wholeness in music education. *Music Educators Journal, 99*(2), 25-29.

Repp, B. H. (1992). Diversity and commonality in music performance: An analysis of timing microstructure in Schumann's Traumerei." *Journal of the Acoustical Society of America, 92,* 2546-2568.

Repp, B. H. (1997). Variability of timing in expressive piano performance increases with interval duration. *Psychomonic Bulletin and Review, 4,* 530-534.

Repp, B. H (1998). A microcosm of musical expression I: Quantitative analysis of pianists' timing in the initial measure of Chopin's Etude in E major. *Journal of the Acoustical Society of America, 102,*1085-1099.

Repp, B. H. (2000). Pattern typicality and dimensional interactions in pianists' imitation of expressive timing and dynamics. *Music Perception, 18,* 173-211.

Revonsuo, A., & Newman, J. (1999). Binding and consciousness. *Consciousness and Cognition, 8,* 123-127.

Rigg, M. G. (1937). Musical expression: An investigation of the theories of Erich Sorantin. *Journal of Experimental Psychology, 21,* 442-455.

Rigg, M. G. (1964). The mood effects of music: A comparison of data from earlier investigations. *Journal of Psychology, 58,* 427-438.

Rock, I. (1984). *Perception.* New York, NY: Scientific American Library.

Rosenthal, R. K., Wilson, M., Evans, M., & Greenwalt, L. (1988). Effects of different

practice conditions on advanced instrumentalists' performance accuracy. *Journal of Research in Music Education, 36*(4), 250-257.

Rudy, P. (2004). Spectromorphology hits Hollywood: Sound objectification in *Black Hawk Down. International Computer Music Conference Proceedings*. Symposium conducted at the meeting of International Computer Music Conference, Miami, FL.

Russell, J. A., & Barrett, L. F. (1999). Affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology, 76*, 805-819.

Scanlon, T. J. (1967). Color television: A new language? *Journalism Quarterly, 44*, 225 230.

Schaps, E. & Guest, L. (1968) Some pros and cons of color TV. *Journal of Advertising Research, 8*(2), 28-39.

Schubert, E. (1999). *Measurement and time series analysis of emotion in music.* (Doctoral Dissertation). University of South Wales, Sydney, Australia.

Schutz, M., & Lipscomb, S. (2007). Hearing gestures, seeing music: Vision influences perceived tone duration. *Perception, 36*, 888-897.

Seashore, C. E. (1936). *Objective analysis of music performance.* Iowa City, IA: University of Iowa Press.

Seashore, C. E. (1938). *The psychology of musical talent.* Boston: Silver Burdett.

Sessions, R. (1979). The new musical horizon. In E. T. Cone (Eds.), *Roger Sessions on music, collected essays.* Princeton NJ: Princeton University Press.

Seydor, P. (1997) *Peckinphah- The Western films: A reconsideration*. Urbana, IL:

University of Illinois Press.

Shaffer, L. H. (1981). Performances of Chopin, Bach, and Bartok: Studies in motor programming. *Cognitive Psychology, 13*, 326-376.

Sheldon, D. A. (2000). Preservice and in-service teachers' perception of band music content and quality using self-report and behavioral measures. *Journal of Research in Music Education, 48(*1), 10-25.

Sheldon, D. A. (2004). Listeners' identification of music expression through figurative language and musical terminology. *Journal of Research in Music Education, 52*(4), 357-368.

Shevy, M. (2007). The mood of rock music affects evaluation of video elements differing in valence and dominance. *Psychomusicology: Music, mind & brain, 19*(2), 57-78.

Sidoti, V. J. (1990). *The effects of expressive and nonexpressive conducting on the performance accuracy of selected expression markings by individual high school instrumentalists.* (Doctoral Dissertation). The Ohio State University, Columbus, Ohio.

Silvey, B. A. (2013). The role of conductor facial expression in students' evaluation of ensemble expressivity. *Journal of Research in Music Education, 60*(4), 419-429.

Simons, D. J., & Levin, D. T. (1998). Failure to detect changes to people during real-world interactions. *Psychonomic Bulletin and Review, 5*, 644-649.

Sloboda, J. A. (1996). The acquisition of musical performance expertise: Deconstructing the "talent" account of individual differences in musical

expressivity. In K. A. Ericsson (Ed.), *The road to excellence: The acquisition of expert performance in the arts and sciences, sports and games* (pp. 1070126). Mahwah, NJ: Lawrence Erlbaum Associates.

Sloboda, J. A. (2005). *Exploring the musical mind: Cognition, emotion, ability, function.* Oxford: Oxford University Press.

Sonnenschein, D. (2001). *Sound design: The expressive power of music, voice, and sound effects in cinema*. Studio City, CA: Michael Wiese Productions.

Spiro, R. J., Feltovich, P. J., Jacobson, M. J., & Coulson, R. L. (1995). Cognitive flexibility, constructivism, and hypertext: Random access instruction for advanced knowledge acquisition in ill-structured domains. In L. P. Steffe & J. Gale (Eds.), *Constructivism in education* (pp. 85-197). Hillsdale, NJ: Erlbaum

Steinberg, R., & Raith, L. (1985). Assessment of musical expression. *Psychopathology, 18,* 265-273.

Steptoe, A. (2001). Negative emotions in music making: The problem of performance anxiety. In P. N. Juslin & J. A. Sloboda (Eds.), *Music and emotion: Theory and research* (pp. 291-307). New York: Oxford University Press.

Stollack ,M. A., & Alexander, L. (1998). The use of analogy in the rehearsal. *Music Educators Journal, 84*(6), 17-21.

Sundberg J., Askenfelt A., & Frydén L. (1983). Musical performance: A synthesis-by rule approach. *Computer Music Journal, 7*(1), 37-43.

Sundberg J., Friberg, A., & Frydén L. (1991). Common secrets of musicians and listeners: An analysis-by-synthesis study of music performance. In P. Howell, R. West, and I. Cross (Eds.), *Representing musical structure* (pp. 161-197). London: Academic Press.

Sundberg, J., Iwarsson, J., & Hagegård, H. (1994). A singer's expression of emotion in sung performance. *Speech, Music, and Hearing: Quarterly Progress and Status Report, 35*, 81-92.

Tagg, P. (1989). An anthropology of stereotypes in TV music? *Swedish Musicological Journal, 71*, 19-42.

Tagg, P. (2006). Music, moving images, semiotics, and democratic right to know. In S. Brown & U. Volgsten (Eds.), *Music and manipulation: On the social uses and social control of music* (pp. 163-186). New York, NY: Berghahn Books.

Tait, M. (1992). Teaching strategies and styles. In R. Cowell (Ed.), *Handbook of research on music teaching and learning* (pp. 525-534). New York, NY: Schirmer.

Tait, M., & Haack, P. (1984). *Principles and processes of music education.* New York: Columbia University, Teachers College Press.

Tan, E. S. (1996). *Emotion and the structure of narrative film: Film as an emotion machine* (B. Fasting, Trans). Mahwah, NJ: Erlbaum.

Tan, S. L., Spackman, M., & Bezdek, M. (2007). Viewers' interpretations of film characters' emotions: Effects of presenting film music before or after a character is shown. *Music Perception, 25*(2), 135-152.

Tan, S. L., Spackman, M. P., & Wakefield, E. M. (2008). Effects of diegetic and non diegetic presentation of film music on viewers' interpretation of film narrative. *Conference Proceedings for the 2008 International Conference of Music Perception and Cognition* (pp. 588-593), Hokkaido University, Japan. Australia: Causal Productions.

Ternström, S. (1989). Long-time average spectrum characteristics of different choirs in

different rooms. *Speech Transmission Laboratory – Quarterly Progress and Status Report (Royal Institute of Technology, Stockholm), 3,* 15-31.

Ternström, S., & Kalin, G. (2007) Formant frequency adjustment in barbershop. *International Congress on Acoustics, September 2007,* 1-6.

Thayer, J. F., & Levenson, R. W. (1983). Effects of music on psychophysiological responses to a stressful film. *Psychomusicology - A Journal of Research in Music Cognition, 3*(1), 44-52.

Thomas, T. (1997). *Music for the movies.* Los Angeles, CA: Silman-James Press.

Thompson, S. (2012, September, 23). American orchestras: Make no little plans. [Web log post]. Retrieved from http://www.artsjournal.com/stanford/2012/09/american-orchestras-make-no-little-plans/

Thompson, W. F., Graham, P., & Russo, F. A. (2005). Seeing music performance: Visual influences on perception and experience. *Semiotica, 156,* 203-227.

Thompson, W. F., & Robitaille, B. (1992). Can composers express emotion through music? *Empirical Studies of the Arts, 10*(1), 79-89.

Thompson, W. F., Russo, F. A., & Sinclair, D. (1994). Effects of underscoring on the perception of closure in filmed events. *Psychomusicology - A Journal of Research in Music Cognition, 13,* 9-27.

Timm, L. M. (2003). *The soul of cinema: An appreciation of film music.* Upper Saddle River, NJ: Prentice Hall.

Timmers, R., & Ashley, R. (2007). Emotional ornamentation in performances of a Handel sonata. *Music Perception, 25*(2), 117-134.

Tocheff, R. D. (1990). Acoustical placement of voices in choral formations. (Doctoral

dissertation, Ohio State University, 1990). *Dissertation Abstracts International, 51, 4055A.*

Todd, N. P. M. (1985). A model of expressive timing in tonal music. *Music Perception, 3,* 33-58.

Toulet, E. (1995). *Birth of the motion picture.* Translated by Susan Emanuel. New York: Harry N. Abrams.

Touzard, G. (2001) *An application of the Kuleshov experiment on generation X: Testing viewer reactions to editing.* Doctoral Dissertation, University of Nevada, Las Vegas, Nevada.

Triplett, N. (1898). The dynamogenic factors in pacemaking and competition. *American Journal of Psychology, 9,* 507-533.

Turner, G., & Kenny, D. (2010). A preliminary investigation into the association between body movement patterns and dynamic variation in western contemporary popular singing. *Musicae Scientiae, 14*(1), 143-164.

Tyler, B. (2011, June 17). Interview by R. Spaddy [Video file]. Retrieved from http://interviews.onthegig.com/2011/05/brian-tyler.html on September 14, 2012.

Vasconcellos, H. M. (2002). *The effect of choral performers' body movement on performance ratings assigned by high school choral students and college music majors.* (Doctoral Dissertation). University of Missouri-Kansas City, Kansas City, Missouri.

Vassilakis, P. N. (2005). Auditory roughness as means of musical expression. *Selected Reports in Ethnomusicology*, 12, 119-144.

Vieillard, S., Peretz, I., Gosselin, N., Khalfa, S., Gagnon, L., & Bouchard, B. (2008). Happy,

sad, scary and peaceful musical excerpts for research on emotions. *Cognition and Emotion, 22*(4), 720-752.

Vines, B. W., Krumhansl, C. L., Wanderley, M. M., Dalca, I. M., & Levitin, D. J. (2011). Music to my eyes: Cross-modal interactions in the perception of emotions in musical performance. *Cognition*, *118*, 157-170.

Vines, B. W., Krumhansl, C. L., Wanderley, M. M., & Levitin, D. J. (2006). Cross-modal interactions in the perception of musical performance. *Cognition, 101*, 80-113.

Vitouch, O. (2001). When your ear sets the stage: Musical context effects in film perception. *Psychology of Music*, *29*, 70-83.

Vrana, S. R., & Rollock, D. (2002). The role of ethnicity, gender, emotional content and contextual differences in physiological expressive, and self-reported emotional responses to imagery. *Cognition and Emotion*, *16*, 165-192.

Walker, E. (2012). Introduction: Teaching music and the moving image and the value of praxis. *Music and the Moving Image, 5*(2), 1-8.

Walton, K. (1994). Listening with imagination. *Journal of Aesthetics and Art Criticism, 52*(1), 51.

Watson, D., Clark, L. A., & Tellegan, A. (1988) Development and validation of brief measure of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*, 1063-1070.

Watson, M. A. (1994). *The expanding vista: American television in the Kennedy Years.* Durham, NC: Duke University Press.

Weisenberg, M, Raz, T., & Hener, T. (1998). The influence of film-induced mood on pain perception. *Pain, 76*(3), 365-375.

Welch, G. (2005). Singing as communication. In D. Miell, R. MacDonald, & D. Hargreaves (Eds.), *Musical communication* (pp. 239-259). Oxford: Oxford University Press.

Wierzbicki, J. (2009). *Film music: a history.* New York and London: Routledge Taylor and Francis Group.

Williams, D. B. (2007, April). Reaching the "other 80%:" Using technology to engage "non traditional music students" in creative activities. In S. D. Lipscomb (Chair), *"Technology and Music Education" Symposium*. Symposium conducted at the meeting of Tanglewood II, University of Minnesota.

Wilson, G. D., & Roland, D. (2002). Performance anxiety. In R. Parncutt & G. E. McPherson (Eds.), *The science and psychology of music performance* (pp. 47-61). New York: Oxford University Press.

Windsor, W. L., & Clarke, E. F. (1997). Expressive timing and dynamics in real and artificial musical performances: Using an algorithm as an analytical tool. *Music Perception, 15*(2), 127-152.

Winkler, M. (1951). *A penny from heaven.* New York: Appleton-Century-Crofts.

Winston, A. S., Kenyon, B., Stewardson, J., & Lepine, T. (1995). Children's sensitivity to expression of emotion in drawings. *Visual Arts Research, 21*(1), 1-14.

Winters, B. (2010). The non-diegetic fallacy: Film, music, and narrative space. *Music & Letters, 91*(2), 224-244.

Woody, R. H. (1999). The relationship between explicit planning and expressive performance of dynamic variations in an aural modeling task. *Journal of Research in Music Education, 47*(4), 331-342.

Woody, R. H. (2000). Learning expressivity in music performance: An exploratory

study. *Research Studies in Music Education, 14*, 14-23.

Woody, R. H. (2002). Emotion, imagery, and metaphor in the acquisition of musical performance skill. *Music Education Research, 4*(2), 213-224.

Woody, R. H. (2006a). The effect of various instructional conditions on expressive music performance. *Journal of Research in Music Education, 54*(1), 21-36.

Woody, R. H. (2006b). Musicians' cognitive processing of imagery-based instructions for expressive performance. *Journal of Research in Music Education, 54*(2), 125-137.

Yewdall, D. L. (2003). *Practical art of motion picture sound.* Focal Press, Taylor & Francis Group.

Zabriskie, A. (2011). Effect of reverberation and dynamics on musicians' ratings of choral tone quality and intonation. *Missouri Journal of Research in Music Education, 48,* 58-67.

Zajonc, R. B. (1965). Social facilitation. *Science, 149,* 261-274.

Zamecnik, J. S. (1913). *Sam Fox moving picture volumes.* Cleveland, OH: Sam Fox Publishing Company.

Zettl, H. (1990). *Sight, sound, motion: Applied media aesthetics.* Belmont, CA: Wadsworth Publishing.

VITA

Daniel James Keown, a native of Trego, Wisconsin, completed a Bachelor of Music degree in Recording Technology from the University of Wisconsin-Oshkosh in 2001. Following the completion of a Masters of Music degree in Choral Conducting from Indiana State University in 2004, Keown spent six years as a music educator and choir conductor with the Chicago Children's Choir. In addition to teaching music within the Chicago Public School district, Keown held positions as the conductor of the Beverly and Pilsen/Little Village Neighborhood Choirs while assisting a variety of selected children's choir ensembles in collaboration with other arts organizations.

During his time earning an Interdisciplinary Doctor of Philosophy degree in Music Education and Curriculum & Instruction from the Conservatory of Music and Dance at the University of Missouri-Kansas City, Keown taught courses in music technology and elementary music methods, and assisted with Conservatory choirs and various music education courses. Areas of interest in research include consumption of music through audiovisual media, electronic/digital technologies' role in elementary and secondary music classrooms, the relationship between sonic elements of sound and music embedded within projected film visuals, and the implementation of projected films within school music programs and performance practice.

Keown is an active member of the National Association for Music Educators, Technology Institute for Music Educators, Society for Music Perception and Cognition, American Choral Directors Association, and College Music Society.