

ALABAMA BAND DIRECTORS USE OF WARM-UP TIME
PRECEDING STATE CONCERT BAND ASSESSMENTS

by

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A THESIS

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ABSTRACT

The purpose of this study was to examine the activities and behaviors of middle and high school band directors when warming-up their concert bands prior to an adjudicated performance. Twenty-nine videos of band directors at two concert band festival sites were analyzed for frequency and duration of 60 behaviors using the Simple Computer Recording Interface for Behavioral Evaluation (SCRIBE). Duration results revealed that directors spent a majority of their warm-up time on teaching behaviors (32%) , music rehearsal (19%), tuning (18%), and scales (7%). Results for the frequency of warm-up activities indicated that a third of all directors lead their bands in breathing exercises, articulation exercises, or chorales, while two-thirds performed long tones or interval exercises. Over 80% of the directors lead their bands in scales and rehearsed the music to be performed at the assessment. Detailed results for percentage of time spent tuning indicted that 82% of tuning time employed the use of electronic tuner. Differences between middle and high school directors indicted that more high school directors lead their bands in singing activities compared to middle school directors. All middle school directors tuned their bands during warm-up, compared to half of the high school directors. None of the band directors had their bands perform a mental warm-up.

LIST OF ABBREVIATIONS AND SYMBOLS

df	Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data
F	Fisher's F ratio: A ratio of two variances
η^2	Eta-squared
χ^2	Chi-square
M	Mean: the sum of a set of measurements divided by the number of measurements in the set
MS	Sum of squares divided by the degrees of freedom
N	Number of participants
n	Number of sub-group participants
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
SS	Sum of squares
<	Less than
=	Equal to

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CHAPTER 1

INTRODUCTION

Warm-up is a period of time at the beginning of a rehearsal, practice session, or performance that is used by conductors and music educators to prepare musicians for what is to come next. This period of time has been used by middle school, high school, university, and professional band directors, conductors, and musicians for many years. This period typically precedes a full ensemble rehearsal for a performance or a private practice session that is preparing one for a solo or ensemble performance. It has become a mainstay and common practice in the construction of music education classes and rehearsals. It is also prevalent in preparing students or musicians to perform. All music performance assessment festivals have a period of time specifically devoted to warm-up. This period of time is also used in band, orchestra, and choir rehearsals and practice sessions.

The practice of full ensemble warm-up is generally limited to middle and high school ensembles. Casey (1993) states that collegiate and professional ensembles expect their musicians to warm-up on their own and do not conduct full ensemble warm-ups. However, Rush (2006) added that those who are in the process of becoming a successful musician or music educator at a conservatory, college, or university must include a warm-up period for their students or themselves. They are also told that this period of time is the most crucial part of a rehearsal and must include certain components. The warm-up will help improve basic individual and ensemble playing skills that will lead to a better ensemble, rehearsal, and performance.

According to the American School Band Directors Association (1997) every class period, rehearsal, or performance must begin with a warm-up routine and should include performance basics that are needed to rehearse the music that is to be performed. The National Association for Music Education (1991) states that an effective instrumental music lesson or rehearsal contains a warm-up that includes rote playing, scales, and rhythms. Musicians and music educators use this period of time for various reasons. Some designate time for mental preparation while others use the time for physical preparation. The physical preparation can include warming-up the physiological components for activity, practicing and improving basic skills needed to perform, and establishing and improving ensemble performance skills. Brookshire states that students are expected to physically warm-up on their own so that their physical components are properly prepared to play their instruments and music (as cited in Casey, 1993, p. 393). Rush (2006) argues that band directors who use the first portion of their rehearsal for a structured warm-up have the best sounding bands. He also states that warm-up serves two purposes: ready the physiological aspects of a musician as well as their mind, and prepare the musician for any challenge that they may face during the course of a rehearsal or performance. While many of the components to a physical warm-up seem practical and functional, their effect on musical performance has not been formally tested and evaluated by the research community which may provide valuable information to music educators.

Fradkin (2006) found that even in athletics there is a great need for further research examining the effects of a warm-up period in preventing injury and exercising and preparing muscles and choral music education research has examined the physiological effects of warm-up on the components of one's instrument or voice. However, research-derived information on the

warm-up period for instrumental music education is sparse. The question arises, what is the effect of a physical warm-up on ensemble musical performance and which components are more conducive to better performance.

Studies in instrumental music education have examined both the physical and mental effects of warm-up. Fischer argues that warm-up is a time which all talents converge to create a complete ensemble effort (as cited in Casey, 1993, p. 394). He surmised that warm-up exists for a variety of reasons including mental preparation. Mental preparation is seen as necessary to prepare individual musicians for the ensemble experience as well as preparing the brain and mind for use of creative learning and cognitive skills. Many believe that mental preparation is key in participation in any group activity. The preparation conquers diversity found within the group and creates one unified ensemble that is prepared for unified group activity. Mental preparation is also used in an attempt to counter the onset and effects of performance anxiety. Roland (1994) found that most professional instrumental musicians agreed that they experience some form of performance anxiety. He stated that the levels of performance anxiety that they felt were normal and were necessary in providing a heightened level of performance readiness. It is often recommended that musicians perform a routine warm-up, that is used in most practice sessions, before a musical performance to counter the effects of high levels of performance anxiety on the music performance. Interestingly, the effects of *warm-up* on performance anxiety had not been completely examined. The effectiveness of this practice is universally accepted as effective, however the best means to warm-up an ensemble is still in question. Furthermore, the effectiveness of mental warm-up, physical warm-up, and lack of warm-up have not been fully researched.

Conclusion

It is difficult to argue with the almost monolithic acceptance from respected educators, conductors, and musicians who feel that warm-up is an integral part of any musician's rehearsal and performance time. The practice of warming-up is held in high esteem and its importance continues to be taught to future music educators and professional musicians. Band directors devote a large amount of time to warming-up an ensemble. All music performance assessment festivals and contests began with a warm-up period. There are numerous motivations and procedures for warming-up an ensemble before a performance. There are mental and physical warm-ups that are designed to prepare the mental and physical components needed to rehearse and perform music. Warm-ups are also designed to counter the effects of performance anxiety as related to instrumental music performance and rehearsal. However, empirical evidence derived from controlled examinations of preparing the mind and body for musical activity is sparse. The advantages and disadvantages of warm-up have been widely examined and discussed in other disciplines including athletics, psychology, and even choral music education. While many of the results are inconclusive, there has been and continues to be a great attempt to answer questions about the common practice of warm-up. However, this effort has not been applied to instrumental music education and more specifically to music performance. It is incumbent upon music educators to understand the benefits and drawbacks of a warm-up period and the different components that make up an ideal warm-up. To maximize the efficiency of rehearsal time and to make ensembles more viable the following questions must be asked:

Research Questions

Question 1

What are the differences and similarities in the types of activities and behaviors middle school and high school directors employ when warming-up their concert bands for assessment?

Question 2

What are the differences and similarities in the amount of time spent by middle and high school band directors in warm-up activities and behaviors when warming-up their concert bands for assessment?

Question 3

What types of teaching behaviors are employed by band directors when warming-up their concert bands for assessment?

Question 4

What are the differences and similarities between middle school and high school band directors use of tuning time and types of tuning methods employed?

Question 5

How do band directors in general spend time tuning when warming-up their concert bands for assessment?

CHAPTER 2

REVIEW OF LITERATURE

Most directors, conductors, studio teachers, and professional musicians advocate the importance of warm-up in the daily regimen of instrumental ensembles' rehearsals. Indeed, the instrumental music education profession is replete with texts advocating the use of warm-ups as a critical component to developing competent musicians. For example, Rush (2006) describes a complete warm-up replete with breathing exercises, long tones, lip slurs, and chorales as a crucial element in the success of a band director as well as an instrumental music program. He explains that warm-up must be carried out every day and must utilize elements of the music that will be rehearsed. Linklater (1995) reinforces the idea of using warm-up as a time to teach basic concepts and improve basic performing skills such as responding to conducting gestures. Casey (1993) compiled a compendium of opinions and beliefs regarding ensemble warm-ups held by pre-eminent band directors and conductors throughout the United States. Music education researchers have empirically verified the importance of warm-up activities to music teachers in myriad ensemble and rehearsal settings. Goolsby (1996) found that most experienced band directors devote a large amount of their rehearsal time towards a warm-up program. Brendall (1996) reinforced these findings and noted that choral teachers spent almost ten percent of their rehearsal on warm-up. Britten (2005) completed a study of the contents of instrumental music educator's lesson plans and found that all of the plans that were analyzed contained a section on warm-up. Studio teachers and collegiate and professional musicians also place a great

importance on the role of some type of warm-up. Kostka (2002) found that thirty-one percent of studio teachers and twenty percent of college students expected and participated in some type of mental or physical warm-up session to prepare for practice sessions. Generally, these sources advocate warm-up as an integral component of preparing musicians for the mental and physical challenges encountered during a rehearsal. The opinions expressed in Casey (1993) generally demarcate two different motivations for warming-up: mental purposes and physical purposes.

Physical Warm-up

Physical warm-up exists and is an expectation in many disciplines for many reasons. However, the effectiveness of this procedure has either not been tested or generally has inconclusive results. Physical activity can include any activity that uses muscle groups in the body. Warming-up before physical activity in athletics is a common procedure. Most believe that this prevents injury or decreases the risk of injury. Fradkin (2006) completed a review of literature and found that very few studies examined the effect of warming-up on preventing injury, but that there are no conclusive results that prove that warming-up will prevent injury. Witteking (2009) investigated the effect of warm-up on one's ability to run to the point of exhaustion. The study used protocols of no warm-up, a light warm-up and an intense warm-up that consists of jogging and taking large strides while running. The study found that participants' metabolism increased, but there were no statistically significant increases or decreases in the time to physical exhaustion. Therefore, the study found that the physical warm-up neither increased or decreased one's physical stamina. Mandengue (2009) conducted a study that determined the effect of warm-up intensity on performance. The study found no statistically significant differences between the intensity and duration of the warm-up and the actual physical

performance. Pasanen (2009) found that a group of British athletes who performed a neuromuscular warm-up made significant improvements in their jumping and balance skills while the group that did not participate in a warm-up had no such improvements. While the previous studies have focused on the warm-up procedures of athletes, Kahol (2009) examined the effect of psychomotor warm-up with surgeons before performing surgery. Some of the surgeons were extremely fatigued at the time of warm-up, but all of the warm-up procedures yielded significant improvements in the surgeon's ability to perform the surgical operation using their fine motor and psychomotor skills. The effect of warm-up on the use of motor skills was also studied by Spatz (1969). He found no statistically significant difference between groups that had a warm-up and those that did not before they completed a basic exercise of turning a rotor by hand. We see great contrast in the results of using a warm-up versus not using a warm-up.

The practice of using a vocal warm-up in theatre, screen acting, choral music education and performance has long been a common practice. It is believed that the muscles and physiological components of the voice that create sound must properly be warmed up in an attempt to maximize the performance and prevent injury. Frederickson (2002) advocates using a warm-up that consists of light aerobic exercise in order to stretch, warm-up, and alleviate tension in the hands, neck, chest, and other areas of the body that are used during musical performance activities. Tovey (1977) suggests that teachers are not effectively using their warm-up time and that it should include calisthenic exercises for the body, exercises for the instrument or voice, and exercises that heighten aural and mental skills and awareness. Many researchers have examined the effect of physical exercises and singing exercises on the ability to perform. Elliot (1995) examined the vocal-fold vibration, that occurs during voice production, in order to determine

whether warm-up has any physiological effects such as phonation threshold pressure. The results varied from participant to participant and therefore it did not prove or disprove the notion that warm-up has a physiological effect on one's ability to produce sound by voice. Outside of the classroom, de Swart (2007) examined the effect of warming up on persons who suffer from myotonia dystrophy or muscle stiffness. Persons with this condition have extreme difficulty using their voice for extended periods of time due to muscle exhaustion. The vocal warm-up helped the participants increase their ability to consistently speak for longer durations without causing signs of fatigue and exhaustion. McHenry (2009) examined the differences between using a general vocal warm-up and a combination warm-up that included an aerobic component. There was no significant difference for the male group. However, the female group had a difficult time maintaining the adequate lung pressure that was needed to sing or speak (phonation threshold pressure). The researcher indicates that the results are greatly impacted on the differences in physical characteristics between males and females and therefore the results are inconclusive. Amir (2005) found that a vocal warm-up consisting of breathing exercises, voice production using different registers and amplitude levels, and alignment exercises helped to increase the participant's amplitude and improve their noise-to-harmonic ratio. Physical warm-ups are common practice for any performer or participant that uses specific muscle groups. These warm-up activities remain common practice even though there are no conclusive results that fully explain their effectiveness in different disciplines.

Mental Warm-Up

While physical warm-up is the most commonly used warm-up practice in athletics and music, the effects of mental warm-up have been widely studied throughout various disciplines. In music it is suggested by leaders in the field that mental warm-up is equally as important and effective as a physical warm-up. However, the results (like those of physical warm-up) are inconclusive and have different implications in different disciplines. Mental warm-up periods have been used in academic learning environments for many years. Hall (1971) found that a warm-up period had no direct effect on the comprehension skills of kindergarten students. Contrary to the previous findings, Sweeney (2001) found that a warm-up period utilizing very basic math skills greatly improved the addition skills of elementary school students and led to a greater performance on their assessments. Hamilton (1953) found that warm-up exercises and going through practice mazes had no effect on a participant's performance in the cognitive skills used in maze learning. In a musical setting, Byo (2008) found that metacognition had to be present for students to improve the musical performance skills that they were attempting to improve. Many believe that mental practice in musical performance can help attain the appropriate level of metacognition so self improvement can occur. Ross (1985) studied the effectiveness of mental practice in improving performance and the associated performance skills of thirty collegiate trombonists. Students either participated in physical practice, mental practice, or a combination of the two components. The study found that there were significant interactions between combined practice and no practice, combined practice and mental practice, and physical practice and no practice. Coffman (1990) conducted a similar study that focused on the effect of different practice conditions on piano performance. The study found that mental practice and

mental practice in combination with physical practice caused the students to increase the effectiveness of their practice time which yielded results in performance assessment. Contrary to the previous findings, Rosenthal (1988) found that modeling and physical warm-up and practice were far more effective than that of mental practice and warm-up in performing correct pitches, rhythms, articulation, etc. Lisk (2001, 2006) advocates for ensemble-timed thought which consists of internal counting, internally reciting note names, and visualizing what it feels like to produce a tone on one's instrument. He strongly encourages instrumental music educators to access their students' minds and facilitate better mental exercises that will ultimately lead to better musical performance.

Attentiveness is another strong motivation for conducting a mental warm-up. Many music educators put mental warm-up components into their daily rehearsals because they believe that they will increase the student's attentiveness and lead to better music rehearsal and performance. Witt (1986) and Spradling (1985) found that students in secondary instrumental ensembles were off-task and less attentive when there were longer durations of downtime. Yarbrough and Price (1981) found that students were off task when they were not actively engaged in performing and when the teacher was not making eye contact with them. These results suggest that students need to be actively engaged at the beginning of rehearsal in a meaningful way if they are going to be productive in musical performance. Allday (2007) found that simply interacting and greeting students at the beginning of a class period greatly increased their level of on-task behavior from forty-five percent to seventy-two percent. This level of interaction is important because it increased intrinsic motivation. Schmidt (2005) found that students needed intrinsic motivation to want to practice. Bartel (1992) found that students self-perceived level of musicality affected

attentiveness and attitude toward the music that they were listening or performing. This reinforces the motivation for establishing a mental warm-up that includes self visualization of performing desired music. It is important for students to envision themselves producing a positive musical performance. McPherson (2000) found that a student's performance on a music examination or sight reading is directly tied to motivational behaviors such as self-esteem, self-image, and their level of preparedness. While many of the results are inconclusive, this underscores the importance of further research in instrumental education on the effects of warm-up on music performance, performance anxiety, and attentiveness. These issues have strong implications on how music educators and performers are using their time in rehearsal. If warm-up is not affecting music performance, then the use of the time should be evaluated. If it is affecting music performance, then further research may motivate educators and performers to place more importance on warm-up activities.

Performance Anxiety

Many musicians and performers have some type of performance anxiety that may negatively impact their performance. Some musicians insist that they do a warm-up routine to counter the adverse effects of performance anxiety. Martin (2008) found that athletes and musicians share many of the same motivations, characteristics, and factors in which the most common is performance anxiety. According to Roland (1994) most professional musicians acknowledge that they experience some degree of performance anxiety. They each accepted the anxiety as a natural part of the musical process as long as they could control its impact on the performance. Many of the surveyed performers stated that a routine warm-up consisting of different mental and physical components helped to stabilize the pre-performance anxiety. While

all of the performers in the previous study admitted performance anxiety, Hamann (1982) found a significant correlation between the number of years of formal training and anxiety level. These findings correspond to Peretti's (1974) where significant differences were found between the anxiety levels experienced by music and non music majors. Ryan (2005) found that even younger musicians, such as elementary school children, experience high levels of anxiety on the days that they have musical performances. According to Leblanc (1997), students experience low anxiety levels while in the practice room. However, as the number of observers increase from a couple of researchers to a full recital hall, the level of performance anxiety rises. Lehrer (1987) completed a review of literature that examined the effects of certain interventions and therapies on stage fright or performance anxiety. Some of the treatments were drum therapy, increasing the number of performances, and behavioral interventions. None of the studies that were reviewed focused on establishing a warm-up routine. Osborne (2008) outlined visualizing one's best and worst performances, describing what happened, how old they were, the makeup of the audience, and how they felt. The visualization was helpful to the performers and helped to predict who was susceptible to performance anxiety. One possible therapy is to incorporate listening to music as a component of a mental warm-up. Rickard (2001) found that listening to music prevented stress-induced increases in anxiety, blood pressure, and heart rate before taking part in public speaking. LeBlanc (1997) found that heart rate was an accurate and accessible predictor of performance anxiety in musicians.

CHAPTER 3

METHODOLOGY

Participants

Participants ($N = 29$) were a sample of middle school ($n = 11$) and high school ($n = 18$) band directors from the State of Alabama. All band directors were members of either the Alabama Band Directors Association (ABDA) or the Alabama Bandmasters Association (ABA) during the 2009-2010 academic year.

Video Recordings

Video archive footage from the Alabama Bandmasters Association and Alabama Band Director's Association of the participating band directors was secured with permission of the officers of the respective band associations (See Appendix A). Videos included the director warming up their school's concert band in preparation for an adjudicated performance. Videos focused on the behavior of the band director.

For the purpose of the present study, warm-up time began when the band director first addressed the band as a group, stepped on the podium or led the band in any of the behaviors or activities that were the focus of the study.

Videos were analyzed with the Simple Computer Recording Interface for Behavioral Evaluation (SCRIBE; Duke & Stammen, 2009) (See Appendix B for a screen shot of the general program interface). SCRIBE has been used by researchers in music education to examine music teachers' use of teaching cycles (e.g., Price & Yarbrough, 1989), teacher intensity (e.g., Hancock,

2003), and listener perception (e.g., Duke & Colprit, 2001). Videos were observed by the researcher and all band director behaviors and components of the warm-up sessions were notated using a researcher designed SCRIBE template (See Appendix C). Raw data were recorded for frequency and duration a particular behavior or activity occurred.

SCRIBE Template Design

To capture the behaviors and activities band directors employ when warming-up their bands for concert band assessment, an observation template was first created and pilot tested. Results of the pilot indicated a need for subtle changes to the template including reduction of the number of categories. Several were eliminated, consolidated, and renamed to make the template more precise and user friendly. In general, generation of the activity and behavior categories was based on warm-up exercises that could be considered either a *physical* or *mental* exercise. Physical warm-up components included exercises and techniques valued by the preeminent instrumental music educators such as stretching, breathing, singing, long tones, interval exercises, articulation exercises, performing chorales, and playing scales (cf. Casey, 1996; Rush, 2006). Mental warm-up components in the template consisted of counting exercises, visualization exercises, and listening exercises (cf. Casey, 1996; Lisk, 2001, 2006). Additional behaviors and activities such as teaching behaviors, transition time, tuning, and rehearsing music, which also occur when a band director warms up a concert band for a performance, were adopted from Goolsby (1996) and modified to reflect the purposes of the present study. A list of the general and sub categories included on the final SCRIBE template may be found in Table 1. A detailed description of the 60 recorded behaviors may be found in Appendix D.

Table 1

Warm-up activities and band director behaviors in general and sub categories.

General	Sub-Categories
Teaching Behaviors	Musical-Instruction, Non-Musical Instruction, Musical Feedback, Non-Musical Feedback, and Off-Task
Transition Between Tasks	na
Stretching	na
Breathing	Flow, Power, Visual Demonstration of Air Speed, and Inhale Therapy
Singing	Unison Pitches-With Reference, Unison Pitches-Without Reference, Interval Exercises, Chords, Chorales, Solfege, Articulation Studies, Humming
Long Tones	Unison Pitches with a Reference Pitch, Unison Pitches without a Reference Pitch, Chords, Chords with Dynamic Change, Descending/Ascending Chords
Intervals	Descending, Ascending, and Combination of Descending/Ascending, Unison Lip Slurs, Lip Slurs for Brass/Chromaticism for Woodwinds, and Combination of Lip Slurs and Other Exercises
Articulation	Staccato, Marcato, Legato, Combination of Different Articulation, and Slur Two/Tongue Two
Scales	Major, Minor, Whole Tone, Pentatonic, Chromatic, Drop a Note Exercise, and Add a Note Exercise
Chorales	Unison and Harmonized
Tuning	With Tuner-Individually, With Tuner-Section, With Tuner-Full Ensemble, With Tuner-Principal Players Tuning Method, Without Tuner-Individually, Without Tuner-Section, Without Tuner-Full Ensemble, Without Tuner-Principal Players Tuning Method, Humming/Singing

Mental Relaxation Exercise, Listened to Recordings, Visualized Warm-Up,
Visualized Musical Performance, Counting Internally, and Counting
Aloud

Rehearsal of na
Music

CHAPTER 4

RESULTS

This study examined several questions with regard to how middle and high school band directors spend their warm-up period prior to participating in a state concert band assessment. Measurements for each warm-up activity were recorded for frequency, time in seconds, and percentage of overall time. Data were imported into a spreadsheet and then exported to SPSS (version 18.0 for Mac OSX) and the Vassar Stats website (<http://faculty.vassar.edu/lowry/VassarStats.html>) for analysis.

General Warm-up Categories and Activities

The first stage of the analysis examined whether there was a difference in the types of activities that middle and high school band directors used to warm-up. Data were recorded (yes, no) as to whether a band director participated in the general warm-up activities described in Table 2 under the *general* warm-up category heading. A series of chi-square tests were run to compare results between the middle and high school band directors. A summary of the analyses may be found in Table 2.

For the general category of *singing*, results indicated a statistically significant difference by school level, $\chi^2(1, n = 29) = 6.26, p = .01$. Most high school band directors and a few middle school band directors used singing as a warm-up exercise. There was also a statistically significant difference for the use of *tuning* between middle school and high school bands during warm-up, $\chi^2(1, n = 29) = 7.98, p = .005$. Results indicated that all of the participating middle

school band directors used some warm-up time to tune compared to half of the high school band directors. Interestingly, significantly more middle school band directors tuned individual students with an electronic tuner than high school band directors $\chi^2(1, n = 29) = 7.62, p = .006$. No differences were found for the other tuning methods ($p > .05$). See Table 3 for a summary of the analysis for the various tuning sub-categories.

Analysis of the other general warm-up categories indicated no statistically significant differences between middle and high school band directors in their use of *long tones* [$\chi^2(1, n = 29) = 2.08, p = .15$], *transition time* [$\chi^2(1, n = 29) = .13, p = .72$], *stretching* [$\chi^2(1, n = 29) = 0.01, p = .92$], *articulation* [$\chi^2(1, n = 29) = 0.43, p = .51$], *breathing, chorales* [$\chi^2(1, n = 29) = 3.04, p = .08$], *mental warm-up* [$\chi^2(1, n = 29) = 1.70, p = .19$], *interval exercises* [$\chi^2(1, n = 29) = 0.24, p < .63$], *scales* [$\chi^2(1, n = 29) = 2.05, p = .15$] and *rehearsal of music* [$\chi^2(1, n = 29) = 1.45, p = .23$] when warming-up their ensemble. A comparison of middle and high school band directors for the *teaching behaviors* general category was not analyzed with a chi-square as every middle and high school band directors demonstrated the described behaviors.

Percentage of Overall Warm-Up Time

The second stage of the analysis determined whether there was a difference in the amount of time spent as a percentage of the overall warm-up time between middle and high school band directors. Data were recorded in seconds for each category described in Table 1 and converted into a percentage of the overall time spent warming-up. Mean percentages for the middle school bands and high school band directors were then compared using a series of t-tests. All results may be found in Table 4.

In general, significant differences were found for percentage of time spent in *singing* [$t(17.3) = 2.70, p = .02$], playing *long tones* [$t(17.7) = 3.84, p = .001$], playing *scales* [$t(27) = -2.62, p = .01$], and *tuning* [$t(27) = -2.31, p = .03$].

High schools band directors spent more warm-up time *singing* and playing *long tones* compared to middle school band directors. However, middle school directors spent more time playing *scales* and *tuning* compared to high school directors.

Analysis of the other categories revealed no differences between middle and high school directors in time spent in the warm-up categories: *breathing* [$t(25.7) = -1.49, p > .05$], *teaching behaviors* [$t(27) = -0.14, p > .05$], *transition time* [$t(27) = 1.93, p > .05$], *stretching* [$t(27) = -0.07, p > .05$], *intervals* [$t(26.7) = 1.58, p > .05$], *articulation* [$t(27) = 0.51, p > .05$], *chorales* [$t(27) = 1.29, p > .05$], *mental rehearsal* [$t(10.0) = -1.00, p > .05$], and *rehearsal of music in general* [$t(26.6) = 0.18, p > .05$].

Detailed Examination of Prominent Warm-up Categories

The third stage of the analysis examined select general warm-up categories in detail. Table 4 illustrates the mean percentage of time spent in all 13 general categories. From the table, over 75% of overall warm-up time was spent in tuning, teaching behavior, scales, and rehearsal. As such, analysis focused on the sub-categories constituting these four general warm-up categories. The fourth general warm-up category, *rehearsal*, was not analyzed since rehearsal sub-categories were not the focus of the present study.

The greatest amount of time that all of the observed directors spent in warm-up was *teaching* behavior. Results of a chi-square goodness-of-fit test was statistically significant [$\chi^2(4, n = 29) = 87.78, p < .001$]. Teaching behavior was divided into giving *musical instruction*

(52.0%), giving *musical feedback* (30.3%), *non-musical instruction* (8.1%), *other* (8.1%) and *non-musical feedback* (1.5%). Results are graphically illustrated in Figure 1.

Tuning was the second most prominent general warm-up category. A chi-squared goodness-of-fit analysis of the distribution across the tuning sub-categories was statistically significant [$\chi^2(7, n = 20) = 252.15, p < .001$]. Most of the bands' tuning time was spent tuning individual students with an electronic tuner (63.9%), followed by tuning individual players without a tuner (12.6%), tuning sections with an electronic tuner (9.9%), tuning principal players with a tuner (5.6%), tuning sections without a tuner (5.1%), tuning the full ensemble with a tuner (2.0%), tuning the full ensemble without a tuner (0.7%) and tuning by humming or singing (0.2%). Results are listed in Table 3 and graphically illustrated in Figure 2. It should be noted that 81.6% of all time spent tuning consisted of the band director using a tuner to tune members of the band.

Playing scales was the third most prominent general warm-up category. Because the data did not meet the assumptions for chi-square analysis only percentages were calculated.

Descriptive statistics indicated that nearly all of the bands played major scales (98.0%), with some bands playing minor scales (1.3%) or chromatic scales (0.7%).

Table 2

Percentage of band directors that participated in specific warm-up activities by school level

General Warm-Up	(%)			χ^2	<i>p</i>
	All (<i>n</i> = 29)	High School (<i>n</i> = 18)	Middle School (<i>n</i> = 11)		
Singing	37.9	55.6	9.1	6.26	.01
Tuning	69.0	50.0	100.0	7.98	.005
Breathing	34.5	38.9	27.3	0.41	n.s.
Teaching Behavior	100.0	100.0	100.0	-	-
Transition Time	93.1	94.4	90.9	0.13	n.s.
Stretching	17.2	16.7	18.2	0.01	n.s.
Long Tones	62.1	72.2	45.5	2.08	n.s.
Intervals	69.0	72.2	63.6	0.24	n.s.
Articulation	37.9	33.3	45.5	0.43	n.s.
Scales	89.7	83.3	100.0	2.05	n.s.
Chorales	27.6	38.9	9.1	3.04	n.s.
Mental	3.4	0.0	9.1	1.70	n.s.
Rehearsal of music	79.3	72.2	90.9	1.45	n.s.

Note: Reported percentages were based on the number of bands that used the particular method. Bold percentages indicate percentage readers should focus on when examining the table. Additional percentages are for discussion purposes only.

Table 3

Percentage of band directors that used different tuning methods based on school level.

Tuning method	High School (<i>n</i> = 18)		Middle School (<i>n</i> = 11)		χ^2	<i>p</i>
	(%)	(%)	(%)	(%)		
Electronic Tuner						
individual students	38.9	90.9	7.62	.006		
instrument sections	22.2	54.5	3.16	n.s.		
full ensemble	6.9	6.9	0.29	n.s.		
principal players	3.4	3.4	0.13	n.s.		
Without Electronic Tuner						
individual students	10.3	6.9	0.01	n.s.		
instrument sections	6.9	13.8	2.65	n.s.		
full ensemble	3.4	10.3	2.71	n.s.		
principal players	0.0	0.0	-	-		
Humming/singing	3.4	0.0	0.63	n.s.		

Note: Reported percentages were based on the number of bands that used the particular method.

Table 4

Distribution of mean percentage time spent in general warm-up categories.

General Warm-Up	All Schools		High Schools		Middle Schools		<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Breathing	1.9	3.3	2.5	3.8	2.0	3.0	1.49	n.s.
Singing	1.2	2.5	2.0	2.9	0.1	0.2	2.7 ^a	.02
Long Tone	5.0	7.2	7.8	7.9	0.5	0.9	3.84 ^a	.001
Conductor Behavior	31.8	7.7	31.7	8.5	32.1	6.6	-0.15	n.s.
Transition Time	4.7	3.6	5.6	3.8	3.1	2.7	1.93	n.s.
Stretching	0.7	1.7	0.6	1.9	0.7	1.5	-0.07	n.s.
Intervals	6.2	6.5	7.5	7.4	4.1	4.0	1.58 ^a	n.s.
Articulation	1.5	2.4	1.7	2.8	1.2	1.6	0.51	n.s.
Scales	7.0	5.2	5.3	4.2	10.0	5.5	-2.62	.01
Chorales	2.6	4.6	3.5	4.8	1.2	4.0	1.29	n.s.
Tuning	18.3	18.2	12.6	19.6	27.6	11.1	-2.31	.03
Mental	0.1	0.2	0.0	0.0	0.1	0.4	-1.00	n.s.
Rehearsal	18.9	14.6	19.3	17.3	18.4	9.2	0.18 ^a	n.s.

Note: Reported percentages were based on the total amount of warm-up time taken by individual bands.

^a Adjusted value, equal variances were not assumed based on results from *Levene's Test*.

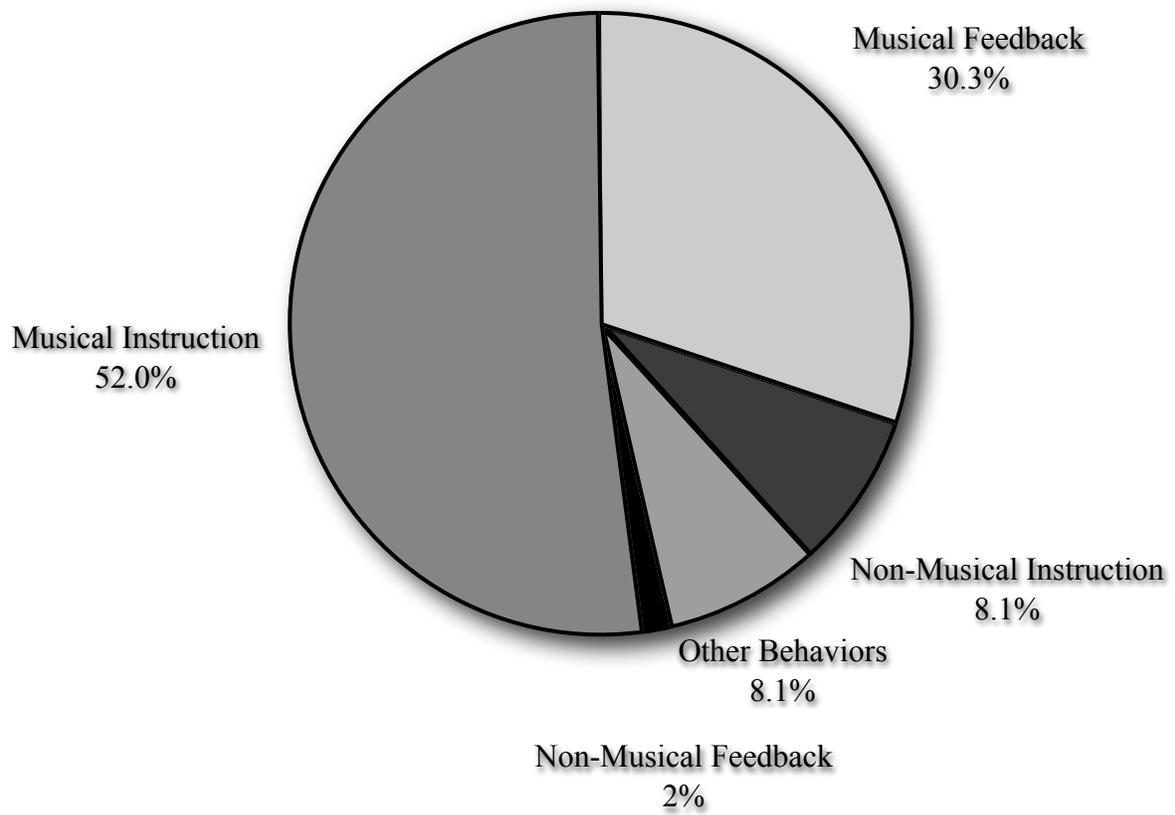


Figure 1. *Distribution of Mean Percentage Time Spent in Teaching Behavior Subcategories (n = 29).*

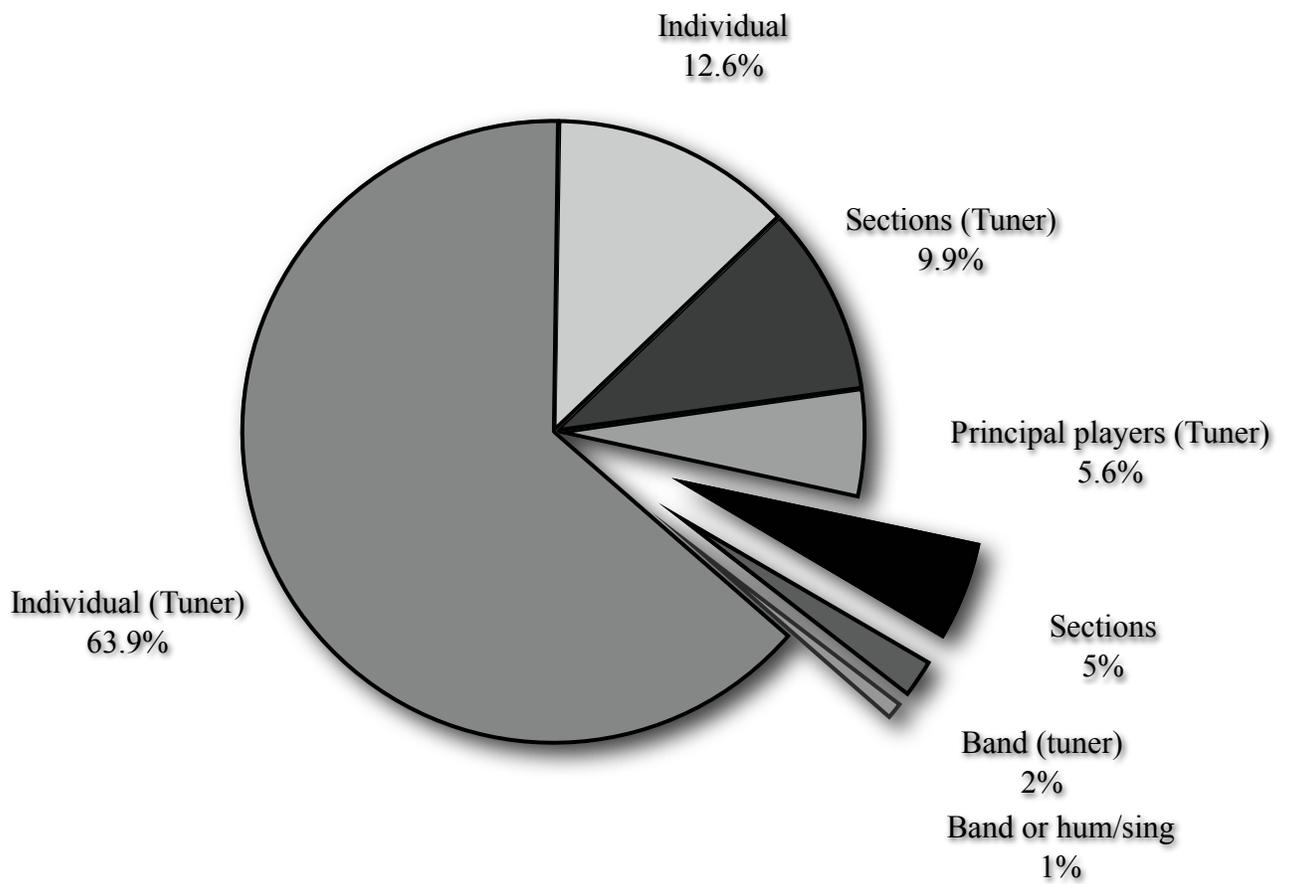


Figure 2. *Distribution of Mean Percentage Time Spent in Tuning Subcategories (n = 20).*

CHAPTER 5

DISCUSSION

The purpose of this study was to examine the activities and behaviors of middle and high school band directors when warming up their concert bands prior to an adjudicated performance. Twenty-nine band directors at two concert band festival sites were analyzed for frequency and duration of 60 behaviors. Results revealed that directors spent a majority of their warm-up time (69%) in music teaching behaviors, music rehearsal, and tuning. Physical warm-up exercises such as playing scales, interval exercises, long tones, chorales, breathing exercises, singing, and stretching constituted only 25% of directors' warm-up time. Band directors spent almost no warm-up time (< 0.1%) leading their bands in mental warm-up exercises. Subtle differences were found between middle school and high school band directors and their use of tuning and singing exercises.

Most band directors spent their warm-up time teaching and rehearsing with over 80% of the band directors choosing to rehearse music during the warm-up. Teaching time was mostly spent in musical instruction followed by musical feedback. Also, little time was spent in non-musical instruction. Few will argue that good teaching is necessary and needed when working with students. However, the amount of time dedicated to teaching should be balanced with time for students to experience concepts through playing and responding (Price, 1983; Price, 1989; Price, 1992; Price & Yarbrough, 1991; Yarbrough & Price, 1989); obviously when time is limited, efficient instruction is needed. Band directors in this study spent nearly 32% of their

overall warm-up time in teacher instructional tasks. If warm-up is truly designed to “warm-up” a band for a performance, it would seem that band members should be “playing” and “doing” to get the band ready for a “peak” performance. Clearly, warm-up was being used in ways that are not warming-up an ensemble in a physical sense (e.g., coaching, visualization of stage, logistics, instrument repair). Other results support that directors are spending a large amount of time rehearsing music (19%) as opposed to engaging their students in warm-up exercises and activities that will help them prepare for their upcoming performance. The warm-up period at concert band assessments is designed for directors to prepare their students for the following performance. It is entirely possible that warm-up exercises may be considered too far removed from the immediacy of performing music for assessment. Thus, band directors in this study chose to focus on the most pressing task at hand (e.g., frequently missed notes, complex rhythm recently taught, new phrasing idea covered the day before) to secure a good performance, foregoing time spent on fundamentals and readying students to play as an ensemble. Interestingly, few guidelines or established procedures are available from professional organizations aside from the designation of a space to warm-up in and a limit on the amount of time allocated for warming-up.

Band directors spent a considerable amount of warm-up time tuning. Interestingly, there was nearly a 2 to 1 ratio of middle school to high school band directors choosing to tune during the warm-up period. Tuning is an integral part of the process for preparing an ensemble to rehearse and perform music. There are many different ways to tune individual students, sections, and the full ensemble and these recommended methods are well-documented (e.g., Casey, 1993; Lisk, 2006). Primarily band directors have to decide whether they are or are not going to use a

tuner to effectively tune their bands. When one decides to *not* use a tuner, directors can teach their bands to match their pitch to a standard such as another student or pitch generator (i.e., speakers playing a single note) and employ “beat-less” tuning methods. Nearly 64% of tuning time was spent tuning *individual band members with a tuner* and nearly 80% of all tuning time was spent using a *tuner to tune sections, individuals, and the entire band*. Middle school band directors in particular primarily tuned individual band members with a tuner. Using a tuner is sometimes necessary, but the musician’s skills are greatly furthered when the method of matching pitch or eliminating the beats is utilized when tuning. Tuning with a tuner provides a quick no-nonsense method of adjusting instrument lengths; however, it does little to develop a band’s ability to independently and dynamically adjust pitch.

While many warm-up exercises were utilized, other exercises were noticeably absent. For example, few directors utilized stretching, breathing, and singing to warm-up their bands. Only 35% of the band directors led students in a breathing warm-up—integral to preparing wind players for performances (e.g., Casey, 1993; Rush, 2006).. Breathing exercises aid in creating and maintaining proper and consistent breath support and flow that is crucial for creating a good fundamental tone quality in individual musicians and thereby can improve the quality of the overall ensemble sound. Additional benefits include improved lung capacity for performing lengthy musical phrases. Only 40% of the examined band directors employed singing during the warm-up. Moreover, more high school band directors led their students in singing exercises than middle school band directors. Participating in guided singing exercises helps instrumentalists learn to internalize pitch and builds basic aural skills that are fundamental to performing with accurate intonation. As students become more conscientious about pitch through singing

awareness of their role in creating a balanced and blended ensemble sound improves. With good instruction, connections between good singing and good instrumental ensemble playing are easily made since the complexity of playing an instrument was removed from the learning task. It is curious that few directors chose to use this effective practice. It should be noted that band directors led their ensembles in singing for only 1% of the overall warm-up time.

Leading band directors and conductors (cf., Casey, 1993; Rush, 2006) trumpet the importance of incorporating a variety of exercises to comprehensively warmup musicians. Participants in the present study mostly employed long tone exercises, descending interval studies, and major scales. Over 80% of the directors led their ensembles in scale exercises. Interestingly, many directors informally claimed they were engaging their bands in major scale exercises to prepare them for the challenges of sight-reading in unfamiliar keys during the sight-reading assessment. Clearly, playing scales has alternative purposes and functions beyond getting a band ready for a stage performance. Lisk (2006) suggests that the bands perform scales to learn to “think in the sound of a particular key.” Additional research in this area is clearly needed to determine how effectively warming-up on scales prepares bands for sight-reading and concert performances.

Over 60% of band directors led students in long tones and interval exercises. It should be noted that little diversity was found among directors’ use of exercises found in the long tones and intervals exercises sub-categories. While the general concepts of playing long tones and working on interval exercises are very important and should be included in an instrumental warm-up, it is important to have diversity when warming-up to focus band members’ attention to avoid routine (Lisk, 2006). For example, band directors could employ long tones exercises with dynamic

changes, lip slur exercises for brasses with chromaticism for woodwinds, diverse intervallic studies (descending, ascending, and combination), and chorales in different keys and with different instruments carrying the melody. All of these activities help warm-up musicians' physical apparatus and reinforce individual and ensemble concepts and skills. At the same time, band directors were working with secondary students ages 13-18—amateur musicians—some of which may have never participated in a concert band assessment before. Familiar and recognizable exercises may be a vital part of the band directors' strategy to help students to “play their best”. Future research should examine the role coaching, anxiety management, and established routine play in the performance of concert bands.

Students need to prepare their minds to perform music just as much as they need to prepare their face, hands, and other physiological components. Only 3% of band directors performed some type of mental warm-up by leading their ensembles in counting internally and aloud to facilitate better awareness of timing and tempo. It is important to note that many directors engaged their students in diverse and meaningful warm-ups that adequately prepared their bands for musical performance assessment. Perhaps, the need to participate in a variety of warm-ups is not important minutes before participating in a concert band assessment. Instead, a variety of warm-up activities may be part of a daily curriculum, observation of which was beyond the scope of the present study. Understanding the approaches directors use to warm-up bands when not at an assessment event is an area in need of study.

Practical Implications

Results from this study have several practical implications for guiding inservice band directors on choosing effective methods, techniques, and activities to warm-up their ensembles for rehearsal and performance. Directors need to be aware of the wealth of warm-up activities that they can engage their students in and the benefits each exercise bestows. Moreover, knowledge about how to effectively use exercises seems important. When considered from the standpoint of the profession, results from this study provides insight into potential inservice activities band associations can sponsor to raise the awareness of what is possible and recommended when warming-up in preparation for music assessments. Activities can include band directors engaged in mock warm-up sessions that would begin with directors creating and incorporating lesson plans for a warm-up based on their value system. The directors would indicate which components they wished to incorporate and how much time should be devoted to each component. The directors would then be presented with an opportunity to incorporate their plan into a live warm-up session. At the same time, directors may be keenly aware of the many warm-up exercises available and simply chose not to employ their entire warmup repertoire right before a formal evaluation.

A logistical consideration for band associations and festival organizers may be reassessment of warm-up time allocations given to ensembles. If warmup time is simply an extension of rehearsal (perhaps a last minute rehearsal), then clearly less-time is needed to mentally and physical prepare the band to “take the stage” compared to what is presently allocated. Future music educators need more focus on the period of warm-up. For teacher trainers, collegiate students may need practicum time devoted to developing and implementing a

comprehensive warm-up that consists of varied components that are unfamiliar. Individual methods classes could include instruction on the components needed to warm-up each individual instrument.

Future Research

This research study asked several important questions about how band directors use their warm-up time. However, more questions emerged from the study than answers. Future research studies should replicate this work with a larger sample to determine if the trends noted in this study are unique to the sample.

In addition, a comparison of band directors' stated warm-up practices and values with observed warm-up behaviors may help flush out the actual warm-up practices of band directors. Recording directors' warm-up intentions after viewing their own videos may reveal directors' awareness of the function of their actions. Finally, an investigation examining how directors chose warm-up activities to accomplish specific teaching goals is needed.

Additional questions of interest to future researchers may include:

- How do band directors actually define the concept of warm-up?
- Are there better ways to utilize allocated warm-up time prior to concert band assessments?
- Which warm-up exercises and in what combinations efficiently accomplish the goal of warming-up a concert band physically and mentally?

It is the practice of many bands to place the responsibility for warming-up on the shoulders of band members, especially with collegiate ensembles. However, there are just as many groups that practice director-led ensemble warm-ups. Obviously, young musicians must

first learn the value of warming up in order for either approach to be successful. However, the value of warming-up a concert band is almost universal accepted as a means of improving ensemble musicianship. For directors that choose to use warm-up time as a group activity, knowing how best to use warm-up time seems important, especially in light of decreased rehearsal time due to increased academic and performance demands. It seems crucial that all areas of rehearsal, pedagogy, and practice are fully examined so that the band room remains an environment that is conducive for a meaningful and efficient educational experiences.

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APPENDIX A

LETTER OF CONSENT

Letter of Consent for Use of Video Recorded Warm-Ups

Dear Chairpersons,

I am a Graduate Teaching Assistant in the School of Music at The University of Alabama . I am conducting a research study to evaluate the effect of warm-up on performer anxiety.

I am requesting your permission to use the following:

1. Use prerecorded videos of Alabama Band Directors to analyze what warm-up activities and teaching behaviors that are using in the warm-up sessions before music performance assessment.

If you have any questions concerning this research study, please email me at justin.p.ward@gmail.com.

If you consent to participate in this study please fill in the information and sign below.

Print Name _____

Sign Your Name _____

Date _____

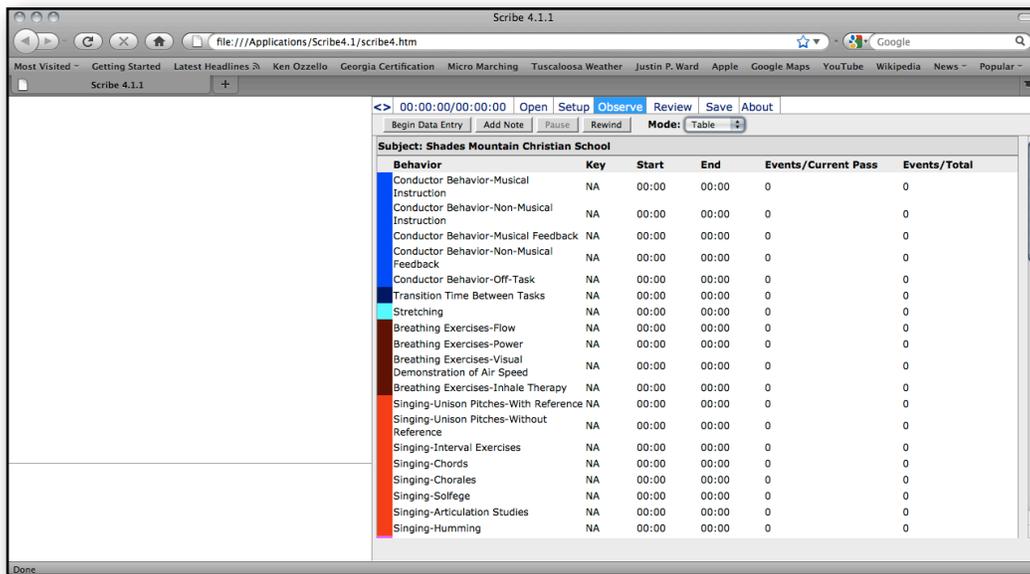
Thank your for your participation in this study.

Many thanks,
Justin P. Ward

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact a Research Compliance Specialist at the Office for Research Compliance by calling (205) 348-8461 .

APPENDIX B

SCRIBE SCREEN SHOT



APPENDIX C

WARM-UP ANALYSIS TEMPLATE

Warm-Up Analysis

School/Ensemble Name _____

Start Time _____ End Time _____

Festival Classification _____ Festival Rating _____

	Duration	Frequency	Description/ Notes
Teaching Behavior			
Musical Instruction			
Non-Musical Instruction			
Musical Feedback			
Non-Musical Feedback			
Off-Task			
Transition Between Tasks			
Stretching			
Breathing Exercises			
Flow Exercises			
Power Breathing			

Visual Demonstration of Air Speed (Paper Airplane/			
Inhale Therapy with Suction			
Singing			
Singing-Unison Pitches (with reference pitch)			
Singing-Unison Pitches (without reference pitch)			
Singing Interval Exercises			
Singing Chords			
Singing Chorales			
Singing on Solfege			
Singing Articulation Studies			
Humming			
Long Tones			
Unison Pitches without a reference pitch			
Unison Pitches with a reference pitch			
Chords			
Chords with a dynamic change			
Descending/Ascending chords			
Intervalic Studies/Lip Slurs			
Descending Intervals			
Ascending Intervals			

Combination of Descending and Ascending Intervals			
Unison Lip Slurs			
Lip Slurs for Brass/Chromaticism for Woodwinds			
Lip Slurs for Brass/Other Exercises for Woodwinds			
Articulation Studies			
Stacato Articulation			
Marcato Articulation			
Legato Articulation			
Combination of Different Articulations			
Slur 2/Tongue 2			
Scale Studies			
Major Scales			
Minor Scales			
Whole Tone Scales			
Pentatonic Scale			
Chromatic Scale			
Drop a Note Scale Exercise			
Add a Note Scale Exercise			
Chorales			
Unison Chorale			

Harmonized Chorale			
Tuning			
Tuner			
Individually			
Section			
Full Ensemble			
Principal Players Tuning Method			
No Tuner			
Individually			
Section			
Full Ensemble			
Principal Players Tuning Method			
Humming and Singing			
Mental Warm-Up			
Relaxation Exercise			
Listened to Recordings			
Visualized Warm-Up			
Visualized Musical Performance			
Counting Internally			
Counting aloud			
Rehearsal of Music			
Rehearsal of Music			

APPENDIX D

DESCRIPTION OF BEHAVIORS

1. ***Teaching Behavior-Musical Instruction:*** Conductor gives general instructions related to the rehearsal and improvement of the music.
2. ***Teaching Behavior-Non-Musical Instruction:*** Conductor gives general instructions that are not related to music, but can include logistical information.
3. ***Teaching Behavior-Musical Feedback:*** Conductor gives musical feedback after a repetition that is aimed at improving the musical technique and performance of the musicians and the ensemble.
4. ***Teaching Behavior-Non-Musical Feedback:*** Conductor gives feedback after a repetition that is not referring to the musical qualities and behaviors of the repetition.
5. ***Teaching Behavior-Off-Task:*** Conductor is off-task and is engaged in behavior that is not benefiting the musicians or the rehearsal.
6. ***Transition Time Between Tasks:*** Conductor and students are transitioning from one task to another. Neither group is off task nor actively engaged in rehearsal behavior.
7. ***Stretching:*** Students are stretching any part of their body to prepare for the rest of their warm-up and musical performance.

8. ***Breathing Exercises-Flow:*** Students are engaged in basic breathing exercises that are used to monitor and improve flow. The exercises are not rigorous and are sometimes used for relaxation.
9. ***Breathing Exercises-Power:*** Students are engaged in breathing exercises that are used to increase the power of the inhalation and exhalation. The exercises are sometimes rigorous and sometimes lead to students getting light headed.
10. ***Breathing Exercises-Visual Demonstration of Air Speed:*** Students are engaged in breathing exercises that use visual demonstrations to help students understand air speed as it relates to dynamic change. The exercises often include demonstrations that use paper airplane, dart, and bow-and-arrow visualizations to properly explain air speed.
11. ***Breathing Exercises-Inhale Therapy:*** Students are engaged in breathing exercises that show student the proper way to inhale by using their hand to create suction. When the hand is removed students are left with their mouth in the correct position to efficiently inhale.
12. ***Singing-Unison Pitches-With Reference:*** Students are matching pitch with a reference pitch while singing in unison.
13. ***Singing-Unison Pitches-Without Reference:*** Students are matching pitch without a reference pitch while singing in unison.
14. ***Singing-Interval Exercises:*** Students are singing exercises that contain different intervals.
15. ***Singing-Chords:*** Students are singing individual chords or chord progression in at least two part harmony.

16. ***Singing-Chorales:*** Students are singing chorales.
17. ***Singing-Solfege:*** Students are singing pitches in unison or harmony using solfege syllables.
18. ***Singing-Articulation Studies:*** Students are singing studies that are designed to improve their understanding and practice of articulation.
19. ***Singing-Humming:*** Students are humming to internalize and hear pitches.
20. ***Long Tones-Unison Pitches-With Reference:*** Students are playing long tones with the aid of a reference pitch.
21. ***Long Tones-Unison Pitches-Without Reference:*** Students are playing long tones without a reference pitch.
22. ***Long Tones-Chords:*** Students are playing long tones in harmony in the form of chords.
23. ***Long Tones-Descending/Ascending Chords:*** Students are playing long tones in harmony in the form of chords and then moving the chords up and down.
24. ***Long Tones-Descending/Ascending Chords with Dynamic Change:*** Students are playing long tones in harmony in the form of chords and then moving the chords up and down with a dynamic change.
25. ***Intervals-Descending Intervals:*** Students are playing intervallic studies that contain descending intervals (i.e. Remington Exercises).
26. ***Intervals-Ascending Intervals:*** Students are playing intervallic studies that contain ascending intervals.
27. ***Intervals-Combination of Descending/Ascending Intervals:*** Students are playing intervallic studies that contain a combination of descending and ascending intervals.

28. ***Intervals-Unison Lip Slurs:*** Students are playing lip slurs in unison.
29. ***Intervals-Lip Slurs for Brass/Chromaticism for Woodwinds:*** Brass students are playing lip slurs while the woodwind students are simultaneously playing chromatic exercises .
30. ***Intervals-Combination of Lip Slurs and Other Exercises:*** Brass students are playing lip slurs while the woodwind students are simultaneously playing other exercises.
31. ***Articulation-Staccato:*** Students are playing exercises that work on staccato articulation.
32. ***Articulation-Marcato:*** Students are playing exercises that work on marcato articulation.
33. ***Articulation-Legato:*** Students are playing exercises that work on legato articulation.
34. ***Articulation-Combination of Different Articulations:*** Students are playing exercises that work on a combination of different articulations.
35. ***Articulation-Slur Two/Tongue Two:*** Students are playing exercises that contain a slur two/tongue two pattern.
36. ***Scales-Major:*** Students are playing major scales.
37. ***Scales-Minor:*** Students are playing minor scales.
38. ***Scales-Whole Tone:*** Students are playing whole tone scales.
39. ***Scales-Pentatonic:*** Students are playing pentatonic scales.
40. ***Scales-Chromatic:*** Student are playing chromatic scales.
41. ***Scales-Drop a Note Exercise:*** Students are playing an exercise that takes a major or minor scale that starts with eight pitches and progressively drops notes until there is only one pitch.

42. ***Scales-Add a Note Exercise:*** Students are playing an exercise that takes a major or minor scale that starts with one pitch and progressively adds notes until there is the complete scale that contains all eight pitches.
43. ***Chorales-Unison:*** Students are playing a chorale that contains a unison melody.
44. ***Chorales-Harmonized:*** Students are playing a chorale in full harmony.
45. ***Tuning-With Tuner-Individually:*** Conductor tuned individual students with a tuner.
46. ***Tuning-With Tuner-Section:*** Conductor tuned a section of the ensemble with a tuner.
47. ***Tuning-With Tuner-Full Ensemble:*** Conductor tuned the full ensemble with a tuner.
48. ***Tuning-With Tuner-Principal Players Tuning Method:*** Conductor tuned the principal players of the ensemble with a tuner.
49. ***Tuning-Without Tuner-Individually:*** Conductor tuned individual students without a tuner.
50. ***Tuning-Without Tuner-Section:*** Conductor tuned a section of the ensemble without a tuner.
51. ***Tuning-Without Tuner-Full Ensemble:*** Conductor tuned the full ensemble without a tuner.
52. ***Tuning-Without Tuner-Principal Players Tuning Method:*** Conductor tuned the principal players without a tuner.
53. ***Tuning-Humming and Singing:*** The used humming and singing to help the students properly tune.
54. ***Mental-Relaxation Exercise:*** The students took part in a basic relaxation exercise.

55. ***Mental-Listened to Recordings:*** The students listened to recordings of music for the purposes of mentally preparing to perform.
56. ***Mental-Visualized Warm-Up:*** The students were asked to visualize the act of warming-up.
57. ***Mental-Visualized Musical Performance:*** The students were asked to visualize the act of performing music on their instrument.
58. ***Mental-Counting Internally:*** The students were asked to internalize tempo and pulse by counting internally.
59. ***Mental-Counting Aloud:*** The students were asked to internalize tempo and pulse by counting aloud.
60. ***Rehearsal of Music:*** The conductor rehearsed the music that the students were going to be evaluated on.