A DESCRIPTION OF SIXTH GRADE CHOIR PROGRAMS: STUDENT GROUPING ACCORDING TO GENDER AND TEACHER PERCEPTION OF ADOLESCENT BEHAVIOR AND VOCAL PHYSIOLOGY

Tammy G. Kotara

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APPROVED:

Debbie Rohwer, Major Professor
Nathan Kruse, Committee Member
Don Taylor, Committee Member
John Murphy, Director of Graduate Studies in the College of Music
James Scott, Dean of the College of Music
Mark Wardell, Dean of the Toulouse Graduate School

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The purpose of this study was to provide a description of teacher perceptions concerning behavioral and physiological vocal issues among current gender groupings in sixth-grade choir classrooms through the collection of survey research data. Participants selected for this study consisted of registered Dallas-Fort Worth metropolitan area choral directors of the Texas Music Educators Association. Results of the study indicated that more girls were enrolled in sixth-grade choir than boys and that mixed choirs were more common than gender-specific choirs in sixth grade. Results also indicated that teachers perceived evidence of early voice change among both sixth grade boys and girls, and that there was a difference in behavior as students showed signs of puberty.

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CHAPTER 1

INTRODUCTION

Middle school choir can sometimes be an adventure for choir directors, as the behaviors and voices of their students can change throughout the school year due to adolescence and puberty. The idea that students' behaviors and voices will most likely transform and develop at some point in time during middle school can be a cause for anticipation for directors, due to the fact that these changes can drastically alter the grouping arrangements directors select for each choir during the course of the school year. Studies describing student voices based on age, gender, ability, and vocal maturity frequent current literature as researchers investigate possible solutions (Carp, 2004; Hamann, 2007; Zemek, 2010).

Perhaps one of the largest issues for middle school choir directors is voice change. In order to plan for program groupings and literature selection, it would be useful for directors to know when to anticipate voice change in their classrooms. Research has indicated that the onset of puberty for both boys and girls is highly correlated with the onset of voice change (Gackle, 1991, 1994; Killian, 1999, 2010; Tanner, 1972). Research also has suggested that the onset of puberty for young male and female students may begin earlier than traditionally considered (Hermans-Gidden & Slora, 1997; Killian, 1999, 2010; Tanner, 1972) and may possibly start at different times according to ethnicity (Fisher, 2010; Herman- Giddens, Wang & Koch, 2001; Sun et al., 2002). Voice change among boys was documented in 1977 by Cooksey to be most prominent during seventh and eighth grade (Cooksey & Welch, 1998). A more recent

study documented that boys demonstrated signs of voice change "as early as Grade 6 with more than 80% of the sixth graders having entered voice change" (Killian, 2010, p. 15). Gackle (1991) investigated voice change among adolescent females, and identified the beginning stages of voice change as occurring between the ages of 11-13 and related to the first signs of physical mutation before the first menstrual cycle, referred to as menarche. Despite these findings, a time frame during which to expect voice change for both boys and girls is still ambiguous. More evidence, including choir director's perceptions of voice change in their classrooms, is needed in order to pinpoint the specific ages of voice change for young male and female students.

An unquestionable aspect of voice change is the growth of the vocal cords, which often results in changing vocal needs for boys and girls. Studies have shown that adolescent male (Collins, 1981, 1999; Cooksey & Welch, 1998) and female (Gackle, 1987) singers have different vocal needs than pre- and post-adolescent voices. As vocal cords grow during puberty, the singing range and tone quality of the student voice have been found to change (Gackle, 1991; Tanner, 1972). Defining the varied ages during which to expect these changes may help choir directors anticipate vocal growth in their classrooms in order to better serve the needs of their students.

Another change choir directors may need to anticipate in their classrooms each year is students' behavior before and during adolescence. Research has described the changes adolescents psychologically experience during puberty (Savin-Williams & Demo, 1984) and the possible causes of any behavioral self-concept changes (Eccles, 1993). Whether these self-concept changes are related to musical attitude and how students perceive their performance abilities and/or their actual music performance has

been debated. Several studies that have evaluated student attitude in relationship to perceived performance ability have provided contradictory results, with some (Demorest, 2001; Mizener, 1993) finding no relationship between attitude and performance and others suggesting a positive relationship between attitude and performance (Adler, 2002; Clements, 2002; Petzold, 1969).

When considering how changes in self-concept may affect classroom behavior, directors in Carp's study (2004) unanimously agreed that gender-specific ensembles were better learning environments for the middle school age group. They "indicated that (a) students are visibly less focused when members of the opposite sex are present and (b) vocal technique methods can be tailored more effectively in single-gender groups" (Carp, 2004, p. vi). However, other studies that have examined the influence/distractions of the opposite sex on student performance have found no difference based on gender (Flowers, 2005; Ryan, 2004).

The idea that choir directors perceive evidence of physiological vocal and behavioral changes among their students due to puberty and adolescence is hardly debatable. The question of *how* directors are handling these changes in their classrooms through gender groupings appears to need more investigation. Hamann (2007) documented that "choirs are more often grouped by age level than ability," but also noted that "middle school choir directors teach in a wide variety of situations and often have a large number of students," making it difficult to determine any trends in grouping of students (p. 68). Zemek (2010), however, found that when the issues of voice change and gender grouping were considered, "no clearly articulated argument supported by research" existed that was "in favor of gender-defined choral ensembles

for adolescents" (2010, p. 18). Even though research is inconclusive about gender-defined choral ensembles, single-gender choirs have been a common preference in the literature (Carp, 2004; Freer, 2007; Jorgensen & Pfeiler, 2008; Killian, 1999).

Despite the available research concerning choir grouping preferences in middle school, adolescent behavior, and vocal growth during puberty, questions remain as to how sixth grade choir directors group their students and what vocal and behavioral changes they currently perceive among students in their classrooms. If puberty, as the research suggests (Hermans-Gidden & Slora, 1997; Killian, 1999, 2010; Tanner, 1972), is truly occurring at an earlier rate for young singers, late elementary and middle school directors, especially sixth grade choral directors, could benefit from further investigation of when teachers perceive evidence of voice change in their classrooms. As current discrepancies in research do not identify a particular age at which to expect the onset of puberty and voice change, new findings concerning teachers' perceptions of puberty and voice change could assist directors in anticipating and nurturing young singers' vocal needs. Furthermore, choral directors may benefit from research specific to the behavioral and physiological aspects of adolescence in the classroom and how teachers are currently handling these student needs. Should sixth grade teachers know what is common in sixth grade choir classes concerning grouping preferences, as well as behavior and voice change, they may be able to make better-informed decisions about gender and grade level groupings that could provide a healthier vocal developmental environment for their students.

Statement of the Problem

There is a need for additional research that can provide clear suggestions for sixth grade choir directors who are currently questioning choir grouping according to gender, as past research was not found that specifically addressed sixth grade choir groupings. The need exists for further investigation into the transitional stages of pre-pubescent boys and girls into puberty, and specifically, into the behavioral implications affecting self-concept and classroom behavior in sixth grade choral classrooms. Specifically, sixth grade choir directors may benefit from knowing what other directors are experiencing in their classes concerning student self-concept and classroom behavior, and which gender grouping, if any, teachers perceive as a better learning environment. Studies have been performed that examine student self-concept and behavior in an academic setting or with elementary or high school students; however, very few studies were found that have highlighted these concepts in the sixth grade. No studies were found that identified teachers' perceived ideal groupings of sixth grade choir students according to gender.

Research also has provided little direction concerning when sixth grade choir directors might anticipate puberty, and consequently voice change, in their classes. While recent research has focused more on young adolescent changing voice, little was found that provided choir director perspective on what voice change, if any, is taking place during the sixth grade year in choral settings. Gaining sixth grade choir directors' perspectives concerning voice change in their classrooms could be of assistance in anticipating voice change in choir programs and creating classes that can foster a

healthy vocal growth environment. Further studies could potentially offer insight into possible gender groupings for young adolescent singers.

Purpose of the Study

In response to the need for information regarding teacher perception and organization of sixth grade boys' and girls' voices in choir ensembles, the purpose of this study was to provide a description of teachers' perceptions concerning behavioral and physiological vocal issues among current gender groupings in sixth grade choir classrooms through the collection of survey research data from Dallas-Fort Worth metropolitan area sixth grade choir programs.

Research Questions

The specific questions of the study were:

Research Question 1: What are the descriptive groupings according to gender?

a. How many sixth grade students are enrolled in choir?

b. What is the specific number of sixth grade boys and girls enrolled in choir?

c. How are sixth grade students grouped in choral programs according to gender?

d. Do directors have sixth grade students mixed with other grade levels, and if so, why?

Research Question 2: What are the perceptions of teachers concerning choral groupings?

a. How do directors perceive classroom behavior in a gender-specific classroom?

b. How do directors perceive classroom behavior in a mixed-gender classroom?

c. Do directors perceive evidence of early voice change among sixth grade boys and girls?

Definition of Terms

Middle school: For the purposes of this study, the term *middle school* refers to an intermediate school for children "typically serving grades 6 to 8 (ages 12 to 14)" that is between a "first or elementary school and an upper, senior, or high school" (Oxford English Dictionary Online, 2002, definition 4).

Perception: For the purposes of this study, the term *perception* refers to "the mental product or result of perceiving something," specifically, "an interpretation or impression based upon such an understanding; an opinion or belief" (OED Online, 2005, para 5). This term is related to Research Question 2, which questions teachers' perceptions of vocal physiology and behavioral signs of adolescence. Because it cannot be assumed that all directors in this study have the same knowledge base concerning these two topics, the study only aims to measure what they perceive is happening in their classrooms according to their individual understandings of vocal physiology and adolescent behavior.

Adolescence: According to the online Oxford English Dictionary, adolescence has been defined as "the process or condition of growing up," and "the period which extends from childhood to manhood or womanhood; ordinarily considered as extending from 14 to 25 in males, and from 12 to 21 in females" (OED Online, 1989, para. 1). The term *adolescence* has been commonly referred to as the period in time during which boys and girls experience puberty. For the purposes of this study, adolescence is defined as the behavioral aspects of puberty.

Puberty: This term is defined as “the period of life during which a young person reaches sexual maturity and becomes capable of reproduction” (OED Online, 2007, definition 1). For the purposes of this study, puberty refers to the physiological changes experienced by boys and girls during adolescence.

Menarche: This term refers to the first menstrual period, or “the age at which this occurs,” of adolescent females (OED Online, 2001, para. 1).

Attitude: According to OED Online, this term refers to “some action or mental state assumed by human beings” (1989, para. 2), and a “settled behavior or manner of acting, as representative of feeling or opinion” (1989, para. 3). For the purposes of this study, attitude refers to a student’s feeling and opinion toward something other than himself/herself.

Behavior (behavioral): For the purposes of this study, the term *behavior*, or *behavioral*, refers to the demeanor or disposition of adolescents’ actions reflective of their mental state during adolescence (OED Online, 1989).

Self-concept: For the purposes of this study, self-concept refers to a student’s “concept or idea of himself” (OED Online, 1989, para. 1). This term will be used in relation to the behavioral aspects of adolescence.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter reviews literature pertaining to issues concerning the physiology of adolescents during puberty and subsequent voice change, as well as the behavioral implications of adolescence in relationship to self-concept and singing confidence, attitude toward music, and classroom behavior. A review of literature concerning the history of the composition of choirs also is provided, followed by a description of current choral groupings based upon age and gender, focusing specifically upon middle school choir programs.

Adolescent Physiological Issues

Research has shown that adolescent male (Collins, 1981, 1999; Cooksey & Welch, 1998) and female (Gackle, 1987) singers have different vocal needs than pre- and post-adolescent voices. Research also has suggested that the onset of puberty for young male and female students may begin earlier than traditionally considered (Hermans-Gidden & Slora, 1997; Killian, 1999, 2010; Tanner, 1972) and may possibly start at different times according to ethnicity (Fisher, 2010; Herman- Giddens, Wang & Koch, 2001; Sun et al., 2002). Results from these studies seemingly offer contradictory conclusions concerning adolescent voice change; this inconsistency can make it difficult for choir directors of middle school students to anticipate and nurture young singers' vocal needs.

The upper unchanged elementary voice, ages 10 to 11 years, has been characterized as “light, free and clear,” (Hoffer, p. 79) and as capable of producing a

“charming quality of sound” (Hoffer, 2005, p. 79). This is the age when “the child voice reaches its peak of development” before voice change begins (McRae, 1991, p. 46). Children should be capable of singing a range of up to two octaves; however, a range of B-flat below middle C (Hoffer suggested A rather than B-flat) to F an octave and a half higher is typical (Hoffer, 2005; McRae, 1991). Wassum (1979) documented no significant differences in range between sexes.

The ability to determine singing range of unchanged voices is largely dependent upon the pitch accuracy of the singer. Among first grade through fifth grade students, pitch accuracy has been found to be strongest in the fifth grade 10 to 11 year old voice, although both boys and girls may be more accurate when singing together than individually (Cooper, 1995; Green, 1994). Research is not conclusive, however, about how accurately boys match pitch compared to girls. Studies have indicated that elementary girls, especially toward the later years, may perform with better pitch accuracy than boys (Green, 1994; Petzold, 1969; Swanson, 1977; Welch, 1979). Two different studies, though, found no differences in pitch accuracy between 10 to 11 year old boys and girls (Cooper, 1995; Moore, 1994). A study that tested only sixth grade students found that “sixth grade males and females did not differ in their ability either to discriminate or to vocally produce single, interval, or sequence” pitches. (Pedersen & Pedersen, 1970, p. 8).

The unchanged voice soon alters as puberty begins for the young singer. In order for choir directors to anticipate the onset of puberty and subsequent voice change, some evidence would be useful that could indicate a general age at which to expect the beginning stages of puberty. Physical evidence of puberty is consistently agreed upon

in current research. Findings state that girls show physical evidence of puberty through the growth of breast tissue and eventual start of menstruation (Herman-Giddens & Slora, 1997; Tanner, 1972). The beginning signs of puberty in boys are "usually an acceleration of the growth of the testes and scrotum" (Tanner, 1970, p. 11) followed by the growth of the penis and development of pubic hair. While these physical indicators of puberty are easily discernible to the students themselves, choir directors must rely on other evidence by which to expect puberty and voice change in their students, as the physical growth experienced during puberty is a private concern for each student and his or her parents.

Directors must then turn to research for clues that point to a starting age of the beginning of puberty. Unfortunately, existing literature concerning when puberty actually begins seems to offer contradictory conclusions. While puberty was documented in 1972 to begin for American and British girls around the age of 12 and the age of 14 for boys (Tanner, p. 3), research over the past 160 years has indicated that puberty is beginning earlier for both sexes (p. 2). This has been especially evident in girls, as seen in statistical evidence on age at menarche. "The trend [toward early menarche] is between three and four months per decade since 1850 in average sections of Western European populations" (Tanner, 1972, p. 22). Almost 30 years later, however, a study of over 17,000 American girls showed a trend of early menarche around the age of 12 to 12.5 years of age, depending on ethnicity (Herman-Giddens & Slora, 1997). As previously seen, girls in each decade were recorded as beginning menstruation 3 to 4 months earlier than the previous decade. If this is still a reliable and

predictive model, girls should now begin menstruation earlier. No current studies have been found, however, to support this trend.

Current research is, conversely, pointing toward the early onset of puberty among boys. Two studies, both of which used Tanner's (1972) stages of growth during puberty when documenting the beginning signs of puberty, have suggested an early onset age. According to a medical study in 2001, "a significant number of boys are experiencing development of one or more secondary sexual characteristics, particularly genital maturity, at very young ages," up to 1½ years earlier than that predicted by Tanner (Herman-Giddens et al., 2001, p. 1023). Sun et al. (2002) determined the median age to occur around the age of 12, noting slight differences in the years between 11 and 12 according to ethnicity. In both cases, boys appeared to begin puberty earlier than suggested by Tanner in 1972. The results of both studies, however, were determined from samples of the same cross-sectional survey from the National Health and Nutrition Examination Survey III (NHANES III), between 1988-1994. As no other studies were found that investigated the onset ages of puberty for boys, it is difficult to ascertain a reliable period of puberty maturation without further investigation.

Once puberty begins for both boys and girls, choir directors must anticipate evidence of voice change in their choirs, as research has documented that the onset of puberty for both boys and girls is highly correlated with voice change caused by the growth of vocal cords and larynx (Gackle, 1991, 1994; Killian, 1999, 2010; Tanner, 1972). Pubescent boys and girls have been found to experience growth of the vocal cords and larynx in different ways; laryngologists Luchsinger and Arnold (1965) reported that pubescent boys' vocal chords can increase in size up to 1 cm, while girls' vocal

cords can increase in size approximately 3 to 4 mm. Weiss (1950) discovered the direction of laryngeal growth to be the main difference between pubescent boys and girls. Weiss documented that the male larynx grew front to back, while the female larynx increased more in height than width. The combination of these two factors can lead to the different vocal qualities commonly observed among boys and girls during puberty (Gackle, 1991).

Given that voice change is strongly correlated to the onset of puberty for boys and girls, sixth grade choir directors can expect to deal with voice change in the classroom. Several studies have investigated the beginning signs of voice change for boys. In 1977, Cooksey documented that voice change was most prominent among boys around the age of 12 to 14, during seventh and eighth grade. This was the period during which voice change was most noticeable, as the pitch lowers and vocal tone becomes "husky and sometimes quite breathy" (Cooksey & Welch, 1998, p. 107). Although voice change may be prominent at the ages of 12 to 13, Collins (1999) suggested that "fully changed voices in middle-level schools are rare" (p. 200). A recent study conducted by Killian (2010) reported that boys were demonstrating signs of voice change "as early as Grade 6 with more than 80% of the sixth graders having entered voice change" (p. 15). When examining student age rather than student grade, more than 70% of 11 year olds had entered voice change, and among 12 year olds, there were individuals in all stages of the voice change (p. 15). The stages Killian mentioned refer to the developmental periods of growth created by Cooksey in 1977 (2010), and can also be found in similar studies (Harris, 1993; Killian, 1999).

Brodnitz (1983), Gackle (1991), and Phillips and Emge (1994) investigated voice change among adolescent females, which resulted in a growth scale similar to that of Cooksey's 1977 model. Gackle (1991) identified beginning stages of voice change among girls as occurring between the ages of 11 to 13. This was related to the first signs of physical mutation in pre-menarcheal girls, audible through a breathy tone quality and difficulty in achieving a louder singing volume. Brodnitz (1983) supported this evidence with his findings that suggested a link between voice change and the onset of menarche; when pubescent girls begin menstruation vocal pitch simultaneously deepens. Gackle's "puberty/post-menarcheal" stage, ages 13 to 14, (1991, p. 22) lists this age span as the most critical vocal time and audible indicator of voice change, because girls experience symptoms similar to pubescent boys, such as hoarseness, voice cracking and lack of clarity in the tone (1991; 1994). Singing tessitura is another obvious indicator of vocal development for both girls and boys (Cooper, 1977, Collins, 1999; Gackle 1991,1994; Williams, Larsen, & Price, 1996; Wolverton, 1998).

As past research has differed on the stated actual onset of puberty for young boys and girls, current documentation of boys' and girls' pubertal ages is needed to pinpoint if and/or when to expect voice change in the sixth grade choral classroom. If voice change is truly occurring at an earlier rate for young singers, late elementary chorus directors, especially sixth grade choral directors, could benefit from further investigation of this phenomenon. Furthermore, choral directors may benefit from future research specific to the behavioral and physiological aspects of adolescence in the classroom and how other directors are currently handling these needs of their students.

Behavioral Implications of Adolescence

Although adolescence appears most obviously in the physical changes exhibited by young male and female students, research has indicated that less visible transformations occur within the psyche of adolescents, including changes to overall self-concept (Adler, 2002; Austin, 1990; Clements, 2002; Frakes, 1984; Klinedinst, 1991; Petzold, 1969). Whether these self-concept changes are related to how students perceive their performance abilities and/or their actual music performance has been debated, as well as how their self-concept affects their attitude toward music. Several studies that evaluated students' attitude toward music in relationship to perceived performance abilities have provided contradictory results, with some (Demorest, 2001; Mizener, 1993) finding no relationship between attitude toward music and performance, and others suggesting a positive relationship (Adler, 2002; Clements, 2002; Petzold, 1969). Other studies pertaining to music participation were more in agreement, as they pinpointed adolescent self-concept as the primary factor in the prediction of a positive attitude toward music and music participation (Austin, 1990; Clements, 2002; Frakes, 1984; Klinedinst, 1991).

Mizener (1993) studied a group of elementary students' attitudes in relation to their singing ability. Despite a higher skill level in older elementary students, Mizener found that the high skill level had little relationship to their attitudes and actual singing ability. Demorest (2001) also found that there was no difference in attitude of perceived ability and performance in his study of pitch-matching performance of junior high boys. In other words, these studies found that a relationship did not exist between attitude, perceived ability, and performance.

Other reports, however, have indicated that there is a difference in attitude of perceived ability and performance. Researchers have even suggested differences among gender. A study conducted by Petzold (1969) tested six 12-year-olds on their attitudinal perceptions and related performance ability of melody, rhythm, harmony, and timbre. Results indicated that of sixth grade students, girls performed better than boys. Petzold attributed the performance difference to male attitude, stating that the attitudinal perception difference “is related to the attitude of the boys toward using the singing voice—they lack both confidence and competence in being able to view singing as a natural musical response” (1969, p. 86). Clements (2002) discovered that "self-concept was more important than actual musical and singing ability" for both boys and girls (p. 138). Other research has suggested that that poor self-concept, seen in these studies among boys, negatively impacted singing ability (Adler, 2002). Adler found that adolescent male self-concept was influenced in part by issues of self-esteem, peer and teacher recognition, and "social-power as they relate to maturity and homophobia" (2002, p. ii).

Given the breadth in age and disparity of the reviewed literature, the relationship between performance ability (a student’s singing ability rather than the perceived singing ability) and student self-concept is still unclear. Some trends in research may help provide clarity to this question. When examining student participation in musical ensembles at the middle school level, two studies indicated that there may be a relationship between musical retention and student self-concept (Frakes, 1984; Klinedinst, 1991). Klinedinst (1991) found some meaning in the use of self-concept as a predictor of fifth grade students’ future participation in middle school music ensembles.

Frakes (1984), in a comparison of musical participants, non-participants and drop-outs, found that the critical time of drop-out for music ensembles was during the junior high school years, particularly for adolescent boys in choir. Self-concept, also examined in the study, was significantly higher for those who were currently participating in music ensembles. Those who dropped out and who never participated had lower self-concepts.

Another behavioral consideration related to male and female adolescents in academic and musical environments includes teacher perception of classroom behavior in single versus mixed-gender classrooms. Carp (2004) interviewed choir directors about preferred teaching scenarios concerning mixed-gender or gender-specific ensembles. Directors unanimously agreed that gender-specific ensembles were better learning environments for the middle school age group. They "indicated that (a) students are visibly less focused when members of the opposite sex are present and (b) vocal technique methods can be tailored more effectively in single-gender groups" (Carp 2004, p. vi). Although directors in Carp's study (2004) indicated a preference for single-gender classrooms based on student behavior, studies that have tested student performance based on behavior in relationship to influence/distractions of the opposite sex have found no difference (Flowers, 2005; Ryan, 2004).

Historical Composition of Choir Programs

Adolescent vocal physiology and behavior are important characteristics in determining the structure of a middle school choir program. It is equally important for choir directors to be familiar with current grouping trends according to grade level and gender, and how grouping preferences have changed throughout the history of choir

programs. Understanding these historical changes and current preferences might allow directors to make informed decisions when structuring their programs and to better anticipate issues that may arise from different grouping choices.

Choir programs in the United States today look different than those of almost 300 years ago, as “a marked shift from male to female involvement with public singing” has occurred (Gates, 1989, p. 33). Gates (1989) presented a chronological overview of the shift from male-dominated choirs to female-dominated choirs. This historical research documented that Boston choirs during the 1720s flourished with male singers. Unlike the men, women were reluctant to participate and often had to be coaxed into public singing ensembles. Later data from the 1930s indicated “that membership in high school choruses was equally divided between sexes” (Gates, 1989, p. 39). An inversion occurred after the 1930s, resulting in an opposite imbalance in the gender make-up of school choirs, with choirs becoming dominated by girls and women, rather than boys and men (Gates, 1989, 1991; Van Camp, 1987).

Choir directors across the United States reiterated this imbalance in the 1980s as they appealed for help in solving the problem of missing male singers. Van Camp (1988) published a two-part report in *Choral Journal* that presented survey information concerning the balance of men and women in secondary and college/university choirs in 1988. Data collected indicated a growing trend of gender transition in choir programs over a five-year period; while results were not drastically imbalanced, data from the 315 choir programs demonstrated a slight increase of females, disrupting program gender organization and performance literature (Van Camp, 1988a, 1988b). Van Camp considered this evidence sufficient warning of conditions to come in future choir

programs. Later studies indicated that chorus enrollments appeared to continue their departure from gender parity, as directors questioned the problem of gender imbalance in their choirs (Adler, 2002; Freer, 2007; Koza, 1993; Newlin, 2007).

Because the literature suggests that the gender of choir programs has changed over time, (Adler, 2002; Freer, 2007; Gates, 1989, 1991; Koza, 1993; Newlin, 2007; Van Camp, 1987), it could be assumed that this trend also has occurred at the middle school level. Current research has investigated choral program organization according to grade level and gender in order to answer questions concerning curriculum design (Hamann, 2007) and voice change (Zemek, 2010). In a study focused on curriculum design for middle school choir, Hamann found that "choirs are more often grouped by age level than ability," (2007, p. 68) and further suggested that "middle school choir directors teach in a wide variety of situations and often have a large number of students" (p. 68). When the issue of voice change was considered, Zemek compared single-gender choirs versus mixed-gender choirs and found "no clearly articulated argument supported by research" (2010, p. 18) existed that was "in favor of gender-defined choral ensembles for adolescents" (p. 18). Zemek then stated:

> Many experts agree that it is advantageous to separate the boys and girls during this time to address the specific needs of these singers. On the other hand, many choral directors are able to successfully train and instruct members of each sex in mixed settings—some even prefer it. (p. 18)

The advantage Zemek discussed for single-gender choirs is a common preference documented in previous literature (Carp, 2004; Freer, 2007; Jorgensen & Pfeiler, 2008; Killian, 1999). Similar findings supporting mixed-gender choir groupings at the middle

school level were not found. Further research in this area may benefit directors when determining gender groupings of sixth grade students.

The review of literature has covered issues pertaining to the physiology of adolescents during puberty and subsequent voice change, the behavioral implications of adolescence, and the history of the composition of choirs and gender groupings. Although the literature reviewed explored aspects of vocal physiology and behavior during puberty, teachers' perceptions of voice change and behavior among sixth grade students was not found. Descriptive studies concerning current choral groupings of sixth grade students also were not located. The current study could be helpful to sixth grade directors in its description of sixth grade choir programs according to gender. Furthermore, the teachers' perceptions of evidence of early voice change and behavior during adolescence could be valuable in their relationship to each specific gender grouping.

CHAPTER 3

METHODOLOGY

This chapter provides a detailed description of the methods used in this study. The specific research design utilized in the current study is addressed, followed by a demographic reporting of the sample. Concerning materials for the study, a comprehensive depiction of the instrument used for the study, validity and reliability evaluation procedures, and all administrative steps are presented. Statistical procedures used in the analysis of data from the study conclude the chapter.

Research Design

A quantitative descriptive survey design with a cross-sectional survey tool was used for this study. Because the purpose of this study was to collect specific quantifiable data from choir directors that would then be statistically evaluated for trends, a quantitative method was deemed the most appropriate form of research, given that it is "a type of educational research in which the researcher decides what to study; asks specific, narrow questions; collects quantifiable data from participants; analyzes these numbers using statistics, and conducts the inquiry in an unbiased, objective manner" (Creswell, 2008, p. 46). According to Creswell, the survey design is descriptive in nature, in that it does "not involve a treatment given to participants by the researcher…Survey studies describe trends in the data rather than offer rigorous explanations" (2008, p. 388). The study utilized a cross-sectional survey that was administered during the spring semester of the 2011-2012 academic school year. A cross-sectional survey was chosen for this study as its function is to "collect information

from a sample that has been drawn from a predetermined population… at just one point in time" (Fraenkel & Wallen, 2009, p. 391).

Sample

Participants selected for this study (*N* = 165) consisted of registered Dallas-Fort Worth (DFW) metropolitan area head choral directors of the Texas Music Educators Association (TMEA) for the 2010-2011 school year. The list of TMEA directors and contact information was acquired through the University of North Texas. For the purposes of this study, head choral directors were defined as those who oversaw the choral department at their school and made all program decisions relating to course scheduling, program structure and gender groupings. Of the 165 participants selected for the study, 59 started the study and 42 were determined as eligible to participate, based on one qualifying question that asked if directors were currently teaching sixth grade students in their choir programs.

The 42 eligible directors completed the entire questionnaire, but represented only a small percentage of the population surveyed. The small number of study participants may lessen the generalizability of results for directors of sixth grade students, as the results might only represent the directors who participated and not sixth grade choir program demographics or sixth grade choir directors' perceptions at large. The amount of responses collected might have been due to when the questionnaire was administered, which took place during the middle of the spring semester. Sixth grade choir directors in the DFW metropolitan area might have been on Spring Break vacation or participating in area University Interscholastic League (UIL) Concert and Sight-Reading Festival, commonly held for area middle school directors around the time of

Spring Break. If directors were on Spring Break, they may not have accessed the e-mail address to which the questionnaire was delivered. Also, if directors were undergoing final preparations or participating in UIL activities, time might not have allowed them the opportunity to participate. The 42 head directors included in the sample taught at least one class defined as choir which included sixth grade students in either a multi-grade choir class or an entirely sixth grade choir class. Thirty-nine public schools, two religious/secular private schools and one public school with a performing arts emphasis (magnet) represented the types of schools at which the respondents were employed. Sampling procedures for this study involved a census of the population: registered DFW head choral directors of the Texas Music Educators Association (TMEA) for the 2010-2011 school year. Census sampling was selected due to its ability to survey the entire selected population (Fraenkel & Wallen, 2009).

Demographic information concerning gender of participants was collected. Of the 42 head directors surveyed, 9 men and 33 women completed the study. The structure of the choral programs was also determined, including teaching schedule and how the choir program was created. Of the 42 respondents, 4 taught in a block schedule or modified block schedule (in which students did not attend choir all five days of the school week), 36 taught in a traditional schedule (in which students attended choir each day of the school week), and 2 taught in rotating blocks, (during which they would see a section of sixth grade students for only one portion, either a grading period or semester) of the school year.

Participant responses concerning how the choir program was established indicated that 24 directors created the current choir program class schedule. Of the 18

who responded that they did not create the current schedule, 4 indicated that it was already created before they began working at their current places of employment and they decided to adhere to it; 14 others indicated that while the program was already created before gaining employment, they were required to keep the current schedule. Sixteen participants responded that their current choir program class schedule was not created by the head director or a choir department member.

Grade levels taught at the location of employment and overall student enrollments also were collected as part of the choir program demographics. Grade levels included in the directors' teaching schedules ranged from pre-kindergarten to 12; of the 42 respondents, 30 indicated that only Grades 6 through 8 were included in their enrollment totals. Total enrollment for choir directors' programs ranged from 30 to 454 (*M* = 195.8*, SD* = 94.8*)*.

Instrumentation

The present study collected information regarding gender groupings of sixth grade choir students and teachers' perceptions of behavioral and physiological vocal issues among sixth grade students. Eligibility for participation in the study was determined by one question that stated, "Do you currently teach sixth grade students in your choir program?" Demographic information about the school and choir program was collected across eight questions. Participants responded to one question that classified their school as either public, private with religious affiliation, private without religious affiliation, or magnet. The school teaching schedule was then identified as either a traditional teaching schedule, in which directors taught students every day of the school week, block schedule, or other. One question addressed the grades taught

at the participants' current schools. Participants were then asked how their choir program was established across four questions. If the four questions did not determine how the choir program was established, an optional free-response question was offered to allow directors the opportunity to clarify their own context.

The first section of the 35-item questionnaire included 18 questions that addressed Research Question one (what are the descriptive groupings according to gender?). Participants were instructed to complete a set of 10 interval level enrollment questions that pertained to Research Questions 1a, 1b, and 1c. Participants were instructed further that the enrollment totals should pertain to scheduled choir classes that appeared on their daily class roster. The number of sixth grade students enrolled in choir (Research Question 1a) was addressed in two questions, one pertaining to overall choir program enrollment and one pertaining to only sixth grade enrollment totals. The specific number of sixth grade boys and girls enrolled in choir (Research Question 1b) was addressed in two questions, one concerning the enrollment of sixth grade boys and the other sixth grade girls. How sixth grade students are grouped in choral programs according to gender (Research Question 1c) was determined through the administration of six questions. Two questions dealt with how many choir classes appeared on the daily class roster and of those classes, how many had only sixth grade students. Four other questions determined if directors taught at least one sixth grade all boys or all girls class, mixed-gender class, and/or a mixed grade level class with sixth grade students.

Research Question 1d (do directors have sixth grade students mixed with other grade levels, and if so, why?) was addressed through the administration of eight questions. Three questions determined how many mixed grade level choirs included at

least one sixth grade boy or at least one sixth grade girl, or both. Participants selected from answer choices 0 to 8. Four nominal level, yes/no questions determined how sixth grade students were grouped with other grade level students. Participants responded yes or no to statements that indicated inclusion of sixth grade students based on singing ability, enrollment, and vocal maturity. The final question of this section was an open-ended question that allowed respondents to give another reason not covered in the yes/no questions as to why the sixth grade students were included with other grade level students.

The second section of the questionnaire contained 17 teacher perception questions that addressed Research Question two (what are the perceptions of teachers concerning choral groupings?). The items were chosen based on a review of literature search pertaining to director perception. Director perception of classroom behavior in a gender-specific class (Research Question 2a) was addressed in five questions, three nominal yes/no questions, and two ordinal multiple choice questions. The two ordinal multiple choice questions measured teacher perception of student singing confidence when performing in front of the same and opposite sex. Respondents selected from answer choices: all boys/girls; a large number of boys/girls; about half of the boys/girls; a small number of boys/girls; no boys/girls. Director perception of classroom behavior in a mixed-gender class (Research Question 2b) was addressed in seven questions, three nominal yes/no questions and 4 ordinal multiple choice questions. Response categories were identical to those for the gender-specific section. Director perception of evidence of early voice change among sixth grade boys and girls (Research Question 2c) was assessed through the administration of four ordinal level questions. Response

categories included: all; a large number; about half; a small number; none. The final questionnaire question was an open-ended question that asked participants what they perceived as the advantages and disadvantages of sixth grade students participating in mixed-gender and gender-specific sixth grade choirs. Participants were asked to specify any perceptions they had that were not addressed in the questionnaire.

In order to prevent participants from answering perception questions that were not applicable to their current grouping of sixth grade students, the questionnaire was programmed after the enrollment questions to route them to all applicable perception questions and skip all non-applicable questions. Program routing was based on the three sixth grade choir grouping categories included in the enrollment Research Questions: gender-specific, mixed-gender and mixed grade level. The 14 participants that instructed at least one gender-specific sixth grade class answered all 10 questions pertaining to gender-specific choirs. This was determined by a routing question that asked participants how many sixth grade mixed-gender classes they taught. If they answered as having between 1 to 8 classes, they moved on to answer the mixed-gender teacher perception questions. Otherwise, if the answer was zero, they were directed to the routing question that determined how many gender-specific classes the respondents taught. Thirty-one participants indicated that they instructed 1 to 8 mixed-gender classes; they then answered all nine questions pertaining to mixed-gender choirs. The 11 participants who answered zero to the gender-specific routing question were directed to one final routing question that determined how many multiple grade level choirs they taught. The 31 participants who instructed at 1 to 8 mixed grade level classes answered all seven questions pertaining to mixed grade level choirs.

Participants who answered zero to the mixed grade level routing question were routed to the final questionnaire question.

Procedures

The questionnaire was administered electronically during the spring semester of the 2011-2012 school year. The questionnaire was administered via e-mail the second week of April through SurveyMonkey.com©, a web-based survey program. Participants had four weeks to complete the questionnaire. Three reminder e-mails were sent, one during week two and week three and two days before the final deadline to encourage participant response. The study concluded during the end of the second week of May. Respondents were sent thank you e-mails to confirm participation in the study.

Equipment needs for this study included a working computer from which participants could access a working e-mail address though a reliable Internet connection. Participants also needed the ability to access the SurveyMonkey.com© webpage, provided through an e-mail web-link which directed them to the questionnaire. This presented some threat to the completion of the questionnaire, as the setting in which the questionnaire was completed could have caused interruptions to the completion process. For those participants who completed the questionnaire at work, the risk of interruptions, lighting irregularities, time at which the questionnaire was taken, and room location were potentially unequal across participants, and could have potentially interfered with responses. Participants could also have experienced loss of Internet connection during the questionnaire, as well as screen freezes and other technological problems that possibly hindered participation. No audio-visual equipment was needed for this questionnaire.

Data Analysis

The complete questionnaire contained 35 questions. Of the 35 questions, 18 pertained to Research Question one (what are the descriptive groupings according to gender) and 17 pertained to Research Question two (what are the perceptions of teachers concerning choral groupings). The 18 questions that addressed Research Question one collected interval and nominal level data, 13 using free-response numeric answers, four using nominal yes/no responses and one using open-ended responses. The free-response interval data were analyzed using mean, range, and standard deviation; yes/no responses were analyzed for frequency and reported as a percentage; the open-ended responses were reported as direct quotations and coded into relevant categories based on a content analysis of the responses. The 17 questions that addressed Research Question two collected nominal and ordinal level data, six using nominal yes/no responses, ten using ordinal multiple choice responses, and one open-ended question. Yes/no responses were analyzed for frequency and reported as a percentage. The ten ordinal multiple choice responses were analyzed by category (e.g., a small number of girls, about half of the girls) and percentages of responses for each category were listed, in addition to an overall median response being provided. One open-ended question asked directors what they perceived as the advantages and disadvantages of sixth grade students participating in mixed-gender choirs and single gender choirs. This question was intended only to compliment the data and was not used in a mixed-method approach. Response trends were reported as direct quotations and coded into relevant categories based on a content analysis of the responses.

Validity and Reliability

Content validity of the questionnaire was checked through a panel of three experts. Experts consisted of a music education choral music faculty member who has instructed at the collegiate level for ten years, a music education collegiate faculty member of 36 years, and a middle school choir director with 10 years of teaching experience. Three revisions took place before the experts agreed that the questionnaire content accurately addressed choral gender groupings in the sixth grade choir classroom and teachers' perceptions of behavior and voice change among sixth grade students. The following changes were made to the questionnaire based on the panel members' responses.

1. Answer responses for the teacher perception multiple choice questions were changed from three responses to five responses to better represent the amount of students addressed. Wording was changed in these responses for clarity and consistency among questions.
2. Two open-ended questions were added in order to allow participants the opportunity to clarify or add perceptions not included in the questionnaire. One question pertained to a set of statements concerning how the entire choir program was developed. If directors did not think any of the statements were appropriate for their situation, they were allowed to comment. Similarly, directors of multiple grade level classes were asked questions that determined how sixth grade students were placed with other grade levels. If the statements did not describe the situation, directors were allowed the opportunity to clarify.

3. Questions concerning vocal range were eliminated, as they were deemed inconsistent with the Research Questions in the study.

Three choral directors not affiliated with TMEA and not eligible to participate in the research study due to location or teaching requirements then field tested the questionnaire for clarity. Clarity concerns that were resolved on the questionnaire included the following:

1. Consistency of the use of the words “choir class” was suggested, rather than the originally used choir program. This change was perceived to be needed, as participants would be asked about individual classes, rather than the overall program.
2. The terms sixth grade mixed-gender and sixth grade gender-specific were designated for consistent use when classifying sixth grade choir classes.
3. Questionnaire instructions in the demographic section were revised for clarity and brevity. Suggestions were made to specify what types of choirs comprised those on the “daily class roster” to avoid participant confusion in providing numerical enrollment responses.

After the clarity revisions from the field test, 16 different choir directors not affiliated with TMEA and not eligible to participate in the research study due to location or teaching requirements served as the pilot group toward the end of the fall semester of 2011 to assess the reliability of the questionnaire. Directors represented a wide variety of choirs, including private schools (with and without religious affiliation) as well as public schools. All directors were female and ranged in age from 24 to 65. No other demographic information was collected. Reliability was determined by the

administration of a test-retest procedure with one month in between the administrations. An original wait time of two weeks was anticipated in between tests, but due to the Thanksgiving holiday that occurred at the beginning of the second testing period and subsequent start of the directors' winter concert seasons, all directors waited one month to retest. Item scores were correlated across the two administrations. All analysis was performed using the SPSS statistical analysis software, version 15.

The interval level data were checked for test-retest reliability using the Pearson product-moment correlation, all of which produced a coefficient of r = 1.0. This coefficient was selected based on the assumption that it is "an index of correlation appropriate when the data represent either interval or ratio scales" and "takes into account each pair of scores and produces a coefficient between 0.00 and either ±1.00" (Fraekel & Williams, 2009, p. G-6). The nominal level yes/no response questions were checked for test-retest reliability by means of the Phi coefficient, as it is "used to determine the degree and direction of association when both variable measures are dichotomous" (Creswell, 2008, p. 365). Scored ranged from phi = .7 to 1.0. The ordinal level questions were analyzed using the Spearman rho correlation coefficient, as it is used by researchers for "data measured on categorical (rank-ordered) scales" (Creswell, 2008, p. 364). Scores ranged from r_s= .9 to 1.0.

When determining reliability for each question, the score of r = .85 (rounded to .9 for this study) was used. Research has indicated that correlations of .85 and higher "indicate a close relationship between the variables correlated and are useful in predicting individual performance" (Fraenkel & Wallen, 2009, p. 337). Such scores are "typically achieved for studies of construct validity or test-retest reliability" (Creswell,

2008, p. 365). Most scores met or exceeded the determined reliability coefficient for the pilot study.

Only four test-retest questions produced correlations lower than .85, all resulting in a correlation of .7. Three of the questions belonged to Research Question 2a and 2b: how do directors perceive classroom behavior in a gender-separate and mixed-gender classroom? The specific questions asked participants to respond yes or no to the statements: classroom behavior is improved when sixth grade boys and girls are taught together; a difference in classroom behavior is noticed as sixth grade students begin puberty; and choir students' confidence in singing is not affected by the presence of the opposite sex. Variance in responses in between the one month test-retest period could be due to the nature of content addressed: behavior during puberty. Research has shown that puberty tends to result in a variety of adolescent behaviors in the choir room, and teachers have yet to find a common ground upon which to agree (Carp, 2004; Flowers, 2005; Ryan, 2004). The varied responses also could have been based upon the directors' reactions to the behavior experienced in class the day each test was administered, and their moods upon taking the second test. "Mood is a variable that, by definition, is considered to be stable for short periods of time," (Fraenkel & Wallen, 2009, p. 156).

The fourth question to produce a score of .7 pertained to Research Question 1d: how are sixth grade students mixed with other grade levels? After determining that directors did have sixth grade students mixed with other grade levels, they were asked to respond to the following yes/no statement: the choir program didn't have enough students to separate grade levels. Of the 16 responses, two answered differently the

second time. The low number of pilot study participants could have been problematic in attempting to determine reliability for this question, as only two caused the correlation to drop below .85. Had more directors participated in the study, it is possible that the correlation could have been higher.

Upon considering the four correlations in question, all at .7, it was determined that the test-retest coefficients were high enough to still be considered valuable to the study. Resources have indicated that scores as low as .6 are still considered positive and a high enough level to be deemed reliable (Creswell, 2008; Fraenkel & Wallen, 2009). Correlations of .7 and higher indicate that a "good prediction can result from one variable to another. Coefficients in this range would be considered very good," (Creswell, 2008, p. 365). The decision was ultimately made to retain the four questions that had .7 test-retest reliability for the main study.

CHAPTER 4

RESULTS

Results of the study are presented according to Research Questions 1 and 2 and their corresponding sub-questions. Analysis of results from the one open-ended question conclude the results section.

Research Question 1 addressed the enrollment and grouping of sixth grade students in choir programs. In response to Research Question 1a, participants were asked about the total choir program enrollment at their current school. A mean of 195.8 students was reported. Participants were then asked how many sixth grade students were enrolled in one or more choir classes. The mean response was 90.1 students. Research Question 1b addressed the specific number of sixth grade boys and girls enrolled in choir. A mean of 54.6 girls in choir was documented, as well as a mean of 35.6 boys in choir. These data documented there were more sixth grade girls enrolled in choir programs than sixth grade boys. For the complete set of descriptive statistics for Research Questions 1a and 1b, see Table 1.

Table 1

Enrollment of Sixth Grade Students in Choir

Question	*Mean*	*SD*	*Range*
		n = 42	
How many students are enrolled in one or more choir classes at your school?	195.8	94.8	30-454
How many sixth grade students are enrolled in one or more choir classes at your school?	90.1	50.0	1-238
Of the sixth grade students, how many are girls?	54.6	29.6	1-150
Of the sixth grade students, how many are boys?	35.6	22.8	0-90

Research Question 1c addressed how sixth grade students were grouped in choir programs according to gender. Directors had a mean of 5.7 total classes on their daily roster. Of these classes, a mean of 2.6 were classes of sixth grade students and of the sixth grade classes a mean of 1.9 were sixth grade mixed-gender classes. Two questions asked how many single-gender classes were sixth grade boys and sixth grade girls. Participants indicated a mean of 0.4 classes consisted of sixth grade boys and a mean of 0.5 classes consisted of sixth grade girls. The final question indicated directors instructed a mean of 2.3 multiple grade level classes. For the complete set of descriptive statistics for Research Question 1c, see Table 2.

Table 2

The Grouping of Sixth Grade Students According to Gender

Question	*Mean*	*SD*	*Range*
		n = 42	
How many choir classes appear on your daily class roster?	5.7	2.2	0-12
How many choir classes consist of only sixth grade students?	2.6	1.4	0-6
How many sixth grade only choir classes are mixed gender?	1.9	1.8	0-5
How many choir classes are only sixth grade boys?	0.4	0.7	0-2
How many classes are only sixth grade girls?	0.5	.9	0-3
How many choir classes have multiple grade levels?	2.3	1.8	0-7

Research Question 1d asked if sixth grade students were mixed with other grade levels and how the directors decided to group the students. A mean of 0.4 choir classes were multiple-grade level with at least one sixth grade boy or girl. Two questions determined how many of the multiple-grade level classes included either only sixth grade boys or sixth grade girls. Directors reported a mean of 0.1 classes including sixth grade girls and no sixth grade boys, and a mean of 0.1 classes including sixth grade boys and no sixth grade girls. For the complete set of descriptive statistics for Research Question 1d, see Table 3.

Table 3

Mixed-Grade Level Classes with Sixth Grade Students

Question	*Mean*	*SD*	*Range*
		n = 42	
How many multiple-grade level choir classes include at least one sixth grade boy or girl?	0.4	1.0	0-6
How many multiple-grade level choir classes include sixth grade girls and NO sixth grade boys?	0.1	0.2	0-1
How many multiple-grade level choir classes include sixth grade boys and NO sixth grade girls?	0.1	0.4	0-1

Also as part of Research Question 1d, directors indicated how they made the decision to group sixth grade students with multiple grade levels. Of the 42 respondents, 31.0% answered NA (*n* = 13); they did not teach one or more multiple-grade level classes with at least one sixth grade student. The first yes/no question stated, “The choir program didn't have enough students to separate grade levels.” Of the 29 respondents who had multiple-grade level choirs with sixth grade students, 3.5% indicated yes (*n* = 1) and 96.6% indicated no (*n* = 28). The second question stated, “Some of the sixth grade boys’ voices changed early, and they were placed in a class with maturing male voices.” Of the 29 respondents, 13.8% indicated yes (*n* = 4) and 86.2% indicated no (*n* = 25). The third question stated, “I (or anyone else in the choir department) did not make the decision to mix sixth grade students with other grade levels in choir.” Of the 29 respondents, 20.7% indicated yes (*n* = 6) and 79.3% indicated no (*n* = 23). Finally, the fourth question stated, “Some of the sixth grade students performed at an advanced level and were more successful with older students.” Of the 29 respondents, 27.6 % indicated yes (*n* = 8) and 72.4% indicated no

(*n* = 21). Of the 29 directors who responded to this question set, 10 answered no to all four questions. An opportunity for them to expand on their responses was offered, as the final part of Research Question 1d.

The final question concerning Research Question 1d provided space for directors to explain how sixth grade students were grouped with other grade levels if they felt the provided statements did not clearly define their current groupings. This question was optional, and six responses were gathered. Across the six responses, no consistent trends were noted (confirmed by a collegiate music faculty member of seven years experienced in qualitative data analysis), with responses addressing such issues as vocal skill among boys and girls, voice change among boys and scheduling concerns. Expressed scheduling concerns included the need to put all boys in one class regardless of skill or vocal maturity, and the need to accommodate students' academic schedules before considering choir groupings.

Research Question 2 addressed teachers' perceptions of classroom behavior in gender-specific (2a) and mixed-gender (2b) sixth grade classrooms, as well as teachers' perceptions of voice change (2c) among sixth grade boys and girls. Directors' perceptions of classroom behavior in gender-specific classes (Research Question 2a) were addressed in three yes/no questions and two multiple choice questions. Of the 42 respondents, 33.3% (*n* = 14) indicated they taught one or more gender-specific sixth grade class. The first yes/no question stated, "Classroom behavior is improved when sixth grade students are separated by gender." Of the 14 respondents, 78.6% indicated yes (*n* = 11), and 21.4% indicated no (*n* = 3). The second question stated, "A difference in classroom behavior is noticed as sixth grade students begin puberty." Of the 14

respondents, 92.9% indicated yes (*n* = 13), and 7.1% indicated no (*n* = 1) was collected. The third question, a double negative, stated, “Choir students’ confidence in singing is not affected by the presence of the opposite sex.” Of the 14 respondents, 7.1% indicated yes (*n* = 1), and 92.9% indicated no (*n* = 13).

Twelve directors taught at least one all-boys sixth grade choir class and responded to the first multiple choice question. The highest number of responses among the 12 directors was for the answer choice “A large number of boys sing confidently around other boys,” (*n* = 6, 50.0%) followed by “about half of the boys” (*n* = 4, 33.3%) and “all boys” (*n* = 2, 16.7%). Fourteen directors taught at least one all-girls sixth grade class and responded to the second multiple choice question. The highest number of responses among the 14 directors was for the answer choice “A large number of girls sing confidently around other girls,” (*n* = 7, 50.0%) followed by “About half of the girls” (*n* = 4, 28.6%) and “All girls” (*n* = 2, 14.3%). For a complete set of descriptive statistics for the multiple choice questions of Research Question 2a, see Tables 4 and 5.

Table 4

Sixth Grade Boys Sing Confidently around Other Boys during Their Voice Change in Gender-Specific Classes

Perceived amount of students	Number of Responses *n* = 12	Percentage of Responses
All boys	2	16.7
A large number of boys	6	50.0
About half of the boys	4	33.3
A small number of boys	0	0.0
No boys	0	0.0

Table 5

Sixth Grade Girls Sing Confidently around Other Girls during Their Voice Change in Gender-Specific Classes

Perceived amount of students	Number of Responses *n* = 14	Percentage of Responses
All girls	2	14.3
A large number of girls	7	50.0
About half of the girls	4	28.6
A small number of girls	1	7.1
No girls	0	0.0

Directors' perceptions of classroom behavior in a mixed-gender sixth grade class (Research Question 2b) were addressed in three yes/no questions and four multiple choice questions. Of the 42 participants, 73.8% indicated (*n* = 31) that they taught one or more mixed-gender sixth grade classes. The first of the yes/no questions stated, "Classroom behavior is improved when sixth grade boys and girls are taught together." Of the 31 respondents, 38.7% (*n* = 12) indicated yes, and 61.3% indicated no (*n* = 19). The second question stated, "A difference in classroom behavior is noticed as sixth grade students begin puberty." Of the respondents, 93.5% indicated yes (*n* = 29), and 6.5% indicated no (*n* = 2). The third question, a double negative, stated, "Choir students' confidence in singing is not affected by the presence of the opposite sex." Of the respondents, 19.4% indicated yes (*n* = 6), and 80.6% indicated no (*n* = 25).

In the first multiple choice question, the highest number of responses was for the answer choice "A large number of girls sing confidently around other girls," (*n* = 23, 74.2%) followed by "About half of the girls," (*n* = 5, 16.1%) and "All girls," (*n* = 2, 6.5%). In the second multiple choice question, the highest number of responses was for the

answer choice “A large number of girls sing confidently around other boys,” (n = 16, 51.6 %) followed by “About half of the girls sing confidently around other boys,” (*n* = 7, 22.6%) and “A small number of girls sing confidently around other boys,” (*n* = 4, 12.9%). In the third multiple choice question, the highest number of responses was for the answer choice “A small number of boys sing confidently around other girls,” (*n* = 12, 38.7%) followed by “About half of the boys sing confidently around other girls,” (*n* = 10, 32.2%) and “A large number of boys sing confidently around other girls,” (*n* = 5, 16.1%). In the fourth multiple choice questions, the highest number of responses was for the answer choice “A large number of boys sing confidently around other boys," (*n* = 18, 58.1%) followed by “About half of the boys sing confidently around other boys,” (*n* = 9, 29.0%) and “A small number of boys sing confidently around other boys,” (*n* = 2, 6.5%). For a complete set of descriptive statistics for the multiple choice questions of Research Question 2b, see Tables 6-9.

Table 6

Sixth Grade Girls Sing Confidently around Other Girls during Their Voice Change in Mixed-Gender Classes

Perceived amount of students	Number of Responses *n* = 31	Percentage of Responses
All girls	2	6.5
A large number of girls	23	74.2
About half of the girls	5	16.1
A small number of girls	1	3.2
No girls	0	0.0

Table 7

Sixth Grade Girls Sing Confidently around Boys during Their Voice Change in Mixed-Gender Classes

Perceived amount of students	Number of Responses *n* = 31	Percentage of Responses
All girls	3	9.7
A large number of girls	16	51.6
About half of the girls	7	22.6
A small number of girls	4	12.9
No girls	1	3.2

Table 8

Sixth Grade Boys Sing Confidently around Girls during Their Voice Change in Mixed-Gender Choirs

Perceived amount of students	Number of Responses *n* = 31	Percentage of Responses
All boys	0	0.0
A large number of boys	5	16.1
About half of the boys	10	32.2
A small number of boys	12	38.7
No boys	3	9.7

Table 9

Sixth Grade Boys Sing Confidently around Other Boys during Their Voice Change in Mixed-Gender Choirs

Perceived amount of students	Number of Responses *n* = 31	Percentage of Responses
All boys	1	3.2
A large number of boys	18	58.1
About half of the boys	9	29.0
A small number of boys	2	6.5
No boys	1	3.2

Directors' perceptions of evidence of early voice change among sixth grade boys and girls (Research Question 2c) were assessed through the administration of four multiple choice questions regarding directors' teaching situations: sixth grade gender-specific classes or sixth grade mixed-gender classes. Of the 42 participating directors, 14 taught one or more all-girls' choir and responded to the first multiple choice question. The highest number of responses concerning early evidence of voice change among sixth grade girls in gender-specific classes was for the answer choice "About half of the girls," (*n* = 7, 50.0%) followed by "A small number of girls," (*n* = 6, 42.9%) and "None of the girls" (*n* = 1, 7.1%). Of the 42 participating directors, 12 taught one or more all-boys' choir and responded to the second multiple choice question. The highest number of responses concerning early evidence of voice change among sixth grade boys in gender-specific classes was for the answer choice "A small number of boys," (*n* = 6, 50.0%) followed by "About half of the boys," (*n* = 5, 41.7%) and "A large number of boys" (*n* = 3, 25.0%). Of the 42 participating directors, 31 taught one or more mixed-gender sixth grade choir classes and responded to the third and fourth multiple choice questions. In the third multiple choice question, the highest number of responses concerning early evidence of voice change among sixth grade girls in mixed-gender classes was for the answer choice "A small number girls," (*n* = 14, 45.2%) followed by "About half of the girls," (*n* = 11, 35.5%) and "None of the girls" (*n* = 4, 12.9%). In the fourth multiple choice question, the highest number of responses concerning early evidence of voice change among sixth grade boys in gender-specific classes was for the answer choice "About half of the boys," (*n* = 14, 45.2%) followed by "A small number

of boys," (*n* = 11, 35.5%) and "A large number of boys" (*n* = 6, 19.4%). For a complete set of descriptive statistics for the Research Question 2c, see Tables 10-13.

Table 10

Evidence of Voice Change among Girls in Sixth Grade Gender-Specific Classrooms

Perceived amount of students	Number of Responses *n* = 14	Percentage of Responses
All girls	0	0
A large number of girls	0	0
About half of the girls	7	50.0
A small number of girls	6	42.9
None of the girls	1	7.1

Table 11

Evidence of Voice Change among Boys in Sixth Grade Gender-Specific Classrooms

Perceived amount of students	Number of Responses *n* = 12	Percentage of Responses
All boys	0	0
A large number of boys	3	25.0
About half of the boys	5	41.7
A small number of boys	6	50.0
None of the boys	0	0.0

Table 12

Evidence of Voice Change among Girls in Sixth Grade Mixed-Gender Classrooms

Perceived amount of students	Number of Responses *n* = 31	Percentage of Responses
All girls	0	0.0
A large number of girls	2	6.5
About half of the girls	11	35.5
A small number of girls	14	45.2
None of the girls	4	12.9

Table 13

Evidence of Voice Change among Boys in Sixth Grade Mixed-Gender Classrooms

Perceived amount of students	Number of Responses *n* = 31	Percentage of Responses
All boys	0	0.0
A large number of boys	6	19.4
About half of the boys	14	45.2
A small number of boys	11	35.5
None of the boys	0	0.0

The final perception item was an open-ended question that allowed the researcher to describe any perceptions not covered in the questionnaire. The specific question stated, “Briefly, what do you perceive as the advantages and disadvantages of sixth grade students participating in (a) mixed-gender choirs, and (b) gender-specific choirs? Please specify any perceptions not addressed in the questionnaire.” Thirty-four total responses were coded and classified into categories within two themes: choral literature and sixth grade boys. These themes represent trends not anticipated in the

original Research Questions. Validation by a collegiate music faculty member of seven years experience in qualitative data analysis confirmed the emergence of two themes from the coding of the categories.

Theme one, choral literature, emerged as an issue 15 of the 34 directors considered when grouping sixth grade students. Directors stated that they focused on choral literature when determining the structure of their choir programs. Categories within this theme included gender grouping as an influence of repertoire selection, vocal range and voicings, and sight-singing literature.

Eight directors stated that gender groupings determined how they selected choral repertoire. Most participants stated that they preferred gender-specific choirs when selecting repertoire. “Separating gender… changes how I choose music” (Participant 3). “Choral literature may be tailored both to the vocal needs and to the interests of students more easily with gender-specific choirs” (Participant 9), and is “easier to select when voice parts are gender-specific: (Participant 25). “I choose vastly different songs for boys and girls due to factors of range, text and subject matter” (Participant 10). Concerning an all boys' chorus, Participant 23 stated that “as long as the literature is good, they will do anything you ask.”

Choral voicings and the vocal range of each voice part, as evident above (Participants 9 and 25), were also a factor in the selection of choral literature. Participant 30 stated that there is an

> enormous difference in the men alone when it comes to disparity between voice parts. Very few of my sixth grade boys can sing E3-F5, and most have between

a sixth or an octave somewhere in that range. It makes singing in unison a huge challenge (thus negating the ability to successfully sing 1-part or SAB music). The director went further to suggest that a mixed choir setting for girls can also be challenging. "Vocally, it also becomes hard for the girls to develop, because the repertoire such a class can perform is so narrow." Concerning boys, Participant 21 stated, "It is much easier to address the male changing voice with gender-specific group. By the end of the year, my sixth grade boys are working on TB music instead of 2-part treble music." Two directors who stated a preference for mixed-gender sixth grade choir noted that a mixed choir "helps the boys find their head voice" (Participant 19) by singing treble literature and that "it is good for boys to be singing in their head voice. I like to keep them in sixth grade choir singing in a higher range" (Participant 25).

Some directors weighed sight-singing literature when considering placement of sixth grade students, specifically focusing on skill level and vocal range. "I think very advanced sixth graders with a strong basis in sight-singing and music theory training and reasonable vocal ability can learn a lot from studying with 7th/8th grade students" (Participant 1). Concerning vocal range among both genders, one director stated, "When the boys' voices begin to change, it is more difficult to teach sight reading because a common key is difficult to find. The boys have difficulty singing the high notes and the girls cannot sing lower" (Participant 6).

Theme two, sixth grade boys, emerged as a common theme shared by 17 of 34 directors. In each response, directors isolated a specific concern of boys in choir. Two categories were prevalent: voice change and classroom behavior. Voice change among sixth grade boys was stated to affect many aspects of the choir class for the

director. Directors tended to prefer an all-boys choir class in order to nurture boys through their voice changes. “I believe the boys are more comfortable in a gender-specific choir. The boys changing voice is so much more complex than girls' voices” (Participant 5). “The absence of girls removes the pressure or awkwardness they feel as they are singing through the voice change” (Participant 8). “I requested that my sixth grade boys be in a separate class from my girls next year… but my administration did not make it happen. I am still pushing for it next year, due to so many boys already changing” (Participant 31).

Directors also commented on the behavior of boys during puberty in both mixed-gender and gender-specific classes. “Behavior is the biggest disadvantage” (Participant 16). “There is more silliness and misbehavior of both girls and boys when the genders are mixed in choir” (Participant 6). “I think behavior is better when the boys are mixed with the girls at the sixth grade level” (Participant 13). “I find that the mixed class… is about average in their behavior as you would find in other mixed classes; girls are silly, but boys seem to behave better around the girls” (Participant 18). Directors also offered differing points of view when considering boys' behavior in a gender-specific setting. Some suggested that behavior is worse in an all boys' class. “The boys' classes have the worse behavior; they seem to feel unrestricted in the inappropriate behavior issues, since there are no girls to impress” (Participant 18). “Boys' conduct is worse in gender-specific classes” (Participant 16). Others viewed classroom behavior in an all boys' class from a different perspective. “Boys learn louder and more physically” (Participant 21). “Boys love to sing when it is just boys!!” (Participant 23). “Separating gender… allows boys to be themselves” (Participant 3).

Chapter 5 provides a brief summary of the study, followed by conclusions based on the study findings. Implications for sixth grade teachers are discussed, and teaching strategies based on the study findings are offered. Ideas for future research are also presented.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Purpose of the study

In response to the need for information regarding teacher perception and organization of sixth grade boys' and girls' voices in choir ensembles, the purpose of this study was to provide a description of teachers' perceptions concerning behavioral and physiological vocal issues among current gender groupings in sixth grade choir classrooms through the collection of survey research data from Dallas Fort Worth metropolitan area sixth grade choir programs.

The study investigated the following Research Questions:

Research Question 1: What are the descriptive groupings according to gender?

a. How many sixth grade students are enrolled in choir?

b. What is the specific number of sixth grade boys and girls enrolled in choir?

c. How are sixth grade students grouped in choral programs according to gender?

d. Do directors have sixth grade students mixed with other grade levels, and if so, why?

Research Question 2: What are the perceptions of teachers concerning choral groupings?

a. How do directors perceive classroom behavior in a gender-specific classroom?

b. How do directors perceive classroom behavior in a mixed-gender classroom?

c. Do directors perceive evidence of early voice change among 6th grade boys and girls?

Participants

The population of the study consisted of 165 registered DFW head choral directors who were members of the Texas Music Educators Association (TMEA) for the 2010-2011 school year. Sampling procedures for this study involved a census of the complete population of middle school TMEA choral directors. Of the 165 participants selected for the study, 59 responded to the questionnaire and 42 were determined as eligible to participate, based on one qualifying question that asked if directors were currently teaching sixth grade students in their choir programs. The nine men and 33 women included in the eligible responding sample taught at least one class defined as choir which included sixth grade students in either a multi-grade choir class or an entirely sixth grade choir class. Thirty-nine public schools, two religious/secular private schools and one public school with performing arts emphasis (magnet) represented the types of institutions at which the respondents were employed.

Summary of Method

A quantitative, descriptive survey design was used for this study. The study utilized a cross-sectional survey tool that was administered electronically during the spring semester of the 2011-2012 academic school year. Surveymonkey.com was used to administer the questionnaire.

The complete questionnaire contained 35 questions. Of the 35 questions, 18 pertained to Research Question 1 (what are the descriptive groupings according to gender) and 17 pertained to Research Question 2 (what are the perceptions of teachers

concerning choral groupings). The 18 questions that addressed Research Question 1 collected interval and nominal level data, 13 using free-response numeric answers, four using nominal yes/no responses, and one using open-ended responses. The 17 questions that addressed Research Question 2 collected nominal and ordinal level data, six using nominal yes/no responses, 10 using ordinal multiple choice responses, and one open-ended question. The open-ended qualitative question asked directors what they perceived as the advantages and disadvantages of 6th grade students participating in mixed-gender choirs and single gender choirs and was used as a means of supporting the data collected in the survey.

Summary of Results

Research Question 1a. Directors had a mean of 90.1 sixth grade students enrolled in their choir programs, with a range of 1 to 238 students.

Research Question 1b. Directors had a mean of 54.6 sixth grade girls and a mean of 35.6 sixth grade boys in choir. The maximum number of enrolled girls was higher (range = 1 to 150) than that of the boys (range = 0 to 90).

Research Question 1c. Directors had a mean of 2.6 classes of sixth grade students, and of the sixth grade classes a mean of 1.9 were sixth grade mixed-gender classes, a mean of 0.4 classes consisted of only sixth grade boys, and a mean of 0.5 classes consisted of only sixth grade girls.

Research Question 1d. Directors had a mean of 2.3 multiple-level classes, and of those, a mean of 0.4 multiple-grade level choir classes included at least one sixth grade boy or girl. Directors reported a mean of 0.1 classes including sixth grade girls and no

sixth grade boys, and a mean of 0.1 classes including sixth grade boys and no sixth grade girls.

Research Question 2a. Of the 14 directors who taught at least one gender-specific choir, 78.6% (*n* = 11) believed that classroom behavior is improved when sixth grade students are separated by gender. Of the 14 directors, 92.9% (*n* = 13) also noticed a difference in classroom behavior as sixth grade students began puberty and perceived that choir students' singing confidence is affected by the presence of the opposite sex. Twelve directors taught at least one all-boys sixth grade choir. Of the 12 directors, 50.0% (*n* = 6) said that, "A large number of boys sing confidently around other boys," followed by 33.3% (*n* = 4) who said that "About half of the boys sing confidently around other boys." Fourteen directors taught at least one all-girls sixth grade choir. Of the 14 directors, 50.0% (*n* = 7) said that, "A large number of girls sing confidently around other girls," followed by 28.6% (*n* = 4) who said that, "About half of the girls sing confidently around other girls."

Research Question 2b. Of the 31 directors who taught at least one mixed-gender choir, 61.3% (*n* = 19) believed that classroom behavior is not improved when sixth grade students are mixed together, while 38.7% (*n* = 12) believed that classroom behavior is improved when sixth grade students are mixed together. Of the 31 directors of mixed-gender sixth grade choirs, 93.5% (*n* = 29) noticed a difference in classroom behavior as sixth grade students began puberty and 80.6% (*n* = 25) perceived choir students' singing confidence is affected by the presence of the opposite sex. Results also showed that 74.2% of directors (*n* = 23) perceived "A large number of girls sing confidently around other girls," and 51.6% of directors (*n* = 16) perceived "A large

number of girls sing confidently around other boys." Concerning sixth grade boys in mixed-gender choirs, 38.7% (*n* = 12) of directors perceived, "A small number of boys sing confidently around other girls," and 58.1% (*n* = 18) of directors perceived that "A large number of boys sing confidently around other boys."

Research Question 2c. Of the 14 directors who taught one or more all-girls' choir, the highest number of responses concerning early evidence of voice change among sixth grade girls in gender-specific classes was for the answer choice "About half of the girls," (*n* = 7, 50.0%). Of the 12 directors who taught one or more all-boys' choir, the highest number of responses concerning early evidence of voice change among sixth grade boys in gender-specific classes was for the answer choice "A small number of boys," (*n* = 6, 50.0%). Of the 31 directors who taught one or more mixed-gender sixth grade choir classes, the highest number of responses concerning early evidence of voice change among sixth grade girls in mixed-gender classes was for the answer choice "A small number girls," (*n* = 14, 45.2%), and the highest number of responses concerning early evidence of voice change among sixth grade boys in gender-specific classes was for the answer choice "About half of the boys," (*n* = 14, 45.2%).

Conclusions and Recommendation

The results of the current study offer insight into teachers' perceptions of behavioral and physiological vocal issues among current gender groupings in sixth grade choir classrooms. Concerning sixth grade enrollment in choir programs in the current study, the range of enrolled students was expansive, and there were more sixth grade girls enrolled in choir programs than sixth grade boys. This is consistent with the current trends in the literature that have found higher enrollments of girls than boys in

both middle school and high school programs (Adler, 2002; Freer, 2007; Gates, 1989; Koza, 1993; Newlin, 2007; Van Camp, 1987). Based on this finding, current sixth grade teachers may find a higher enrollment of girls in their sixth grade programs, and so may have to weigh instructional choices based on a possible imbalance of voices in terms of gender. For instance, teachers may need to program choral literature that can accommodate a higher number of female vocal needs, such as the need for treble voicings in choral literature that foster the development of head voice singing and choral phrasing that promotes the development of good breath support during girls' voice change.

Concerning groupings of sixth grade students according to gender, mixed-gender groupings were more common than gender-specific. Teachers may want to consider teaching strategies that can nurture the needs of both genders simultaneously, based on their changing developmental vocal needs. Teaching strategies concerning vocal physiology might include the incorporation of vocal and breathing exercises that will foster developmental growth across both genders. This could include more extensive breathing exercises that develop awareness and strengthening of the diaphragm muscle, and vocal exercises that emphasize breath support to foster a stronger and more focused vocal tone across the singing ranges of both genders.

While this study found that mixed-gender groupings in sixth grade were more common than gender-specific, past literature has shown that across grade levels, teachers tend to prefer single-gender choirs over mixed-gender choirs. (Carp, 2004; Freer, 2007; Jorgensen & Pfeiler, 2008; Killian, 1999). Future studies might offer further insight into current groupings of sixth grade students according to gender. This future

data may be helpful to sixth grade choir directors in determining the structure of their programs and serving the behavioral and physiological needs of their students.

In addition to the number of mixed-gender and gender-specific classes within the directors' choir programs, gender totals per teaching situation were also documented. Of the sixth grade gender-specific classes documented in the current study, all girls' classes were slightly more common than all boys' classes. These findings are consistent with studies that have documented more all-girls' choirs than all-boys' choirs (Gates, 1989; Van Camp, 1987), and could present ramifications for choir programs if this trend persists. One implication could include decreased enrollment of boys across the choir program, possibly because boys might perceive that choir is a place just for girls and could lose interest in joining. Another implication could be lessened focus on girls and more focus on boys, as directors seek methods to recruit more boys into the program. Also, girls' placement in mixed-gender or all-girls choir classes may depend upon the number of boys available for a mixed-gender choir or an all-boys choir, rather than the girls' specific vocal physiological and behavioral needs. This trend is evident in past literature that has noted that a female's participation in choir is often "limited by the number of available women willing to sing in an all female choir" (O'Toole, 1997, p. 138).

Teachers might consider offering girls-only activities that focus specifically on their vocal physiological and behavioral needs, especially for girls in mixed-gender classes. These activities might be special rehearsals or social activities that promote confidence and a sense of importance as a member of the organization. Also, research

that determines successful recruiting and retention methods for boys, if teachers express a need or desire to have more boys in their programs, may be beneficial.

The results regarding multiple-grade level classes showed that directors didn't have extensive numbers of multiple-grade level classes in their programs, and that most multiple-grade level classes did not contain sixth grade students. These results may align with the idea that "choirs are more often grouped by age level than ability" (Hamann, 2007, p. 68). The few directors who had at least one sixth grade student in a multiple-grade level class indicated how they made the decision to group sixth grade students with multiple grade levels; respondents noted that sixth grade students were more likely to be placed in a mixed-grade level class because of advanced skill level than because of a lack of sixth grade students, early changing voices, or due to the decision of someone other than the choir director. Future studies specifically related to sixth grade students and placement in multiple-grade level classes might offer further insight regarding how and why sixth grade students are mixed with other grade levels. Teachers may be particularly interested to know more about how sixth grade students of advanced skill perform among similarly-skilled students of different grades. This information may provide guidance to sixth grade teachers who are considering grouping sixth grade students with other grade levels.

Directors' perceptions about behavioral issues among sixth grade students were collected from directors of both gender-specific and mixed-gender classes. Responses from directors of gender-specific sixth grade classes indicated that a large percentage of directors perceived improved classroom behavior when students were separated by gender. Similarly, directors who instructed sixth grade mixed-gender classes tended to

perceive that classroom behavior was not improved when genders were combined. These findings are in alignment with past literature that has documented teachers' preference for gender-specific classes over mixed-gender classes because they perceive improved classroom behavior in gender-specific classes (Carp, 2004).

Responses from the current study also showed that directors in both teaching situations noticed a difference in classroom behavior when students began puberty and that a large percentage of directors of both all-boys' and all-girls' sixth grade choirs perceived high levels of singing confidence when singing around the same sex. This result is consistent with past literature that has found student singing confidence to be related to self-concept (Adler, 2002; Clements, 2002; Petzold, 1969), which has been shown to be affected by the presence of the opposite sex (Carp, 2004).

Based on these results, teachers in mixed-gender choirs may want to consider the seating arrangements of boys and girls when managing classroom behavior and nurturing the singing confidence of each gender. If teachers in this study perceived that boys and girls were more confident and behaved better when separated by gender, current sixth grade teachers of treble mixed-gender choirs may want to consider seating the boys and girls separately, even if they are all singing treble voicings at this age and mixed together. This seating arrangement may encourage greater singing confidence among boys and girls and improve classroom behavior.

Ideas for future research can also be considered, based on these results. While past literature has shown that sixth grade teachers have a preference for single-gender classes over mixed-gender classes, future studies that examine student behavior in each gender grouping may help determine the generalizability of the teachers'

perceptions collected in this study. Also, studies that examine trends across gender groupings, puberty, and student singing confidence may be helpful to teachers in anticipating learning environments that maximize student singing confidence.

Results regarding evidence of early voice change among sixth grade students found that directors perceived between a small number to about half of sixth grade boys as showing evidence of early voice change. This result is similar to some literature that has indicated that sixth grade boys may be experiencing early voice change (Killian, 1999, 2010). It can be concluded that teachers may be facing a variety of vocal needs among sixth grade boys in their programs. Because the results of this study also show that directors currently teach sixth grade boys in both mixed-gender and gender-specific classes, teaching strategies that foster vocal development in both situations, especially mixed-gender classes, may be helpful in nurturing their vocal development.

Directors of mixed-gender choirs may want to consider strategies such as special boys-only rehearsals that focus on their specific vocal needs away from the girls, especially when they begin to notice evidence of voice change. This protective environment may allow boys to explore their voices in a safe and encouraging environment and might allow the director to discuss some of the more sensitive aspects of the male changing voice. If the teacher does want to address the male voice change in a mixed-gender rehearsal, and if the boys seem reluctant to sing in their falsetto in front of the girls, vocal sirens or chants that explore the different levels of the voice can be an effective tool in promoting the development of a growing voice, especially when delivered in the format of a game or creative interactive story. Future studies that investigate how choir directors can serve the developing needs of sixth grade boys in

both gender-specific and mixed-gender classes may be helpful in guiding teachers toward methods that will foster vocal growth in both teaching situations.

While the results of the study seem to indicate that teachers should expect to encounter a small number to about half of sixth grade boys as showing signs of voice change, these findings are not consistent with current literature that documented up to 80% of sixth grade boys as showing signs of voice change (Killian, 2010). This inconsistency could be attributed to the fact that the current study did not measure evidence of voice change among boys according to the stages of voice change identified by Cooksey in 1977. Past and current research has documented voice change among adolescent boys using the stages developed by Cooksey in 1977 (Fisher, 2010; Harris, 1993; Killian, 1999, 2010).

The inconsistent results could also be due to a lack of familiarity of Cooksey's stages among participants in the study. Because the questionnaire used in the current study did not specifically measure voice change based on Cooksey's stages, it is unclear if the study participants were familiar with Cooksey's stages, and whether or not they used Cooksey's stages to determine their responses. This could present an opportunity for future research that could examine the familiarity of teachers with Cooksey's stages, as well as further measurement of sixth grade boys' voice change. It could also present an opportunity for teacher education about the specific stages of vocal development as documented by Cooksey.

Concerning sixth grade girls, directors perceived some evidence of voice change among sixth grade girls, with only a small number to about half of girls showing evidence of early voice change, compared to the possible responses of "a large number

of girls", or "all sixth grade girls". Past literature has documented that directors perceived evidence of voice change during the years surrounding the onset of menarche (Brodnitz, 1983; Gackle, 1991; Herman-Giddens & Slora, 1997), and noticed beginning signs of voice change between the ages of 11 and 13,with the most notable vocal changes occurring between the ages of 13 and 14 (Gackle, 1991). Due to the sensitive nature of the start date of menarche, considered a private matter between adolescent girls and their parents, teachers were not asked to provide this information in the questionnaire. Because a relationship tends to exist between the start of menarche and voice change, more data are needed to conclude that the results of this study align with current literature.

As is the case with sixth grade boys, teachers of sixth grade girls also may need to consider the issues related to girls' growing voices within their varied choir classes, based on the results of this study. For instance, teachers of all-girls' choirs may be able to focus specifically on the developmental needs of girls' growing voices by adjusting specific aspects of the rehearsal, such as vocal exercises and choral literature. Teachers of mixed-gender choirs may need to consider both the needs of boys' and girls' developing voices in the same rehearsal and adjust the rehearsal to fit the needs of both genders. During the mixed-gender rehearsal, directors might consider incorporating vocal exercises that both genders can perform simultaneously, such as unison descending drills that start in head voice for the girls and falsetto for the boys, or two part exercises that allow the girls to sing more complicated vocal lines while the boys sing simpler vocal passages that fit the limited range of a changing voice. Both girls and boys may benefit from exercises that build awareness and strengthen the

diaphragm, such as chants, sighs, and yells that start from the diaphragm, as well as breathing exercises, such as panting and timed breathing activities. Friendly competitions among individuals or sections that compete for the longest note or the longest hiss can be a fun way to foster much-needed breath support among girls with changing voices. Future studies that investigate how choir directors can serve the developing needs of sixth grade girls in both gender-specific and mixed-gender classes may be helpful in guiding teachers toward methods that will foster vocal growth in both teaching situations.

When directors had the opportunity to openly respond to their perceptions concerning behavioral and physiological issues gender-specific and mixed-gender groupings, they expressed concern for two issues not considered in the study. These two themes, choral literature and sixth grade boys, emerged as apparent areas of interest. Directors documented a trend across gender grouping and choral literature. This trend affected how they selected choral literature based upon the developmental vocal needs of each gender in each classroom setting, and the text (literary content) interests of each gender in both mixed and gender-specific environments. This trend also affected sight-singing, in that some teachers expressed difficulty finding literature that fit the vocal needs of mixed-gender sixth grade classes when voice change was evident. Future research that could examine the link between gender and literature could help teachers find singing materials that fit the needs and interests of their students. Directors also expressed interest specifically in sixth grade boys, concerning voice change and classroom behavior in gender-specific and mixed-gender classes.

Future study specifically related to sixth grade boys' classroom behavior in terms of gender groupings might be beneficial to sixth grade choir directors.

The most important findings of the study for sixth grade choir directors are that more girls are enrolled in choir than boys and that mixed choirs are more common than gender-specific choirs. Concerning teachers' perceptions, the most important findings are that teachers perceive evidence of early voice change among both sixth grade boys and girls, and that they perceive a difference in behavior as students show signs of puberty. Based on these findings, directors of sixth grade choirs should anticipate more girls in sixth grade choir and physiological and behavioral changes related to puberty and adolescence among boys and girls. While directors seek out methods of retaining and recruiting boys into sixth grade choir and nurturing their vocal development, they should create an equitable learning environment for the girls, one that is inviting and nurturing. Perhaps most important, directors should be sensitive to the behavioral needs of both boys and girls as they experience the physical and psychological vulnerabilities associated voice change.

APPENDIX A

QUESTIONNAIRE

All information provided should be based upon current enrollment for the 2011-2012 school year. If you are employed as a 6th grade choir director at multiple campuses, please answer all questionnaire questions based on *one campus of your choosing.*

1. Your current school is:
❑ public
❑ private/independent
❑ private with religious affiliation
❑ public with performing arts emphasis (magnet)

2. The current school-wide teaching schedule is:
❑ Traditional (For the most part, the class schedule is the same every day of the week.
❑ Block (My choir classes alternate days of the week. (The same students are not taught every day.)
❑Other. Please explain
_____

3. The current choir program's class schedule was created by me or someone else within the choir department.
❑ yes
❑ no

4. The current choir program' schedule was created before I started working here
❑ yes
❑ no and members of the choir department decided to keep it.

5. The current choir program's class schedule was created before I started working here
❑ yes
❑ no and members of the choir department were required to keep it.

6. The current choir program's class schedule was not created by a choir department member.
❑ yes
❑ no

7. If you feel that none of the above situations fit how your choir program class schedule was determined, please provide comments and/or additional information that describe how it was determined.

_____

Please provide a numerical response, 0- X (number). The following questions pertain to scheduled choir classes that appear on your daily class roster. Please do not include totals for choirs/ensembles that are "extra" to the class period school schedule. (Example: before and after school choirs/ensembles such as pop choir or show choir, choirs/ensembles that meet during advisory, home room, lunch, etc.)

8. What grades are taught at your current school? _____

9. How many students are enrolled in one or more choir classes at your school? (If a student is enrolled in more than one choir/ensemble, please only count him/her towards the total enrollment once.)_____

10. How many 6th grade students are enrolled in one or more choir classes at your school? _____

a. Of the 6th grade students, how many are girls? _____
b. Of the 6th grade students, how many are boys? _____

11. How many choir classes appear on your daily class roster? _____

12. How many choir classes consist of only 6th grade students? _____

a. How many 6th grade-only choir classes are mixed gender?_____
b. How many choir classes are only 6th grade boys? _____
c. How many classes are only 6th grade girls? _____

13. How many choir classes have multiple-grade levels? _____

a. How many multiple-grade level choir classes include at least one 6th grade boy or girl?_____
b. How many multiple-grade level choir classes include 6th grade girls and NO 6th grade boys? _____
c. How many multiple-grade level choir classes include 6th grade boys and NO 6th grade girls? _____

The following questions pertain to 6th grade mixed gender choir.

14. Classroom behavior is improved when 6th grade boys and girls are taught together.

❑ yes
❑ no

15. A difference in classroom behavior is noticed as 6th grade students begin puberty.

❑ yes
❑ no

16. Choir students' confidence in singing is not affected by the presence of the opposite sex.

❑ yes
❑ no

17. 6th grade boys sing confidently around the girls during their voice change.
❑ All boys
❑A large number of boys
❑About half of the boys
❑ A small number of boys
❑ No boys

18. 6th grade boys sing confidently around other boys during their voice change.
❑ All boys
❑A large number of boys
❑About half of the boys
❑ A small number of boys
❑ No boys

19. 6th grade girls sing confidently around the boys during their voice change.
❑ All girls
❑A large number of girls
❑About half of the girls
❑ A small number of girls
❑ No girls

20. 6th grade girls sing confidently around other girls during their voice change.
❑ All girls
❑A large number of girls
❑About half of the girls
❑ A small number of girls
❑ No girls

21. It is apparent that ____ 6th grade boys' voices begin to change during their 6th grade year.
❑ All
❑ A large number
❑About half
❑ A small number
❑ None of the

22. It is apparent that ____ 6th grade girls' voices begin to change during their 6th grade year.
❑ All
❑ A large number
❑About half
❑ A small number
❑ None of the

The following questions pertain to 6th grade gender-specific choirs (separated by gender).

23. Classroom behavior is improved when 6th grade students are separated by gender.
❑ yes
❑ no

24. A difference in classroom behavior is noticed as 6th grade students begin puberty.
❑ yes
❑ no

25. Choir students' confidence in singing is not affected by the presence of the opposite sex.
❑ yes
❑ no

26. 6th grade boys sing confidently around other boys during their voice change.
❑ All boys
❑A large number of boys
❑About half of the boys
❑ A small number of boys
❑ No boys

27. 6th grade girls sing confidently around other girls during their voice change.
❑ All girls
❑A large number of girls
❑About half of the girls
❑ A small number of girls
❑ No girls

28. It is apparent that ____ 6th grade boys' voices begin to change during their 6th grade year.
❑ All
❑ A large number
❑About half
❑ A small number
❑ None of the

29. It is apparent that ____ 6th grade girls' voices begin to change during their 6th grade year.
❑ All
❑ A large number
❑About half
❑ A small number

❑ None of the

The following questions pertain to multiple grade level choirs that contain at least one 6th grade student.

30. The choir program didn't have enough students to separate grade levels.
❑ yes
❑ no

31. Some of the 6th grade boys' voices changed early, and they were placed in a class with maturing male voices
❑ yes
❑ no

.

32. I (or anyone else in the choir department) did not make the decision to mix 6th grade students with other grade levels in choir.
❑ yes
❑ no

33. Some of the 6th grade students performed at an advanced level and were more successful with older students.
❑ yes
❑ no

34. If you feel these statements do not clearly define your multiple-grade level choir(s), please explain.

_____

All participants are asked to freely respond to the following question:

35. Briefly, what do you perceive as the advantages and disadvantages of 6th grade students participating in (a) mixed gender choirs?, and (b) gender-specific choirs? Please specify any perceptions not addressed in the questionnaire.

_____

APPENDIX B

PILOT STUDY RESULTS

Results

Results from the pilot study retest administration will be presented in this section. From the test-retest administrations, the retest, or second administration data set was selected over the first administration as the enrollment totals and perceptions addressed were more recent than the first collected and closer to the directors' current teaching situations and classroom experiences.

Research Question 1 addressed the enrollment and grouping of sixth grade students in choir programs. In response to Research Question 1a, participants were asked about the total choir program enrollment at their current school. A mean of 165.8 (*SD*= 116.3, range = 22 to 384) was reported. Respondents were then asked how many sixth grade students were enrolled in one or more choir classes. The mean response was 66.5 (*SD* = 54.5, range = 1 to 154). Research Question 1b addressed the specific number of sixth grade boys and girls enrolled in choir. A mean of 40.4 girls in choir (*SD* = 31.7, range = 1 to 85) was documented, as well as a mean of 22.7 boys in choir (*SD* = 25.9, range = 0 to 77). These data documented that there were more sixth grade girls enrolled in choir programs than sixth grade boys, as can be seen in Table 1.

Table B.1

Enrollment of Sixth Grade Students in Choir

Question	*M*	*SD*
	n = 16	
How many students are enrolled in one or more choir classes at your school?	165.8	116.3
How many sixth grade students are enrolled in one or more choir classes at your school?	66.5	54.5
Of the sixth grade students, how many are girls?	40.4	31.7
Of the sixth grade students, how many are boys?	22.7	25.9

Research Question 1c addressed how sixth grade students are grouped in choir programs according to gender. Directors had a mean of 4.3 total classes on their daily roster (*SD* = 2.5, range = 0 to 7). Of these classes, a mean of 1.7 (*SD* of 1.4, range 0 to 4) were only classes of sixth grade students. There was a mean of 1.2 *(SD* = 1.6, range = 0 to 4) participants who instructed sixth grade only mixed-gender classes. Two questions determined how many single-gender classes were only sixth grade boys and only sixth grade girls. Directors indicated that they taught no classes with only sixth grade boys and a mean of.3 (*SD* = .9) and range: 0 to 3 were only sixth grade girls. One final question determined that directors instructed a mean of 2.9 multiple grade level classes. (*SD* = 1.9, range = 1 to 6).

These data documented that less than half of directors' classes included only sixth grade students; of the sixth grade classes, mixed-gender groupings were more common than gender-specific. Of the gender-specific classes, all girls' classes were

more common, as can be seen in Table 2. More directors instructed multiple grade level classes than any other type.

Table B.2

The Grouping of Sixth Grade Students According to Gender

Question	*M*	*SD*
	n = 16	
How many choir classes appear on your daily class roster?	4.3	2.5
How many choir classes consist of only sixth grade students?	1.7	1.4
How many sixth grade-only choir classes are mixed gender?	1.2	1.6
How many choir classes are only sixth grade boys?	0.0	0.0
How many classes are only sixth grade girls?	.3	.9
How many choir classes have multiple grade levels?	2.9	1.9

Research Question 1d addressed if sixth grade students were mixed with other grade levels and how the directors decided to group the students. It was determined that a mean of 1.2 choir classes (*SD* = 1.3, range = 0 to 4) were multiple-grade level with at least one sixth grade boy or girl. Two questions determined how many of the multiple-grade level classes included either only sixth grade boys or sixth grade girls. Directors reported a mean of .3 classes (*SD* = .6, range = 0 to 2) included sixth grade girls and no sixth grade boys and a mean of .1 classes (*SD* = .3, range = 0 to 1) included sixth grade boys and no sixth grade girls. The results documented that multiple-grade level choirs were about as common as sixth grade mixed gender choirs and that it was slightly more common to find girls in the multiple-grade level choirs than boys.

Table B.3

Mixed-Grade Level Classes with Sixth Grade Students

Question	*M*	*SD*
	n = 16	
How many multiple-grade level choir classes include at least one sixth grade boy or girl?	1.2	1.3
How many multiple-grade level choir classes include sixth grade girls and NO sixth grade boys?	.3	.6
How many multiple-grade level choir classes include sixth grade boys and NO sixth grade girls?	.1	.3

Also part of Research Question 1d, directors responded yes or no to statements concerning how they made the decision to group sixth grade students with multiple grade levels. No NA responses were collected for this set, meaning every director instructed at least one mixed-grade level class that included at least one sixth grade student. Response totals can be seen in Table 4.The first yes/no question stated, “The choir program didn't have enough students to separate grade levels.” Of the respondents, 25% indicated yes (*n* = 4) and 75% no (*n* = 12). The next question stated, “Some of the sixth grade boys’ voices changed early, and they were placed in a class with maturing male voices.” Of the respondents, 25% yes (*n* = 4) and 75% indicated no (*n* = 12). The third question of the set stated, “I (or anyone else in the choir department) did not make the decision to mix sixth grade students with other grade levels in choir.” A 25% yes (*n* = 4) and 75% no (*n* = 12) response was documented. Finally, the fourth question of the set stated, “Some of the sixth grade students performed at an advanced level and were more successful with older students.” Responses differed from the others in the set, as 50% responded yes (*n* = 8) and 50% responded no (*n* = 8). These

data document that sixth grade students were more likely to be placed in a mixed grade level class due to skill level than for the other three reasons listed. However, some students were placed in mixed-grade level classes due to lack of students, vocal maturity, or due to the decision of someone other than the choir director.

Table B.4

How Mixed-Grade Level Classes Were Determined

Question	Yes	No	NA
	Total number of responses *n* = 16		
The choir program didn't have enough students to separate grade levels.	4	12	0
Some of the sixth grade boys' voices changed early, and they were placed in a class with maturing male voices.	4	12	0
I (or anyone else in the choir department) did not make the decision to mix sixth grade students with other grade levels in choir	4	12	0
Some of the sixth grade students performed at an advanced level and were more successful with older students	8	8	0

The last question concerning Research Question 1d allowed directors the opportunity to explain how sixth grade students were grouped with other grade levels if they felt that the statements in the above group did not clearly define their current groupings. Because this question was optional, only six responses were gathered. Of the six responses, no clear trends were noted (confirmed by an expert analyst), with responses addressing such issues as specifying grade level groupings, sixth grade male voice change, and reasons for former choir groupings based on grade level.

Research Question 2 addressed teachers' perceptions of classroom behavior in gender-specific (2a) and mixed-gender (2b) sixth grade classrooms as well as teachers' perceptions of voice change (2c) among sixth grade boys and girls. Directors' perceptions of classroom behavior in a gender-specific class (Research Question 2a) were addressed in nominal yes/no/NA questions and ordinal multiple choice questions. The first question of the five stated, "Classroom behavior is improved when sixth grade students are separated by gender." Of the 16 participants, 88% responded NA (*n* = 14), 12% yes (*n* = 2), and 0 % no (*n* = 0). The second question stated, "A difference in classroom behavior is noticed as sixth grade students begin puberty." Of the 16 participants, 88% responded NA (*n* = 14), 12% yes (*n* = 2), and 0 % no (*n* = 0). The third question of the set stated, "Choir students' confidence in singing is not affected by the presence of the opposite sex." Results indicated a percentage of 88% NA (*n* = 14), 0% yes (*n* = 0) and 12% no (*n* = 2). Responses can be seen in Table 5.

Table B.5

Teacher Perception of Classroom Behavior in Sixth Grade Gender-Specific Classrooms

Question	Yes	No	NA
	Total number of responses *n* = 16		
Classroom behavior is improved when sixth grade students are separated by gender.	2	0	14
A difference in classroom behavior is noticed as sixth grade students begin puberty.	2	0	14
Choir students' confidence in singing is not affected by the presence of the opposite sex.	0	2	14

Responses for teachers' perceptions of how confidently boys sing around other boys and how confidently girls sing around other girls during voice change can be seen

in Tables 6 and 7. While 88% (*n* = 14) of respondents selected NA, the data from the two responses other than NA documented that the teachers perceived slightly more evidence of voice change among girls than boys.

Table B.6

Sixth Grade Boys Sing Confidently around Other Boys during Their Voice Change

Perceived amount of students	Number of Responses *n*= 16	Percentage of Responses
All boys	0	0
A large number of boys	1	6
About half of the boys	1	6
A small number of boys	0	0
No boys	0	0
NA	14	88

Table B.7

Sixth Grade Girls Sing Confidently around Other Girls during Their Voice Change

Perceived amount of students	Number of Responses *n*= 16	Percentage of Responses
All girls	1	6
A large number of girls	1	6
About half of the girls	0	0
A small number of girls	0	0
No girls	0	0
NA	14	88

Directors' perceptions of classroom behavior in a mixed-gender class (Research Question 2b) were addressed in nominal yes/no questions and ordinal multiple choice questions. The first of the nominal questions stated, "Classroom behavior is improved

when sixth grade boys and girls are taught together". Results indicated a response of 31% NA (*n* = 5), 63% yes (*n* = 10), and 6% no (*n* = 1). The second question stated, "A difference in classroom behavior is noticed as sixth grade students begin puberty." Results indicated a response of 0% NA (*n* = 0), 75% yes (*n*= 12) and 25% no (*n* = 4), and. The third question, a double negative (the only one in the questionnaire) stated, "Choir students' confidence in singing is not affected by the presence of the opposite sex." Results indicated a response of 0 % NA (*n* = 0), 31% yes (*n* = 5) and 69% no (*n* = 11). These data documented that directors who instructed sixth grade mixed-gender classes believed that classroom behavior was improved when genders were combined, but thought that singing confidence was affected by the presence of the opposite sex. Directors also noticed a difference in classroom behavior as students began puberty. Responses can be seen in Table 8.

Table B.8

Teacher Perception of Classroom Behavior in Sixth Grade Mixed-Gender Classrooms

Question	Yes	No	NA
	Total number of responses *n* = 16		
Classroom behavior is improved when sixth grade students are taught together.	10	1	5
A difference in classroom behavior is noticed as sixth grade students begin puberty.	12	4	0
Choir students' confidence in singing is not affected by the presence of the opposite sex.	5	11	0

Responses for teachers' perceptions of how confidently both genders sing in front of each gender during voice change can be seen in Tables 9 and 10. No NA responses were collected for these questions. Concerning girls, 19% (*n* = 3) of

directors indicated all girls sing confidently around other girls, 63% (*n* = 10) a large number of girls sing confidently around other girls, 13% (*n* = 2) about half of the girls sing confidently around other girls, 6% (*n* = 1) a small number of girls sing confidently around other girls, and zero directors said that no girls sing confidently in front of other girls. When girls sing in front of boys, 25% of directors (*n* = 4) said that all girls sing confidently in front of boys, 44% (*n* = 7) a large number of girls sing confidently in front of boys, 6% (*n* = 1) about half of girls sing confidently in front of boys, 25% (*n* = 4) a small number of girls sing confidently in front of boys, and zero directors said that no girls sing confidently in front of boys.

When directors were questioned about boys, 6% (*n* = 1) stated that all boys sing confidently in front of other boys, 50% (*n* = 8) a large number of boys sing confidently in front of other boys, 31% (*n* = 5) about half of the boys sing confidently in front of other boys, 0% (*n* = 0) a small number of boys sing confidently in front of other boys and 13% (*n* = 2) no boys sing confidently in front of other boys. When boys sing in front of girls, 6% (*n* = 1) stated that all boys sing confidently in front of girls, 25% (*n* = 4) a large number of boys sing confidently in front of girls, 19% (*n* = 3) about half of boys sing confidently in front of girls, 38% (*n* = 6) a small number of boys sing confidently in front of girls and 13% (*n* = 2) no boys sing confidently in front of girls. These data documented that a greater number of teachers perceived both girls and boys to sing more confidently in front of their own gender than in front of the other; girls in sixth grade were perceived to be slightly more confident than boys when singing in front of the opposite gender.

Table B.9

Sixth Grade Girls Sing Confidently around Other Girls and Boys during Their Voice Change

Perceived amount of students	Number of Responses *N* = 16	Percentage of Responses
All girls		
Around other girls	3	19
Around other boys	4	25
A large number of girls		
Around other girls	10	63
Around other boys	7	44
About half of the girls		
Around other girls	2	13
Around other boys	1	6
A small number of girls		
Around other girls	1	6
Around other boys	4	25
No girls		
Around other girls	0	0
Around other boys	0	0

Table B.10

Sixth Grade Boys Confidently around Other Girls and Boys during Their Voice Change

Perceived amount of students	Number of Responses *n* = 16	Percentage of Responses
All boys		
Around other girls	1	6
Around other boys	1	6
A large number of boys		
Around other girls	4	25
Around other boys	8	50
About half of the boys		
Around other girls	3	19
Around other boys	5	31
A small number of boys		
Around other girls	6	38
Around other boys	0	0
No boys		
Around other girls	2	13
Around other boys	2	13

Directors' perceptions of evidence of early voice change among sixth grade boys and girls (Research Question 2c) were assessed through the administration of questions per directors' teaching situations: sixth grade gender-specific classes or sixth grade mixed-gender classes. Table 11 indicated that 14 of the 16 respondents selected NA. Due to the limited amount of remaining responses, it is difficult to summarize with any certainty what directors of gender-specific choirs perceive in their classes. It could be ascertained that directors of gender-specific choirs perceived about half of their boys as exhibiting evidence of voice change; however, more data are needed to confirm this conclusion. The data in Table 12 documented directors of sixth grade mixed-gender

classes saw a small number (*n* = 5) to about half of their students (*n* = 7) as exhibiting evidence of voice change; responses were similar across both genders.

Table B.11

Evidence of Voice Change in Sixth Grade Gender-Specific Classrooms

Perceived amount of students	Number of Responses *n* = 16	Percentage of Responses
All		
girls	0	0
boys	0	0
A large number of		
girls	0	0
boys	0	0
About half of the		
girls	0	0
boys	2	13
A small number of		
girls	1	6
boys	0	0
None of the		
girls	1	6
boys	0	0
NA		
girls	14	88
Boys	14	88

Table B.12

Evidence of Voice Change in Sixth Grade Mixed-Gender Classrooms

Perceived amount of students	Number of Responses *n* = 16	Percentage of Responses
All		
girls	0	0
boys	0	0
A large number of		
girls	2	13
boys	1	6
About half of the		
girls	5	31
boys	7	44
A small number of		
girls	6	38
boys	5	31
None of the		
girls	3	19
boys	3	19

The final perception item was an open-ended question that allowed the researcher to describe any perceptions not covered in the questionnaire. The specific question stated, “Briefly, what do you perceive as the advantages and disadvantages of sixth grade students participating in (a) mixed gender choirs, and? (b) gender-specific choirs? Please specify any perceptions not addressed in the questionnaire.” Thirteen total responses were coded and classified into categories within two themes: retention and sixth grade boys. Validation by a collegiate music education faculty member experienced in qualitative data analysis confirmed the emergence of the themes from the coding of the categories.

Theme one, retention, emerged as a factor 13 directors considered when grouping sixth grade students. Directors seemed to focus on this theme when determining their structure of their choir programs. Categories within this theme included fun, energy, and confidence. Three directors indicated that mixed gender choirs at the sixth grade level offered a fun learning environment for students. "In mixed gender choirs, the students have fun and work together well" (Participant 8). This fun atmosphere, however, also was noted in a response concerning an all-boys choir of multiple grade levels. "They enjoy being together and gain from the upper classmen" (Participant 9). The comments also stated that mixed gender sixth grade choirs created an energetic environment that stimulated learning. "There is an enhanced energy with mixed sixth grade classes which help in the learning process" (Participant 6). One director mentioned a student's singing confidence when determining choir groupings and retention.

> I had one sixth grade boy who is clearly a bass. I moved him to $7^{th}/8^{th}$ grade choir. He was more confident about singing with those boys. The advantage to putting the boys who have changed voices in with the $7^{th}/8^{th}$ grade boys is that they are more likely to stay in choir (Participant 5).

While directors were divided on which learning environment they preferred for sixth grade students (no grouping preference emerged as most popular among the responses), two directors valued providing a fun choral environment that was energetic and inspired confident singing in order to retain students.

Theme two, sixth grade boys, emerged as a common theme shared by seven directors. Three categories were prevalent: voice change, behavior and choral blend.

Voice change and behavior among sixth grade boys were cited as affecting many aspects of the choir class for the director. Directors tended to prefer an all-boys choir class in order to nurture boys through their voice changes. "The only boys who will open their mouths around the girls are ones who haven't changed at all, or are totally changed. I really don't think there is an advantage to mixing the genders at that age" (Participant 4). "Each [of the boys] can be working on their vocal instrument and can get much more in a class with the same gender" (Participant 9). Directors also commented on the behavior of boys during puberty. Concerning gender-specific classes, "It would be nice to have a sixth grade, boys-only class, but I'm not sure the behavior would be very good" (Participant 5). Other directors indicated that classroom behavior is a concern in a mixed-gender setting. "I found that the boys were sillier in trying to get attention from the girls" (Participant 12). "It may be a distraction to the students to have the opposite gender involved" (Participant 13). Directors also noted that boys' voices affected the blend of the choir. Two directors were in favor of sixth grade mixed-gender choirs when boys' voices were unchanged. "I believe before voice changes, the boys' and girls' voices are very similar and therefore blend nicely together (Participant 10). "In sixth grade we could all sound good together—the girls really help with that" (Participant 11).

In analyzing these data, the number of responses focusing directly on boys was substantial. Nine of the 13 responses mentioned boys to some extent, most describing voice change, behavior, and choral blend as reasons for combining or separating boys with girls and multiple grade levels. No trend for a specific choral grouping was noted.

Based on the results of the pilot study, it appears that teachers have many different groupings of sixth grade students, both based upon gender and grade level. Mixed-gender sixth grade choirs and multiple grade level classes appeared to be more common than single-gender classes, and all girls, sixth grade choirs were more common than choirs with all sixth grade boys. Analysis of the open-ended responses, however, did not determine an actual director preference for a specific choral grouping. The main study will provide further data concerning director preference for choir groupings of sixth grade students, as well as how their classes are grouped (despite their preferences).

Results from the pilot study also suggested that directors perceived changes in behavior as students began to enter puberty, as well as evidence of voice change among sixth grade students. Directors perceived that classroom behavior was better when sixth grade boys and girls were taught together, but noticed that the behavior changed as puberty started. Directors also noted that students' singing confidence was affected by the presence of the opposite sex once puberty started, but boys' singing confidence seemed to be more sensitive during this time than girls' singing confidence. Directors observed instances of voice change among their sixth grade boys and girls; the voice change appeared to be more evident among boys than girls. The main study will expand upon these data and provide further depth of information concerning directors' perceptions of adolescent behavior and voice change among sixth grade students.

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