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### A BRIEF REVIEW OF SELECTED RESEARCH-BASED STRATEGIES FOR HELPING YOUNG SINGERS MATCH PITCH

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A BRIEF REVIEW OF SELECTED RESEARCH-BASED STRATEGIES FOR  
HELPING YOUNG SINGERS MATCH PITCH

A Review of Literature Submitted to the Graduate School  
in Partial Fulfillment of the Requirements  
for the Degree of  
Master of Music

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Pittsburg, Kansas

May 2023

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A BRIEF REVIEW OF SELECTED RESEARCH-BASED STRATEGIES FOR  
HELPING YOUNG SINGERS MATCH PITCH

An Abstract of the Thesis by  
Dirk W Myers

The purpose of this review of literature was to identify ways to help varying levels of novice singers manage and improve their vocal pitch matching ability. The review identified the work of prominent pedagogues and researchers. The literature review revealed that techniques aiding the novice singer yield varying levels of success. Most of the research showed that remedial techniques work best in small groups, one-on-one settings, and solo singing. The research did not address the issue of effective teaching and its effect with regard to student achievement (e.g., classroom management and issues related to effective or ineffective teaching ability).

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## Chapter I

### INTRODUCTION

Matching pitch is a skill that comes naturally to some and yet is challenging for others. Loui (2015) compared different pathways that the brain uses to function. He noted that the efficiency in which an electric signal travels in the brain results in different vocal abilities from subject to subject.

Roberts and Davies (1975) suggested that singing is a teachable task, as attitudes, motivation, and age are all relevant factors in singing ability. Froehlich (1979) observed that rhythmic reading activities were needed in developing novice singers. Teachers that have students sing through a song without working on pitch, phrasing, rhythm, dictation, or dynamics did not give superior performances.

While teaching a person to sing who has the ability to match pitch poses a challenge, teaching a student who struggles to match pitch presents an even greater challenge. A problem that a music educator can encounter when teaching a monotone or inaccurate singer is identifying the steps to help them become an able singer. Music educators choose to teach in higher levels of music education as a result of their natural ability to produce sound and be successful. This success tends to limit the ability to understand or develop techniques to aid the needs of an unskilled singer. Some of the

best educational tools can be drawn from prior experience to aid struggling mechanics in tonality and working with students in a smaller setting.

Rutkowski's (1996) research showed that the use of small group and individual instruction had a positive influence on singing ability regardless of the pretest, noting a decrease in singing achievement when instructed in a large group. She speculated that this type of instruction could be detrimental to the future of singing ability in schools of tomorrow (p. 362).

Based on personal experience in the classroom, Stene (1969) reported that monotone singers do not exist, arguing that, "children who have had positive encouragement, security, and freedom to explore and develop at home will begin kindergarten or first grade ready to sing and learn the songs presented to them (pp. 46-47)." Stene also explained that, if students do not get this type of nurturing from home, the responsibility to identify the musical need of the child falls on the music educator. According to Geringer (1983), elementary-age students struggle more at matching pitch, and many teachers overlook the steps involved in aiding the singer to match pitch.

Developmentally, children are not being exposed to the types of musical stimuli that they once were. In the past, parents were more active in musical nurturing by utilizing singing and nursery rhymes with children from birth to school age. Atterbury and Silcox (1993) explained that, musical ability develops gradually from infancy to age nine, concluding that this extended exposure is necessary for children to improve musically, meaning "every student is a singer" (p. 45).

Singing, chanting, and rhythm games were an integral part of family activities in the past. Families today may not realize the importance of these activities as they pertain to musicality and brain development. By default, this problem is left to the educator to address. Feirerabend (1998) stated that it takes as many as two years for a student to find their voice. Therefore, if students have not been exposed to musical experiences prior to school age, teachers will not reap the rewards of their teaching until after the student reaches second grade.

## Chapter II

### STAGES OF VOCAL ACCURACY

Educators cannot expect a student to progress from non-singer to singer just by explaining technique alone. Rather the ability to sing has stages, ranging from monotone singer to competent singer. When a student experiences singing success and takes ownership of their own vocal progression, it gives the educator a greater opportunity to foster confidence. It may also instill in the student an effort to achieve their highest singing level. The studies listed below have assessed stages of vocal accuracy in singers and categorized these levels of development.

Bradshaw and McHenry (2004) found three ability groups of singers: (a) "Certain singers" who can sing accurately with a tonal center in any pitch level, (b) "Modulating singers" who sing melodies correctly but shift tonal centers, and (c) "Uncertain singers" who sing randomly with no tonal center. Price (as cited by Bradshaw and McHenry, 2004) suggested that the modulating singers might be in that category to accommodate their vocal comfort. Students that adjust for comfort while singing are classified with an inability to physically sing certain pitches (too high or too low). Therefore, the singer will modulate the tonal center to accommodate for the vocal inability. Inabilities may include vocal deficiency, lack of ability, and/or lack of confidence (p. 432).

Atterbury and Silcox (1993) discovered four levels of singing ability in kindergarten students: (a) "Pre-singer" who chants the words to the song, (b) "Uncertain singer" (uses both singing voice and speaking voice) who has a limited range of about a third, (c) "Partial singer" who sings correctly on some phrases but not the entire song, and (d) "Singer" who stays in key and sings correctly.

Rutkowski (1996) reviewed the five levels of Singing Voice Development Measure (S.V.D.M.). This tool was designed to measure a child's use of the singing voice, with the goal to prove that the use of the singing voice is an ability and is separate from one's ability to accurately intone pitch. The voice is represented on the level of singing ability measured by the degrees of tonality: (a) "Presinger" who chants the song without singing, (b) "Speaking range singer" who holds out sounds and uses some pitch but continues to speak text, (c) "Uncertain singer" who uses a limited range and fluctuates between singing and speaking voice, (d) "Initial range singer" who uses the range of D3-A3, chest voice, and (e) "Singer" that uses the range above Bb3, head voice (p 357).

Rutkowski (1996) identified some omissions while utilizing the S.V.D.M. tool. The revisions are as follows: (1.5) "Inconsistent speaking range singer" who sometimes chants and sometimes sings but stays in the speaking voice range or chest voice, (2.5) "Limited range singer" who goes between singing and speaking voice, and tends to sing up to F3 on average, (3.5) "Inconsistent initial range singer" results in the student wavering between limited singing range and initial singing range, and (4.5) "Inconsistent singer" who wavers between initial singing range and singer.

Howle (1992) identified stages of vocal development as well as reasons that lead students to be diagnosed as uncertain singers. These stages are: (a) "Incorrect pitch" who sing above or below the pitch, (b) "Speaking singers" who speak instead of sing (although some can sing in chest voice at a limited range), (c) "Dependence" student who can sing well but depend on singing with a group or instrument, and (d) "Coordination" singers who might not be able to sing because the skills of making and controlling pitches have not been acquired. Howle (1992) also listed the possible causes of creating uncertain singers, including: (a) home environment, which can create an unfavorable desire to produce a singing voice (e.g., lack of positive reinforcement, or non-singing family), (b) perception of the pitch, where the limited ability singer can have varying success according to their vocal flexibility, (c) range and tessitura, which can be a factor with songs that are not in a child's range, (d) social factors, such as experience and education, can result in inadequate practice using the voice, (e) gender of vocal model-research, which finds that children learn best by modeling a child's voices, (f) listening skills like high vs. low, loud vs. quiet, which should be taught and experienced, and (g) accompaniment that is overly complex, leading to confusion.

## Chapter III

### FACTORS THAT LIMIT VOCAL SUCCESS

Many factors can limit a student's ability to phonate. Musicians may be inclined to overlook such issues because of their innate abilities that led to vocal success. Many students that are labeled inaccurate singers can find success if the educator can help to manage some factors that are hindering the student's vocal growth.

Howle (1992) stated that, children should not develop bad feelings about how they sing. Some issues that lead to uncertain singers are: (a) gender: 36% of male compared to 16% female were found to have vocal difficulties (Roberts and Davies, 1975); a "music is not cool" attitude of boys tends to lead them to sing under pitch or in a low voice so that they sound like men, not girls; (b) motivation: students might be able to sing but lack motivation or desire hinders the effort to sing correctly; (c) age: as the student gets older and gains experience, vocal ability tends to increase. Accuracy in an eight- to nine-year-old should concern an educator when they have had a musical education; (d) and solo and group singing: auditory feedback decreases while singing in a group setting. The ability to use internal and external sounds (i.e., self-evaluating while blending vocally to the sounds they hear) to self-evaluate pitch has not developed in some singers (pp. 22-23).

Smith (2006) investigated why some children need help singing, noting five areas of concern: (a) lack of experience: prior knowledge is up to the music educator to teach if the home musical experiences are not practiced efficiently; (e.g., home life or previous music educator discourages singing, lack of good singing models, or pitch is out of the student's range in a recording); (b) lack of confidence: instilling confidence in a singer will help them achieve pitch (e.g., children that speak sing or sing quietly); (c) auditory processing ability: the music educator should start by referring this student to an expert to detour an auditory problem (i.e., children that sing higher or lower than the pitch and show little to no signs of hearing the pitch); (d) hearing impairments: there are many variables in hearing abilities and students with mild impairments can still be successful singers; and (e) other physical problems: these students should stay hydrated and not overuse their voice, inflicting vocal damage (i.e., children that scream often have a raspy, abused vocal sound, often inflamed vocal chords that hinder the use of head voice) (pp. 28-29).

Many factors can hinder a child's singing ability. Stene (1969) gave examples of six behaviors an educator could encounter. These are strategies to aid the student to cope with insecurities: (a) the timid child is one that might be encountered in the classroom, and who needs a positive experience and time to observe the class routine to become interested in participation; (b) the tense child often is trying too hard, and needs the educator to encourage them to participate without feeling criticized. Rhythmic movements while singing might help them to relax. The desired pitch can possibly be sung when focus is on something else; (c) the phlegmatic child (e.g., relaxed,

shy, content, passive) might be concerned with self-image and might not have the breath or energy to sing with correct pitch. Humorous, up tempo songs can assist this student in reaching pitch; (d) the child who is not conscious of high and low sounds: they tend to confuse high with loud and low with quiet. Stene (1969) observed that the use of a song that incorporates the words high and low represented in the sound will help with the concept; (e) the child who talks the song can be assisted by having the whole class singing a conversation. The educator sings a question, and the students answer. If the student is talking instead of singing, the educator simply has the student try it again and, at times, they will attempt to sing; and (f) the child who has not been exposed to music: this child has not had the opportunities to respond to music with their voice. Stene (1969) suggested that the educator give them time and encouragement, and they will reach pitch (pp. 47-49).

The factors that limit vocal success allow the educator to focus on maternal development, a student's disabilities, or other issues that can cause a singer to be vocally inaccurate (Smith, 2006). Brain development issues are difficult to understand, but as brain research is becoming more efficient, an understanding of how it works can be beneficial. For example, the result of a musical task is a result of numerous neural pathways working in conjunction with each other. More recent research from Loui (2015) found that asymmetry in the dorsal and ventral pathways create tone deafness in one person while allowing another to have perfect or absolute pitch abilities. Although Loui did not cite any resources for aiding a struggling singer, it is encouraging that the

emerging research could help future music educators understand how to better accommodate a curriculum for the needs of each student.

## Chapter IV

### VARIABLES OF SINGING ABILITY ACCORDING TO AGE

As students age, variables in their lives change. Students can become more confident through their experiences. Physical changes can also help students achieve more accurate phonation. Geringer (1983) discovered the possibility that pitch discrimination and pitch matching are two independent abilities, and that age and training are necessary in developing a relationship between the two. He also identified the possibility that pitch matching is related to physical development and that pitch discrimination skills are developed with specific, specialized training.

Scott-Kassner (1999) described what early childhood music programs should entail, noting that, parent/guardian involvement is one of the best tools to utilize in the development of a child singer (e.g., newborns hear lullabies, toddlers learn to sing, dance, and play simple rhythm games). The author shared research and experience-based techniques regarding what a music educator should include for young, untrained singers. The course content should: (a) include musical play, such as singing, moving, listening, creating, playing instruments, and analyzing sound; (b) build a repertoire of songs, including multicultural, rhyming, and singing games; (c) help children find their singing voice; (d) interact musically and discussing music; (e) encourage parental musical

involvement; (f) document musical growth, and (g) include music educator modeling and valuing of music (p.20).

Scott-Kassner (1999) stated that the next level of early childhood programs is the key experiences and should include: (a) expanding the student's repertoire; (b) teaching children to critique music; (c) observing and documenting mastery of songs, coordination, and musical play; (d) reporting finding to parents; (e) instilling confidence in singing voice, and (f) learning to play simple instruments (pp. 21-23).

Emphasizing the important role of sound, Jordan-DaCarbo (1986) stated:

Just as the child's earliest experiences with language are aural, so also the long road to musical literacy must begin with sound. In addition, because of the unique nature of memory, we must deal with patterns of sound. Children do not learn the alphabet in order to speak, they imitate words. With music we learn combinations of two to five sounds, rhythmic or tonal. For example, in learning rhythm, we accumulate a vocabulary of "rhythmic words" or patterns as they occur in basic duple or triple meters, rather than learning individual note values (p.39).

Children are more likely to achieve success when they have more experiences.

We do not expect a child to read a book without learning the language they are to read.

Language development has been researched to teach a student to read. Music is a language and the steps can become musically literate can correlate with reading and language literacy (Jordan-DaCarbo).

## Chapter V

### INSTRUCTIONAL STRATEGIES

Instructional strategies are key to efficient learning. These strategies help students feel success and show students how they can improve. Educators can benefit by reviewing results that show where a lesson might need to be modified in order to promote success. Nicholes (2019) stated that educators should not expect success in vocalization if the particular pitches do not fall within an acceptable vocal range, and tests should include more than three to five pitches for a performance assessment. Moreover, assessments should be given the way they are taught, such as students are accustomed singing in groups. Or, if the educator used certain instruments to accompany the practice, students should hear the accompaniment on the test. If students are not using their vocalizations as a common practiced activity in class, it will be harder to expect them to share vocally as they mature.

#### **Vocal Development**

Jordan-DeCarbo (1986) reviewed Edwin Gordon's (2007) learning sequences in music that identified developmental levels in a child's vocal and rhythmic musical development. She wrote that an educator must teach through each level of learning, and that it is up to the educator to assign a duration for each level. The educator can

choose to spiral the curriculum forward in order to prepare the student's mind for what is to come. Jordan-DeCarbo (1986) then adapted the theory to music learning. The premise is that children do not read words to learn the language. Rather, they first must hear and replicate the sounds in order to achieve the final goal of speech. The five levels of The Gordon Method as compared to speech are: (a) aural/oral level: builds a sound bank made of rhythmic and tonal patterns; (b) verbal association level: sound that must be given label (e.g., ta, du or DO, RE, MI); (c) partial synthesis level: review level one and see if the student can identify the bank of sounds that were rehearsed; (d) symbolic association level: the symbol is learned and associated with the word; and (e) composite synthesis level: combines tonal/rhythmic patterns in a series (p. 40). These steps will be emulated with each new skill that is incorporated in the classroom, whether vocally or rhythmically. Students should first hear the pattern, master the sounds, and then incorporate the labels.

Reifinger (2013) stated that students should be singing independently as soon as possible and that it is not only the teacher's job to assess vocal accuracy in a student but also the student's job to assess their own accuracy. The author listed four levels of singing progression: (a) acquisition of singing independence: students first learn to sing by rote, then progress into more confident singers by the use of simple, familiar songs; (b) call and response singing: these songs are not only simple echo songs, but also songs that require the response to differ from the call. Students are encouraged to sing alone and in small groups at this level; (c) nurturing conceptual understanding: the next level involves students' ability to fine tune their sound by use of a neutral syllable. This can be

used in a call and response song also, but it is meant to aid the ear to focus on the sound more than the word and thus focusing on pitch accuracy. The educator should focus on leading the students into pitch discovery in lieu of giving them the answers, and (d) additional instruction techniques: the last stage of Reifinger's (2013) levels is to utilize the ear, eyes, and body for vocal exploration and understanding. To ensure a higher level of learning and understanding an educator is urged to use visual cueing for high and low, loud and quiet, as well as reinforcing the visual as well as the body with other vocal descriptors (pp. 3-9).

### **Musical Scales**

Winters (1970) suggested that the use of the pentatonic scale is mainly used in the Kodály approach to music education. However, the use of this scale would not be practical in England as it is not used in their musical heritage. He suggested substituting the diatonic scale for the pentatonic scale, which is familiar to the children in his culture. By using the scale that is familiar to the ear, students' musical learning will develop more easily due to prior aural experience of the sound patterns.

Boucher (2019) stated that the Kodály approach was meant to use songs from the educators' cultural surroundings. Sinor (1997) studied the Kodály approach and how it could be adapted to American music, stating that the approach to teaching should begin as early as possible in schools. Singing should be unaccompanied to achieve musical independence and the use of the diatonic solfège system is best. Students should experience sound before notation in a developmentally appropriate order of teaching.

## Remedial Techniques

Howle (1992) studied remedial techniques involved in aiding the struggling singer. These techniques include: (a) become aware of the voice: how does it feel when the vocal cords vibrate through use of a whisper, singing, talking; (b) begin voice instruction early: kindergarten is not too early to work on the voice and muscle coordination. In kindergarten and first grade, the use of the talking voice is utilized because of a habit. The students need to utilize the singing voice to experience and experiment its sound possibilities; (c) use newly learned materials: if a song is learned incorrectly it will continue to be sung that way, so use new material to teach correct intervals. If an educator uses the traditional "Happy Birthday" song they will most likely find students sing it naturally with incorrect pitches (e.g., the SOL to SOL octave leap, or using the same sounds in the three-note starting pattern); (d) provide feedback: tell the child what they need to work on to achieve a goal without harming self-esteem of the student; (e) experience unison: teaching the struggling singer that they should start with a pitch that they can sing; (f) use of recording device: this enables children to hear themselves and critique their voice externally; (g) use of imagery: the educator could say, "Sound like a floating cloud for a soft (quiet) sound," and (h) terminology: ask a student to sing higher. The educator might find that they sing louder and drop from head voice to chest voice to accomplish what they think is asked of them (Howel, 1992, pp. 24-25).

Another way to add a visual component to singing is to display a "picture" of the modular system and the Kodály hand signs. The "modulator system" is essential in the

Curwen Method. It is a chart with symbols representing tones on the scale. Students use Kodály hand signs with the techniques to visually and auditorily sing. They see the notes of a scale in relation to a song.

Brody's (2004) research on the use of a breath support and vocal muscle training found that 33 of 35 participants demonstrated tonal improvement. The struggling singer could better match pitch by the use of three pitches rather than one or two (e.g., use DO, RE, MI not just DO or RE alone).

Curwen and Zinar (1983) reviewed the teachings of John Curwen, who promoted the teaching of movable DO, emphasizing the importance of the learner internalizing the pitches are relative to the key. The reviewers also stated that an educator should not sing with the students. This technique helps the educator hear and correct the students' mistakes.

Smith's (2006) views differed from the Curwen Method and others by claiming that a teacher should start with one pitch and then add pitches as the student progresses. With this approach, it is important that exercises be sung without accompaniment, otherwise the young singer will develop a reliance on the supporting instrument rather than learn to sing independently.

McCoy (1997) suggested that children will modify their pitch in order to adjust for a pitch that is uncomfortable in their voice. McCoy found that the strongest relationship in vocal accuracy is related to the key in which the singer starts. Students will not be accurate with pitches they cannot sing.

Green (1990) investigated the correlation between children's ability to match pitch by the use of a female, child, or male tenor voice model. She found that the participants were significantly more successful with the child voice model. The female voice model was second, followed by the male voice. Tendencies of the participants recalling the pitch with a sharp intonation were found to be prevalent in the child and female voice examples. The participants were more likely to sing flat with the male tenor example, perhaps because the male voice timbre is an octave lower than the child's voice.

Green (1994) also explored echo singing, observing that:

Children in Grades 1 through 5 could most easily match a pitch presented by a child's voice as opposed to an adult male or female voice. Based on these findings, it might be reasonable to assume that a child might also have difficulty singing simultaneously with an adult voice, which has a completely different timbre than the child's own voice. Conversely, a child may find it easier to hear him or herself and to sing accurately in unison with voices exhibiting a timbre similar to that of his/her own voice (p. 111).

Based on the work of Gould, Roberts, and Davies, and Romaine, Rutkowski (1996) argues that singing is a trainable ability. Rutkowski (cited Gould, Roberts & Davies and Romaine, 1996) studied the "Speech to Song" method: This method first allows the student to gain control of their speech pitch (i.e., the natural pitch of their talking voice). Then, the student was given their personal tone by the educator. The student's range can be expanded from this single pitch.

Roberts and Davies (1975) found no gain in pretest to posttest in monotone singers when singing a song in a given key or matching specific pitches. They stated that by using Gould's approach to finding their "personal" sound, research showed large improvements in the ability to extend the participant's voice. They suggested that additional steps are necessary before a student can be successful singing in a group. If the remediation technique skips certain steps and merely assumes that a student can sing in tune within a group, this large leap of vocal skill will likely be a struggle for the student. One must teach vocal stages that lead to correct use of the vocal mechanism (pp. 236-237).

Stene (1969) stated that the use of the humming voice is an instant voice developer. The teacher should reassure the student that the pitch is correct, or correct it to be raised or lowered. She observed that through humming, the student can focus on their own pitch. Students tend to sing louder with an open mouth and that leads to a problem. Loud singing frequently results in out of tune singing because the individual only focuses on their own voice. She further explained that if a student has not learned to manipulate their singing mechanism by third grade, they will need to receive remedial training.

### **Instruments as Instructional Tools**

Stene (1969) suggested that singers hum with an instrument as they are playing it. This helps in three ways: (a) hearing correct pitches while singing; (b) use humming to quiet the singer, allowing them to hear the instrument as they attempt to match pitch, and (c) aids in vocal coordination that is needed to match pitch and will reinforce the

ability of the child to hum accurately (p. 118). Watts, Murphy and Barnes-Burroughs (2002) researched the use of external and internal sound devices to aid the non-singer. No gain in ability was recorded. Smith (2006) experimented with hearphones (a tube that directs the sound wave from the mouth to the ear), stating that the student did become more aware of their pitch.

Laukkanen et al. (2003) conducted a study on the effects of hearphones on speaking and singing voice quality. Singers tend to hear themselves with a lower pitch because lower frequencies tend to travel through objects (their head) better than the higher frequencies. The researcher showed that the 12 participating singers had better vocal control when using the hearing device.

Boshkoff (1991) observed that Kodály's music training was traditionally taught through the use of a musical instrument. Kodály would then create his own pedagogical philosophy. Through his experience, the voice was the optimal instrument to teach music that develops both ear and brain. Crosse (1982) stated that singing, rather than the use of a musical instrument, is the most important element in primary music education:

The ability to sing at sight implies more than simply reading music; it allows the sounds to be learnt 'in the throat' and really heard in a way that the mechanical skills of the fingers do not; it leads to a more intelligent listening of music as well as reading (p. 337).

Russell-Smith (1967) described ways to help a young singer achieve pitch, emphasizing that the educator should sing a simple phrase of two or three sounds to

have them echo, and use the body to reinforce high and low sounds (i.e., hands up for high and hands down for low). If a student tends to sing flat, come down to the student's sound and encourage them to try it higher and higher each time. This will likely take a few attempts before an automatic response is achieved.

Green (1990) stated that, children could match pitch with the piano, autoharp, and pitch pipe. These sounds are similar to the timbre of the female voice. Musical instruments like the recorder, flutophone, and song bells were more difficult to match. This is because timbre correlates with the male tenor voice.

Atterbury and Silcox (1993) used a pretest and posttest to examine kindergartners' singing aptitude. No significant advantage to teaching with piano accompaniment was found. Results showed that high aptitude students sang significantly better than the average to low aptitude singers. Ramsey (1983) investigated whether the use of pitched musical instruments affected school-aged children's ability to sing on pitch. He found no evidence that use of pitched musical instruments aided accurate phonation, concluding that an exploratory manipulation of the musical instrument could be more effective in the development of pitch and melody (p. 144).

Rutkowski (1996) stated that the use of musical instruments has been proven to help the non-singer:

Research over the last 50 years has shown that all children can be taught to sing and that individual or small-group arrangements are more effective than large-group settings. However, with the percentage of problem singers increasing, these strategies have apparently not found application in the classroom.

Teachers seem reluctant to ask children to sing alone or in small groups.

Identification of effective games and activities that encourage individual and small-group singing in a nonthreatening classroom setting is necessary (p. 365).

### **Large Group, Small Group, or Solo Singing**

Investigating the effects of singing in unison in a large group versus singing individually, Green (1994) found that first to fifth grade students sang more accurately in unison group singing than individually, and that students were better at singing individually as they got older. Singing in a large group might hinder the ability to sing in tune. Previous studies have sought to discover whether this is fact or fiction. Roberts and Davies (1994) affirmed that students singing in a group find it more challenging to match pitch. This may be because of the students' inability to hear themselves and hear the group simultaneously. Students in a large group generally tend to sing louder than the students seated next to them. Students who sing loudly are more likely only to focus on themselves and forget about matching pitch with those around them. The study further suggested that students will be more successful when taught individually, thereby improving their ability to sing on pitch.

Smith (2006) explained that solo singing should be utilized in the vocal music classroom. The process of getting a student to sing on pitch can take anywhere from two weeks to a few months. This is most effectively accomplished by gaining the students' trust and making them feel at home. Analyzing sound can also be a good starting point for proper pitch singing. Whipple (1903) discovered that one-on-one training aids a student to improve tonal recognition, noting that it was more difficult to

discriminate chords than pitch of a melodic form. The use of melody is best for beginning pitch discovery.

Nichols (2016) investigated the findings of Goetze, Cooper, and Brown's (1990) research. Nichols and Goetze et al., sought to identify differences in singing ability when comparing solo singing and a techniques called doubling. Nichols used the doubling technique through headphones while his participants were singing. The headphones played the sounds of examples into the ears of the participants while they sang the exercise. The studies compared accuracy of pitches while using solo singing versus the doubling techniques (i.e., singing while headphones played the sounds). Goetze et al. found no significant difference in solo singing versus doubling techniques with pitch accuracy, but Nichols found the opposite to be true (p. 314).

Nichols' (2016) participants were divided in half and performed four different exercises. The first group sang the exercises two times, first with the doubling technique and then solo singing. The second group did the inverse, first singing solo then using the doubling technique. The exercises were ordered from simple to more complex: (1) matching a single pitch; (2) an interval replication; (3) recalling a melodic pattern, and (4) performance of a song. The researcher found significantly more success with the participants that sang the doubled tasks first. The author stated that tonal memory might have a major effect on singing accuracy. The study participants had more difficulty singing the complex task of melodic pattern recall and the performance of a song. However, the participants performed more accurately when matching a single pitch and an interval.

## Cognitive Cues

Bohnenkamp et al. (2002) studied how cognitive cues could affect a child's voice (i.e., pitch up and down, duration slow and fast). The use of word pictures (cognitive cues) were found to work with most children. Bohnenkamp et al. (2002) gave an example of the questions asked:

"The submarine sank to the bottom of the sea" was used with the cue think about the surface of the water; start your voice there and show me how the submarine goes down. This sentence included the semantic cues of downward movement and was presented with specific instructions to speakers to indicate a downward movement of voice (p. 530).

The word "up" was found to be a more effective cognitive cue than the word "climbed." "The plane climbed slowly to the sky" was the sentence used to slow the voice down (p. 532). The use of cognitive cues in vocal music could aid a student to explore their range up or down. This might aid in the achievement of finding the chest voice or head voice. Flowers' (1985) research involved the use of vocabulary by elementary age students explaining high versus low sound. She stated:

Elementary music lessons are often designed to provide experiences with pitch, dynamics, duration, and timbre. Instead of attempting to teach youngsters what they already know, instruction might emphasize correct labels for musical phenomena and experiences in manipulating musical elements toward artistic expression (p. 76).

Abrahams (2005) suggested that a lesson will hold value when teachers relate the lesson to experiences in students' lives. A student will be able to use the prior knowledge to make sense of the new information (p 62). Cavner and Gould (2003) studied the strategy of whole language learning, a technique that stems from the research stating that learning starts with the whole and then will break the knowledge in to parts as compared to learning the parts and trying to lead the learner to the whole. "Whole-language advocates feel that language is best learned in meaningful situations in which language is not separated into parts, but remains whole (p.40)." This style of learning supports studies by Feierabend, Kodály, Orff and others: Musical language must be internally understood before it can be broken down into symbols. Boshkoff (1991) reported that Kodály believed learning should start with the familiar and then move toward the unfamiliar.

Flowers (1985) stated that students should be taught the appropriate language of music, but at the early stages, teachers should work with the vocabulary that they already know to explain high vs. low sound (i.e., light versus heavy and little versus big). Flowers indicated that after these vocabulary words are understood by the teacher, the student will represent these vocal cues to the different sounds. Educators should then introduce the correct terms for the listening examples.

Shaw's (1951) review of the tonic sol-fa method focused on the effect of music to the ear and not visual symbols to the eye. Sounds in a major key would be grouped into three sets of chords (i.e., DO-MI-SOL, SOL-TI-RE, and FA-LA-DO). These sets are treated as individual characters having a function within a key. The idea is to fixate the

sound relative to any key through the mnemonic devices and Curwen hand signs (p. 21). Shaw said that, after this portion of the method is mastered, “Certain intervals of major and minor thirds, octave, perfect fourth and fifth, major and minor sixths are freely sung without conscious calculation (p. 22).”

Miyamoto (2005) designed a singing experiment utilizing novice singers from fourth, fifth, and sixth grades. The experiment used the Yuba Method, which targets the cricothyroid muscle by using vocal exercises to extend the range of the vocal mechanism over the passaggio. In twelve, 45-minute sessions, the 60 participating singers were divided in half and used as the Yuba Method group and a treatment group. Each of the divided participants had classroom music class for 55 minutes one time per week, but the Yuba Method group had the additional 45-minute session one time per week. The results indicated that the Yuba Method was highly effective with regard to improving novice singers’ ability to phonate accurately.

Miyamoto (2005) stated that the Yuba Method has four basic steps to correct inaccurate singers: (1) the singers should be able to learn and understand the difference between their head and chest voice; (2) singers should be able to sing very simple melodies with only the head voice and only the chest voice, and (3) the struggling singer should be able to sing from their head into their chest voice, then from their chest voice into their head voice. This method has corrected over 900 incorrect singing voices by enabling the singer to correctly engage the cricothyroid muscle.

Motivation as a Learning Tool

Teachers who enjoy their job and the musical literature are more likely to have students that enjoy being in their presence. Students have the tendency to emulate their instructor. When students enjoy being in a space that is focused, disciplined, and musically interesting, they are more likely to show increased effort to reach the educator's musical expectations.

Boshkoff (1991) stated:

Because the joy of singing is contagious, songs that the teacher likes will be appreciated more readily by the students'... If a melody is beautiful, then teaching the sounds can be accomplished before introducing the words. Wise teachers can influence vocal learning by choosing songs that inspire the students to sing with emotion, and conveys a positive, encouraging classroom climate. When students feel comfortable in an environment it will aid participation and confidence to learn to use their vocal instrument efficiently (p.34).

Froehlich (1977) researched the effect of a positive classroom climate, comparing a praiseworthy versus critical remarks by the teacher to the achievement of students. The findings indicated that, music educators should teach in a direct teaching style. Effective music educators should focus on concrete musical tasks by utilizing techniques of music analysis and presentation of specific materials.

Paney & Kay (2015) explored ways to motivate and improve the singing of their third grade students while using a self-lead computer game called "Singingcoach". The students performed the song "America" during the year and the computer monitored their progress overall, as well as instantly with regard to pitch accuracy. Accuracy was

self-monitored by students as they sang into a microphone, producing a wave pattern on the computer screen. The goal of the game was to cause the computer generated sound wave from the singer to match the actual pitch wave of the song. Both waves were visually represented in real time, and results showed a significant improvement in vocal accuracy in both male and female participants. The authors also stated that the students enjoyed the ability to raise their scores.

## Chapter VI

### SUMMARY

This review of literature described many positive gains by the research and experience-based findings, but left room for more study in the area of aiding a struggling singer. Monotone singers were found to make progress mainly from the speech-to-song approach, but little to no gains were identified to aid them to sing correct pitches in a group setting. Do all people hear pitch in some form? According to Roberts and Davies (1975),

The existence of patterns of pitch fluctuation in human speech makes one wonder whether there can really be such a thing as "tone deafness," that is to say a constitutional inability to hear pitch differences. People who claim to be tone deaf do not show the abnormality in speaking their mother tongue which would be apparent if they got its patterns of pitch fluctuation wrong. Yet to get the patterns right, they must have been able, when they were learning them, to hear successfully the pitch differences on which the patterns depend. Many people, it is true, find it difficult to hear familiar patterns in terms of musical pitch, as "tunes," and require special training before they can do so. The

difficulty, however, does not lie in tone deafness, but rather in adopting an analytic attitude towards something which has become so familiar (p. 238).

Another possibility might be that college elementary music teacher education programs do not have time built in for adequate teacher preparation. Mankin (1969) reviewed research conducted on why music training is lacking in the preschool through elementary years. The research showed that a child's attitude and interest is well divined by the age five or six, suggesting that music educators find the most efficient way to teach musical concepts to the elementary students. Mankin also reported:

An experienced teacher felt that the area of music was the weakest part of her preschool education training. A recent music graduate was cited saying, 'Music for the nursery school has been passed over in the college curriculum. The professors only mentioned it as important (p. 38).

With regard to the results in the studies involving instruments or appropriate voices timbre to aid the struggling singer, Mankin (1960) questioned the prior experience of the participants in the studies. Were the research participants exposed to hearing and practicing with similar instruments or voice timbres on a daily basis? Would these results differ if the participants were used to hearing a bass guitar, ukulele, or male voice for daily practice and then be given the same regiments of tests?

The degrees of singing abilities, in the stages of vocal development section, could help a singer achieve the steps involved in singing ability. This could be accomplished prior to the ultimate goal of singing in tune with a group. This section has techniques that the music teacher can use to aid in this issue. The review cites many findings that

state a small group setting, one-on-one teaching, and use of child or female voice models are very effective tools in aiding the struggling singer to start to gain pitch perception. The findings stated that the music educator is responsible for documenting and giving the student achievable goals to build a positive feeling about their music class. The music educator can help the student to feel confident enough to participate in this type of focused setting.

This review cited many theorists and researchers that have made progress in aiding the novice singer. For further research, Jordan-DeCarbo (1986) wrote an article referencing many theorists, including Zoltan Kodály. She stated that the Zoltan Kodály's method of instruction utilizes visual symbols and moveable DO. The solfège syllables are taught individually rather than in patterns as a whole, and it utilizes the pentatonic scale (p 41).

Carl Orff (as cited by Jordan-DeCarbo, 1986) does not follow a specific methodology. The author stated that the majority of the instruction utilizes the improvisation skills learned through speech. The language is said to be borrowed from the Kodály Method. The Dalcroze Method is a sound to symbol approach. It utilizes hearing and reproducing the sounds before seeing the symbol and later uses the fixed DO system of solfège. Edwin Gordon's Sequential Levels of Learning is a noteworthy tool for aiding the struggling singer (p. 41).

I prepared this literature review to expand my knowledge of techniques to help novice singers so that they could become successful additions to a general choir setting. I have found, through my implementation of these techniques and my discipline

systems, that the techniques will help increase the focus of study as well as give the student ownership of their learning. When formal tests are given throughout the semester, students tend to take the curriculum more seriously and will show you where you can improve your teaching to help better prepare them for success. While students that show high levels of effort will show the most improvement, overall, all students will show signs of success.

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