

CHAPTER THREE

A DISCUSSION OF THE SINGING PROCESS AND MEANS OF EVALUTION

“Singing is a response that involves the two most essential factors in music – pitch and note-lengths...singing inevitably involves listening.”¹ Arnold Bentley

A discussion of some of the technicalities involved in the singing process

Singing is an integral part of many cultures and as a means of self-expression as we have seen. It is important to understand the processes involved in singing and the technicalities involved. Many students in primary and intermediate schools have opportunities to sing during school music classes, and occasionally in assemblies. However, as Arnold Bentley concluded, some students still “do not sing recognisably at the same pitch as their ‘normal’ singing fellows, or who cannot sing a well-known tune sufficiently accurately for it to be recognisable by the listener.”²

Students who cannot sing in tune may experience one or more of the following difficulties:

- Coping with an uncomfortable tessitura.
- Poor control of the vocal mechanism.
- A problem with tonal direction i.e. an inability to distinguish between low and high.
- Poor tonal memory.
- Poor intonation. A child may have a problem singing at the right pitch, even though he or she might be able to differentiate between low and high.
- Emotional or psychological blocks.
- A physical defect such as partial deafness, adenoids or definite speech deficiencies.⁸

1. Singing at the Primary level

Buckton and Manins write: “By the age of seven the ability to perceive rhythms and pitch is usually fully developed.”³ However the authors note that considerable individual differences are often evident. “While most children should be singing in tune... there will be many who need special assistance.”⁴ Welch, Sergeant and White comment that “approximately 35% of 7-year-olds in Western cultures sing out of tune.”⁵

While some children may experience difficulties with pitch when singing alone, Roger Buckton notes that “some children can sing in tune with the assistance of others around them... Others may be limited by vocal range or the nature of the melody of a particular song.”⁶ The question of vocal range is identified by Janet Mills who writes: “Children learn to sing in tune by singing in their comfortable range, and develop a wider vocal range by gradually extending it.”⁷ Edwin Gordon identifies another problem: “Tessituras which continually cross voice breaks encourage students to sing out of tune.”⁸

Assuming a child is not afflicted with hearing loss, or any other physical deficiencies, an inability to sing in tune may be the degree to which the child is able to perceive pitch and then

interpret it with the vocal mechanism. Perception is defined by Glenn and Turrentine as “an act comprised of apprehension and comprehension. In other words, it is the ability to receive an external impression and, then to give, interpret, or understand the meaning of the external impression.”⁹ Children who score well on tests that involve differentiating pitches played on a musical instrument, may not necessarily be able to reproduce those pitches through singing. The act of singing requires a co-ordination of muscles in the throat, that need to be exercised in order to be able to produce an intoned sound at different pitches. If a child is not used to singing, he or she finds it difficult to render the auditory sensation of what the ear hears into a physical sound.

In Marvin Greenberg’s view continued out-of-tune singing is tied in with self-concept. “People develop their self-concepts in music from the kinds of experiences they have had in dealing with music.”¹⁰ He gives an example of a negative statement that a child may have received about his or her singing: “Sing softer, you’re spoiling the singing of the others.”¹¹ The writer believes that “people learn that they are able, not from failure but from success. To feel acceptance one must experience acceptance... there is an ever-flowing impact between the self and the continuum of experiences involved in the process of learning music at school... underachievement in music, including the lack of ability to sing in tune, is in part a function of the individual’s self-concept.”¹²

Another important consideration in ability to sing in tune is described by Edwin Gordon. “The early studies of Drexler and Williams demonstrated that a sense of tonality is fundamental to singing in tune and to remembering tunes... children could recall a series of pitches based on a tonal centre but not a series that did not imply a recognisable tonality.”¹³ Arnold Bentley suggests that children go through three developmental stages in response to a melody:¹⁴

1. Rhythmic coalescence.
2. Grasp of the tonal configuration, more approximate than exact.
3. Coincidence in pitch when the exact tonal configuration is sung at the pitch of the stimulus tune.

Bentley believes that the majority of children readily and spontaneously respond at a fairly early stage to rhythmic pattern, which is helped by the rhythm of the words. The other two stages he identifies are closely associated and pitch is common to both. He has observed that children seem to be able to sing in unison less spontaneously than they are able to join in a unified rhythmic response. Thus unison singing seems to occur at a later stage and is related to pitch ability. Bentley’s findings are in accord with Stern’s research. “Stern thought that rhythm makes a special impression on young children because, unlike melody, it can be grasped and copied by all sensory and motor organs.”¹⁵ However Wing believed that “the first aspect to develop in the case of many children is melodic shape.”¹⁶ Based on his observations of children participating in spontaneous play and music and movement at school, Wing concluded that they do frequently sing in tune, but do not usually display a rhythmic response by walking or skipping in time with the music.

In light of these different research findings proffered by Bentley, Stern and Wing, it would seem that the teacher’s task in helping young children to develop their melodic and rhythmic ability, is to afford them frequent opportunities to hear singing and to sing themselves while also employing as much rhythmic activity as possible. More importantly, Roger Buckton writes:

“There have been recommendations that effective teaching in early childhood could eliminate the need for later remedial work.”¹⁷

Another factor to consider in singing ability is the physical development of the young child. Some children develop physically sooner than others. Inability to sing properly might stem from lack of physical development. Glenn and Turrentine write: “Music skills, such as learning to perform on a musical instrument, rhythmic action, and singing, are related to the general physical-motor development of the physique... The child’s physical and social environment apparently exerts considerable influence on the extensity of the motor skill development.”¹⁸ Glenn and Turrentine cite the research conducted by Theresa D. Jones on childhood motor development. She concluded that “minimum performance of motor skills is dependent upon an appropriate degree of neuromuscular maturation, however, the development of the skill into a graceful, coordinated performance is dependent upon continued practice.”¹⁹

The music educator thus has to be cognizant of the physical readiness of young children. Most children experience the same sequence of development. “Almost all of the research indicates that a common age at which various functions typically emerge is fairly predictable. The individual differences occur in the rate of development rather than in the sequence of development.”²⁰

Thus Glenn and Turrentine argue that it can be detrimental for the music educator to teach music skills to children before they are ready both physically and psychologically. Bad habits and negative attitudes may result, which will be difficult to eradicate as the child gets older.

2. Singing at the Intermediate level

As the human person matures, the voice range naturally extends upward and downward. The problem though is that many children no longer have the desire to sing once they reach puberty. Charlotte P. Mizener highlights this attitudinal change in a journal article: “the incidence of participation in choirs and choral music classes is relatively small at the secondary school level compared to participation in elementary school.”²¹ There seem to be various factors that promote a negative attitude to singing among older children. “Researchers have described how attitudes toward music are related to grade level, gender, classroom music activities, parental involvement, out-of-school experiences and self-concept and self-esteem.”²²

Tied in with ‘self-concept’ and ‘self-esteem’ is the physical development of older children which effects their vocal mechanisms. These changes effect boys and their singing voices far more drastically than girls. In girls’ voices there is a notable lessening of muscular power in the vocal organs, that often results in a breathy sound with little tonal quality. When boys’ voice change, they often find it difficult to maintain one kind of register when either speaking or singing as the vocal chords will be growing more quickly than the muscles controlling them.

Controversy still exists among music educators regarding the wisdom of allowing adolescents to sing through this time of physical change. Richard DeYoung writes: “Proponents of either side of this controversial question can present examples in support of their opposite views. The weight of the majority, however, seems to lean to the side of the educators who have demonstrated over and over that both boys and girls can sing safely through adolescence.”²³ Brocklehurst comments: “It is recognised that singing for boys with changing voices, provided that it is not too vigorous, can help to ease the transition from the boy’s voice to the adult voice.”²⁴ The critical issue is competent guidance of these young voices. Boys should be encouraged to sing at their most comfortable pitch, which might vary considerably from day to day. Higher

notes in girls' voices are particularly affected by the changes in their vocal mechanisms. Thus girls should avoid singing in their upper regions of the voice to obviate the possibility of vocal strain.

Above all, students should think of singing as an enjoyable and fun activity as it is such a personal means of self-expression. A positive response to singing should engender a greater desire to want to participate in singing activities, which in turn will help to develop students' musicality and minimise any difficulties students might experience in singing.

The means of evaluation

The first attempts at evaluating human abilities were developed towards the end of the nineteenth century. In early psychological experiments it soon became apparent that rigorous control of conditions was of paramount importance. It was concluded that results attained by the subject could be significantly influenced by various factors, such as wording of instructions. "It thus became obvious that experiments with all subjects should be conducted under standardized conditions."²⁵

In evaluating musicality, assessing a child's potential or assessing a child's level of achievement can assist the teacher as well as the parents to guide that child in an appropriate way. For example a child may be advised to join the school choir, on the basis of a reasonable ability to sing. However, a child who cannot pitch correctly may be experiencing difficulty with vocal control, it might be a retentive problem, or simply that the child is not interested in singing. "Valid objective measures of pitch discrimination and tonal memory can supply information which will help in finding solutions to these and similar problems."²⁶ Carl E. Seashore wrote: "Educational guidance in music should be based upon measurement – the measurements of specific musical talents."²⁷

Arnold Bentley maintains that teachers can make valuable subjective assessments of their students, but these assessments are "inevitably restricted to a teacher's experience with a comparatively limited number of pupils."²⁸ In order to make an objective assessment of students' musical ability, it is necessary to devise tests that might be useful to other music educators. The most suitable tests will depend on the musical level of the subjects, their cultural backgrounds and their age.

In administering any kinds of musical tests there are practical factors that should be considered. The following is a partial list of William Whybrew's recommendations:²⁹

- The medium of employing the sounds involved. Equipment used for testing should be of satisfactory quality and in a good operating condition.
- The attitude of the tester to his or her subjects. The tester should be able to relate well to the subjects and be able to put them at their ease.
- The type of physical facilities being used. Is the room likely to be located near any distracting noises?
- The physical and mental condition of the subjects. If any subjects appear to be suffering from some kind of temporary affliction such as a cold, or emotional disturbance, this should be noted as it might affect the reliability of the results.

- The suitability of the test for the subjects on which it is being used. There may be too many difficult items that students don't understand or those that require guesswork on the part of the subjects.

Some teachers believe musical aptitude tests should not be used as the sole criterion for selecting candidates for a course of musical study, as often the results attained on the test are given too great weight. Therefore, many teachers dismiss the tests as a waste of time. Whybrew points out that there are also those teachers who believe that all students who have the inclination for musical study should be given an equal opportunity without going through a selection process.

However aptitude tests can be a means of making purposeful decisions regarding an individual's needs and abilities. Edwin Gordon's *Musical Aptitude Profile* lists several reasons for the development of his test battery. This list identifies a wide spectrum of possible outcomes that are useful for an objective aid in evaluating musical aptitude, and they are included here in abridged form:³⁰

- To encourage musically talented students to participate in music performance organisations, such as school choirs.
- To adapt music instruction to meet the individual needs and abilities of students. All students possess at least some musical talent which may be developed. Few students score equally high or low on all of the seven basic musical aptitude factors represented in the *Musical Aptitude Profile*, therefore students should receive instruction emphasising different methods and techniques to compensate for their specific deficiencies or to enhance their special musical aptitudes.
- To formulate educational plans in music. A student may be guided to choose music as an avocation as a result of his/her standing on the *Musical Aptitude Profile* and past achievement in music.
- To evaluate the musical aptitude of groups of students. The musical potential of different performance groups in a school may be evaluated by music directors and school supervisors. Based on this information, decisions can be made for adequately providing for these different performance groups.
- To provide parents with objective information. A teacher's judgement concerning a child's musical potential may be more acceptable to a parent if substantiated by objective scores on the *Musical Aptitude Profile*.

Gordon writes that aptitude tests are to a certain extent a measure of achievement.¹⁷ "An aptitude test may be distinguished from an achievement test only to the extent that the generalised function of aptitude is relatively maximised and specifically taught course-content material is relatively minimised."³¹ However, if assessments are conducted solely on the basis of achievement, the results obtained would be useful in evaluating the students' level of attainment. For example, a junior school seeking recruits for a choir that frequently enter competitions and participate in festivals, or a Cathedral Choir who regularly perform masses and other sacred music in religious services. Such a choir would of necessity be made up of children who possess a degree of musicality, that is certain qualities necessary for good singing such as an ability to sing in tune, and a good sense of rhythm. An achievement test administered to children interested in joining these choirs, would enable the music director to make suitable choices. Any

child who did not measure up to the required standard set by the music director would not be admitted.

Achievement tests are also used widely by tertiary institutions which often have a limited quota for performance students. Candidates are required to audition in order for the authorities to make appropriate choices. Shuter-Dyson points out: "A danger inherent in any achievement test is that the teacher may come to assume that an average score indicates not only what the pupil *has* achieved but what he *should* score."³²

1. Group-testing of Musical Ability

Group-tests have certain advantages over individual tests:

- Many more students can be tested in a limited time.
- Conclusions may be drawn based upon a much larger sample of the population, consequently population trends can be inferred.
- The instructions, examples and the actual test material are the same for all subjects on whatever occasion they are administered.
- The answers are objective, and not dependent upon a marker's subjective assessment as was the case with the NEMP tests.

However there are disadvantages to group-testing:

- The most obvious is that the subjects have to respond to the test in written form. Audible responses are not permitted as they would interfere with the test proceedings and could influence the responses of others in the room.
- Some students may not understand the instructions, either because they are unclear or there is a language problem. This would pertain particularly in a multicultural society such as New Zealand. English is not the first language for many people in this country. Therefore, if tests are conducted in English it is important that the subjects clearly understand all the instructions before proceeding.
- Shuter-Dyson points out another disadvantage: "They usually have a large number of multiple choice answers into which chance factors may enter."³³
- Students who are not old enough or mature enough may not cope well for several reasons: They may not be able to write sufficiently well to give appropriate responses on the answer sheets; they may not be able to concentrate for the duration of the test; they must be able to work in silence. Bentley is of the opinion that most children are able to cope with these conditions by the age of seven years, but generally group tests cannot be measured successfully prior to this age.³⁴

2. Individual tests

In Shuter-Dyson's view individual tests are usually more reliable since the instructor can clarify any instructions which might appear confusing or vague to the child. Individual tests are also the only way to evaluate performance progress of singers. The disadvantage of individual tests is that they are more time consuming and they may only represent a small sample of a population. Perhaps the chief disadvantage though is that the child may feel vulnerable as the sole candidate

in a test situation. Consequently the child may not respond well, and the results will be affected accordingly.

For the purposes of the NEMP singing tasks, it seemed that individual evaluations were the most appropriate. However, Roger Buckton describes a singing test he devised in which the whole class participated, but with the use of individual microphones distributed in groups of ten, it was possible to record individual's voices. The teacher who normally taught singing, was asked to choose some songs 'which the children sing the best.' "Thus, while the whole class was singing, recordings were made of each child's contribution, and, by using each channel of a stereo recorder, five verses of a song were sufficient to obtain recordings for the first 10 children. This procedure was repeated with a change of song, until recordings were obtained for each of the children in the class."³⁵ The results were later analysed by the writer according to seven categories he devised ranging from 1 "invalid – no sound, indicating that the child was not singing, or a possible defect in recording" to 7 "sung consistently with a high level of vocal accuracy."³⁶

3. The role of pitch and melodic memory in musical ability tests

There are two specific musical components which should be discussed that have a direct bearing on singing ability, viz. pitch and melodic memory. John Booth Davies writes that a sense of pitch is generally agreed to be a central component in musical ability. When he conducted a questionnaire survey of musicians on the staff of four leading music colleges, Davies found that a good pitch sense was rated the most important attribute. Consequently there is a widespread use of some type of pitch test in most test batteries.³⁷ It is usual in test batteries for pitch abilities to be tested in similar ways, mostly by asking subjects to make judgements about the pitch of two tones that are heard consecutively. The tones are either the same or different or the second tone is higher or lower than the first. Those tones that have large pitch differences make discrimination easier, but some tones are presented with very small pitch differences of less than a semitone, such as the tests of Seashore and Bentley, and these are far more difficult to detect. "Teplov has pointed out that change of pitch is also accompanied by a subjective change in timbre and in loudness, so that there are several cues to pitch change other than simple pitch *per se*. He also presents evidence to the effect that the ability to detect simple pitch change is so elementary that it does not correlate highly with other 'musically meaningful' tasks."³⁸

Davies points out that the other most frequently used item for testing musical ability is that of tonal or melodic memory. Usually the subject is asked to listen to two versions of a short melody and to judge whether they are the same or different. Davies distinguishes between these types of tests: (a) There are differences in the pitch of notes between the two versions, and (b) there may be differences such as rhythm, key, phrasing or loudness. In the (a) type of tests, Davies cites Teplov who has distinguished between two components in an 'ear for melody:' the ability to recognise and reproduce the intervals between tones correctly, and the melodic contour of a tune, or the direction of the pitch changes. Teplov maintains that the ability to remember the melodic contour often occurs "before there is accurate recognition or recall of the precise intervallic distances involved."³⁹ In the tests devised by Bentley and Wing, there are only pitch alterations between tones and no changes in melodic contour.

Davies suggests types of tests that could thus be utilised for pitch discrimination. The following list is an abridged version:

1. The version to be recognised is identical in every melodic respect to the standard.
2. The version to be recognised is transposed into a different key, but is still the same tune.
3. The version to be recognised merely has the same pattern of 'ups' and 'downs' as the standard i.e. the melodic contour is preserved, but not absolute or relative pitch differences.
4. The version to be recognised differs in every important melodic respect from the standard.

Numbers 1 and 4 should be obvious to all subjects, while numbers 2 and 3 may not be that easy to identify. Davies concludes that a different approach might be adopted towards melodic memory tests "which does not place all the emphasis upon a change of a single note, and which might more precisely indicate those aspects of a tune which a subject is able or unable to deal with, namely, relative pitch differences, absolute pitch differences, and melodic contour."⁴⁰

In memory tests that involve the differences between two versions of a tune with regard to elements other than pitch change (b) Davies cites tests devised by Drake and Kwalwasser. Both test authors use items which differ in several dimensions, so that they are in effect measuring several abilities and not just one. Test scores on tests such as these "must be regarded as a compound measure within which several different abilities are intermingled. In other words, the 'ability to spot a change, and to describe it' is dependent upon the nature of the change."⁴¹

4. Other types of testing

Tests are sometimes devised specifically for research purposes. Two examples that pertain particularly to singing skills are tests constructed by Eunice Boardman and those conducted by Graham Welch, Desmond C. Sergeant and Peta J. White. These tests focus on young children's ability to sing in tune. Boardman was concerned with vocal accuracy and the effect of training on preschool children. The tests were administered individually to subjects ranging in age between kindergarten and second-grade who were divided into two groups: (a) those receiving special training in vocal accuracy (b) those receiving no specialised training. Boardman's test consisted of twenty melodic fragments sung three times by a woman on a recording. The child then had to sing her rendition which was recorded and later scored on a seven point scale for vocal accuracy. Boardman's results led her to conclude that preschool training may increase the normal development of vocal accuracy, but will not noticeably affect it in any other way.⁴²

The test devised by Welch, Sergeant and White was concerned with assessing a variety of pitch matching tasks in a longitudinal study of a sample of children aged five, six and seven. This study took place during each year of their first three years in school. The tests consisted of pitch glides, pitch patterns and single pitches as well as two sample songs, which were assessed for vocal pitch accuracy by a team of judges. "The results suggest that (a) vocal pitch accuracy is task specific, (b) there is a greater homogeneity in vocal pitch matching abilities between girls and boys than previously reported and (c) it is only at the age of 7 years that the previously reported sex difference in favour of girls emerges, and this is only in relation to the sample song material."⁴³

Another type of test that is currently in vogue is the criterion referenced test which is designed to measure a student's acquisition of skills in particular areas. Thus distinct criteria are laid down. Examples of these types of test are the ACER and University of Melbourne Kit and the NEMP music task assessments. The ACER and University of Melbourne Kit was designed to measure

skills in seven areas: pitch discrimination, discrimination in the length of sounds, volume discrimination, tone colour discrimination, patterns recognition, identification of instruments and instrumental groups, and knowledge of musical signs and symbols. In the pitch discrimination test some of the conventional pitch test questions are utilised. For example those which ask subjects to distinguish between sounds that are higher or lower or stay the same. However the test also employs the use of diagrams on some of the pitch questions. Based on the sounds they hear, subjects have to indicate which diagram correctly depicts pitch movement. The visual symbols offer another dimension to the pure auditory skill required to distinguish sounds. It is arguable though whether this enhances a subject's ability to make a correct judgement since the test is no longer one-dimensional. Someone who has an inability to conceive shapes may score very badly on this test.

The NEMP assessments involved twenty-five music tasks using three different approaches: one-to-one interview settings, where students used materials and visual information; team tasks in which groups of children worked together; and stations tasks where students worked independently on tasks that involved listening to recorded music. Student responses on station tasks were indicated with paper and pencil. The music tasks have a central theme of 'making and understanding music' through three basic aspects of music: creating, recreating and appreciating music. Within the framework of recreating music are the two singing tasks that are the focus of this thesis. Both require the abilities of pitch and melodic memory referred to earlier. The results of these tests will be discussed in detail in the following chapter.

Conclusion

Good guidance is an essential aspect of music education. In order to facilitate a child's musical potential or to monitor progress, evaluations play a vital role. In fact the need to evaluate is very much in evidence in many different areas of music. Frequently musicians involved with competitions or auditions have to make judgements which involve evaluating and measuring. Music teachers can also find evaluations helpful in gauging their own effectiveness in the kind of teaching methods and materials used; on an aesthetic level, we all evaluate music as a listening experience either consciously or unconsciously. Based on our internal assessment of music that we hear, we may respond positively in different ways. We might go to a music store to purchase a CD of that music; we may try and imitate the music through singing or playing an instrument, or we may want to dance to the music. We might also respond negatively by wanting to turn off the sound of that music. All these responses are based on our own personal evaluations of how we feel about that music.

However, most evaluations in music are concerned with assessing a student's musical abilities. Tests attempt to provide information that is important for the musical development of the child. While standard musical aptitude tests offer some perspectives about a child's musical ability, it is questionable whether they provide adequate information. Graça Mota highlights this inadequacy in a journal article. She conducted research in the musical development of a group of 100 children from the beginning of schooling until the end of the third grade in three different schools in Portugal over a period of three years. Mota studied the relationship between the children's results on a standardised test of musical aptitude - Gordon's Primary Measures of Music Audiation -and their performances on three specific music tasks: singing a song, reproducing a short tune, and keeping meter in instrumental play. All children were

administered two types of tests (a) the Gordon tests and (b) a set of specially devised individual musical tasks. "The hypothesis was that musical aptitude tests serve only limited purposes and cannot reflect the variety of manifestations that children's musical behaviour can take."⁴⁴ Mota's results confirmed her hypothesis. "Although it is certain that they [standardised tests of musical aptitude] provide information about some specific musical skills it also seems obvious that other important parts of human musicality remain untapped by this kind of testing."⁴⁵

Objective assessments will always be difficult to administer in evaluating musical ability since Psychologists and Music Educators still wrestle with the problem of terminology. The word 'musical' is an elusive one to define. Perhaps the fairest kinds of tests are those that are used in conjunction with a Music teacher's individual assessment of a child's musical ability. As a final comment on the subject: "We must always guard against the pertinent taunt that the examiner may not be measuring the ability of the subject, but rather his own inability to give a fair test."⁴⁶

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