



**THE MISSING MALES:
FACTORS WHICH CONTRIBUTE TO LOW PARTICIPATION
OF ADOLESCENT BOYS SINGING IN
SECONDARY SCHOOL**

LEIGH T. VAUGHAN

Declaration of Originality

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, no part of it has been written by any other person, nor material which has been submitted or accepted for publication in any journal, book or other institute of higher learning, except where acknowledged.

**A thesis submitted to the Music Education Unit of
Sydney Conservatorium of Music, University of Sydney,
in partial fulfilment of the requirements for the degree of
Master of Music (Music Education)**

Signed

Leigh T. Vaughan

Date

11 December 1998

1998

Declaration of Originality

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by any other person, nor material which to a substantial extent has been submitted or accepted for the award of any degree or diploma of a university or other institute of higher learning, except where due acknowledgement is made.

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ABSTRACT

The objective of this study is to identify and analyse factors which contribute to the low participation rate of adolescent boys singing in secondary school choral activities.

Data for the study was collected from twenty schools in NSW across a broad spectrum of school types and geographic locations. The results of the survey confirmed the expectations of the researcher that there were only a small percentage (less than ten percent) of the total sample of four hundred and four boys who were involved in some type of choral activity, either within their school or their community.

It is acknowledged that there are many factors which could contribute to the low participation rate. This study focused on two: the effect of vocal mutation, or voice change status, and the effect of previous singing experience on participation in choral activities.

Conclusions are drawn from the results of this survey which could have significant outcomes in the improvement of choral pedagogy.

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“We cannot see everything,
we cannot hear everything, but
every step is a journey towards understanding”.

Simon Rattle

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CHAPTER ONE

Nature of the Study

Choral societies, vocal groups, musical and dramatic societies, and other organisations which focus on adult singing are constantly struggling to maintain a gender balance in their ensembles. The gender ratio is frequently heavily biased towards females, much to the anguish of directors who seek a truly balanced choral sound. Involved in school and community choirs over many years, the author has frequently been faced with the phenomenon of low male choral participation. Lengthy discussions with fellow educators in Australia suggest that this problem is a global one. Country and suburban newspapers in Australia frequently carry advertisements for male voices to join local choral societies. A typical example is an article promoting a recital by the Taree Choral Society heralding the need for “tenors and basses of any age or experience” (*Manning River Times*: 22nd April 1998). Choral groups in most western societies appear to have suffered for many years from the “missing male” syndrome.

The author’s experience and other anecdotal evidence from choral directors and music educators, suggests that the “average Australian male” considers that he cannot sing. This could, in part explain the “missing male” phenomenon, but there appears to be only a limited amount of empirical evidence to support this belief. The “missing male” phenomenon is not a small, localised, or recent development, for example, a series of advertisements

appeared for many months in the *British Musical Times* in 1938, seeking only males of all voice types for the Royal Choral Society. There appear to have been no vacancies for female voices, the implication being that male voices were in short supply. This supports the belief that the phenomenon of the “missing males” is not only a global problem in western countries, but that it is also a long lasting one spanning at least, a number of decades. In a study of adult memories of early choir experiences, Stollak and Stollak (1996) found the female to male ratio of adult choristers to be almost two to one, which was “probably similar in adult choirs generally” (p23). The author, having recently spent a year teaching in England, working with community and school choirs, found the estimate of two females to one male to be a conservative one. Male singers in mixed ensembles, in both schools and community groups were always in short supply. This view is supported by Halsey (1998) although he suggests that in Australia the problem is slightly worse. The exception which Halsey offers as a model, is Scandinavia, where “twenty percent of the total population sings in some form of choral group, and the ratio of men to women is approximately equal ... singing is one of the most popular leisure activities” (interview). However, the circumstances in Scandinavia would appear to be the exception. The phenomena of the “missing male” singers in choirs has prompted the author to reiterate the question so often posed by scientist-educator Julius Sumner Miller, “Why is it so?”

In attempting to answer to this question, one area of investigation could be the low number of adolescent boys involved in singing at school. An examination of the schooling of the “average Australian male” would be likely to find boys and girls singing with enthusiasm and gusto in their early primary classes (depending on the enthusiasm and skill of the teacher). However, as children

approach puberty, the males' willingness to sing decreases to such an extent that by the time they enter secondary school around the age of eleven or twelve, a teacher's invitation to join in class singing activities or "worse", to join a co-curricular vocal ensemble, is met with stern resistance and often derision. It is frustration with this resistance that has led the author to ask "Why is it so?", to the conundrum of the "missing males", and to identify and investigate two factors that contribute to low participation rates of adolescent boys in singing at school.

Significance of the study

There is longstanding evidence to suggest that an imbalance exists between the numbers of girls and boys involved in singing from the time they approach puberty. In England, Dawson (1918), acknowledged that "comparatively few boys sing, and the majority of those who do, sing badly" (p10). Stocks (1951) also indicated that there could be difficulties in persuading boys to join church choirs by advising the potential choral director to "first catch your boys" (p4). In America, Swanson (1959) referred to the lack of male voices in school choirs, and Cooksey (1977) wrote forcefully about the dwindling number of adolescent male singers in schools. Likewise in America, Castelli (1986) gathered data which indicated a decline of male enrolments in vocal programs as the young males progressed from elementary (primary) school into high school. When discussing the historical perspective of his research, Castelli reported that the male-female ratio of a choral program in one particular high school, over a period of forty years had never risen above one to four, and had been as low as one to eight (p18). He also suggested that the imbalance was not confined to this one school. Fellow American Mizener (1993), further declared that the incidence of choral participation in secondary schools is

“relatively small at the secondary school level compared to participation in elementary (primary) level” (p233). A recent study in Queensland, by Moore (1996) cites the large numbers of boys he encountered during his research who declared their non-involvement in any choral music with a great deal of pride, “as if they had managed to escape a dreadful fate” (p82). What is it that leads adolescent boys to form attitudes such as this one? One of the principal aims of the current investigation is to determine the factors which lead adolescent boys to form negative attitudes about choral singing.

The study of attitude development focuses on how children acquire “positive and negative orientation towards persons objects and ideas” (Keil 1990 p279). Morris (1965) suggests that the term “attitude” is used broadly to include “facts, opinions and values with regard to the self” (p5). These attitudes are formed, according to Abeles (1994), through “association, reinforcement and a desire for consistency” (p145). Negative attitudes, such as those found above by Moore, which are, according to Abeles (1994) “caught, not taught” (p245), have shaped the behaviour of those developing boys, but from whence have the attitudes come? While the principles of imitation and reinforcement account for the initial acquisition of attitudes (Keil 1990 p281), such variables as parental attitudes, socio-cultural background, and influences of mass media, education and peers, are indicated by Keil (1990) as affecting attitude development. Mizener (1993) has declared that students in upper elementary (primary) grades are the least positive in their attitudes to music, and she pinpoints grade level and gender as being factors which seem to be related to attitudes towards music and singing in particular (p233). There are also indications that previous musical experiences can influence the formation of attitudes towards music. Temmerman (1997), for example, attests that “research

shows that the musical nurturing a child receives during the early years of school can have a marked impact on later success and level of involvement in music, as well as their future adult attitudes to music" (p31). As a tutor of first year university students, Bridges (in Comte 1984) suggested that "many of the students' musical problems originated in their childhood" (p89). Bridges subscribes to a philosophy of developmental education "which is based on the premise that education occurs on a spiral continuum and consists of cumulative re-cycling of basic skills and concepts, ... the essential characteristic of such a curriculum is the continual re-cycling of basic concepts at first grasped only vaguely and intuitively, so that they are progressively strengthened and deepened" (pp97-99), and it is therefore necessary to begin these processes when the child is young. Likewise, Reimer (1989) refers to early childhood as "the most impressionable time of their lives" (p124).

While attitudes apparently play a significant role in determining whether boys participate in singing, physiology may also be a strong contributing factor. Phillips (1992) proposes a hypothesis for the low participation rate of boys in singing ensembles by relating it directly to boys' voice change status and a perception of their inability to sing. He further adds,

why is singing so threatening to students? Because singing is a very complex skill. A writing teacher would not tell students to take out a piece of paper and write with no previous instruction in writing. But in music we just expect students to open their mouths and sing! Those that can, do, those that cannot learn very quickly not to be heard. When one sings, one shares the inner self. That in itself can be intimidating, especially if one lacks confidence in the delivery system! (p18).

Phillips uses the analogy of writing skill, but indeed any skill could be substituted. For example no physical education teacher would permit students

to run onto a field and play a game of football without many preliminary lessons on the rules of the game and the need for warm up activities, nor would any science teacher allow students to walk into a laboratory and conduct an experiment, without first instructing the students in the use of the laboratory equipment and the ground rules for their use. A study of relevant literature reveals widespread acknowledgement of the problems associated with adolescent male voice mutation, but there is little to suggest reasons, apart from voice change status, for the actual lack of participation in singing activities. When approaching the topic of the changing voice in adolescent boys it is tempting to agree with Curwen (1899) who states that "some people are unnecessarily nervous about boys' voices" (p1). There is much literature available on this subject, which shall be addressed in Chapter Two, but it appears that there has been no specific investigation which would provide reasons for the small number of adolescent boys involved in singing at secondary school.

The underlying impetus of this investigation is perceived to be that the number of boys who are actively involved in choral singing in secondary schools in NSW is very small. However, no substantive research to support this contention has been located. Recently, there has been considerable amount of research into the issue of student choice of subjects for the New South Wales Higher School Certificate, and its equivalent in other states. For example, Ainley et al (1994) have observed that there are much higher numbers of girls than boys choosing music as a subject. However, no research has been located that specifies the numbers of boys involved in choral singing, and the reasons for their absence from choral activities has likewise not been investigated. Anecdotal evidence suggests that in schools and communities there do exist

pockets of male adolescents who attain high standards of fine quality singing but when considered overall, the percentage of singing males is very small. This problem raises many musical and pedagogical problems, not least of which is the right of every child to a balanced education that includes access to all creative and performing arts and singing in particular. In accordance with *Agenda '98*, which advocates "A fair go for all", (New South Wales Department of Education and Training, 1998), and the principle of Equal Opportunity, it is necessary to address the rights of all girls and boys to a rounded education covering all disciplines. "The scandal usually not discussed openly, is that in our schools' music/choral groups we have such a scarcity of male singers" (Swanson 1982 p5). These impassioned words were penned over sixteen years ago, in America. It could be claimed, with reference to information quoted above, that the situation in New South Wales today is little different. In New South Wales, Music Syllabi for both Primary and Secondary levels make it clear that for all students to achieve appropriate educational outcomes in music, singing is one of the prerequisites (NSW Department of Education 1984 pp11 and 13, Board of Studies 1994 p7 and p14). At the moment, it would appear that equal opportunity in the arena of singing is not occurring. New initiatives in 1998 in NSW, such as placing some focus of support in primary schools on the Creative and Performing Arts, and the introduction of the "Sing 2001" program which has the object of forming large choirs in each of the forty Educational Districts in NSW, are steps in a positive direction.

In the youth culture of contemporary popular and rock music, the emphasis is on male dominance with lead guitarists and vocalists taking a prominent position, often to the point of idolatry. Researchers such as Campbell (1995) who has investigated the learning processes of adolescents in the rock band

setting, focused entirely on males, which could indicate that rock music is largely a masculine domain. However, in most high schools, the attitude of adolescent boys towards classroom music, and especially singing, places it as particularly inferior to many other subjects (Lierse 1996). The number of boys involved in extra-curricular music-making, and singing in particular, is disproportionately low when compared with the number of girls (Moore 1996). Performing arts festivals and eisteddfods which occur across the state of NSW and which are attended by school children of all ages, show a predominance of female participants, particularly in the age groups from eleven to sixteen. The author's personal involvement over many years in this type of community music activity, confirms the lack of participation by adolescent males, and many of the author's colleagues have had similar encounters. Interviews with two eisteddfod adjudicators (Watson 1998, and Forsythe 1998) both of whom have widespread experience across New South Wales, have confirmed that the low participation rate of adolescent boys in choral activities is a common situation. Watson verified that in his experience as an adjudicator, "the ratio of girls to boys was at least three to one" (Watson interview 1998). At the time of writing there has been no empirical evidence discovered relating to the situation in New South Wales in regard to the low participation rate of boys in choral activities, which would indicate the need for research in this field.

It is reasonable to suggest that there may be a direct link between the low participation rate of adolescent males in choral activities and the low numbers of adult male choral singers. If the "average Australian male" believes that he cannot sing, when does this self-perception begin? Is this self-perception linked to the low participation of young males in school choirs? What other factors influence the male adolescents' formation of attitudes about singing?

When considering these questions, it becomes necessary to examine the variables which might be reflected in the results. Investigators such as Castelli (1986) have suggested that factors such as family influence, peer pressure and sex role endorsement are pivotal components in the formation of attitudes towards singing. Other factors which could have influence on the attitude formation of male adolescents towards singing could be home environment, ethnic background, teachers attitudes, voice change status and gender equity.

Another factor which could have considerable influence on the attitude formation of male adolescents towards singing, is previous singing experience. As preparatory work for the current study, an extended video interview with a former cathedral chorister, (who preferred to remain anonymous) who is now in his late twenties, revealed the traumatic impact his previous singing experiences had on his life. While his early choral experiences were very happy ones, the onset of his change of voice caused him to be "expelled" from the choir and subsequently to lose his cathedral school scholarship. This event caused him to have an extremely depressed view of himself as a worthless person because he could "no longer sing" (interview 1998). In addition, he developed a very negative attitude towards singing, and it is only now, many years later, that , with a sympathetic teacher, he is, once more experiencing the joy of singing. In the domain of the adolescent male changing voice, respected researchers such as Cooper (1953), McKenzie (1956), Swanson (1977), Brodnitz (1983), Herman (1988), Satallof (1989), Mizener (1993), Koza (1994), Phillips (1994), Hylton (1995) and Cooksey (1998) all acknowledge that the adolescent boy's lack of confidence in his vocal ability appears to be a general perception.

Purpose of the study

With the intent of improving choral pedagogy, this study seeks to establish the extent to which specific factors may influence the attitudes of adolescent boys, causing them to reject participation in choral singing and singing activities in learning situations. The factors outlined earlier in this chapter, such as parental attitudes, socio-cultural background, and influences of mass media, education and peers, as well as grade level and gender, are extremely important and relevant and could all be seen to affect the formation of attitudes towards singing in adolescent boys, however, this study will focus on two of these issues:-

- i To what extent does voice mutation affect adolescent boys' attitudes towards singing in secondary school?
- ii To what extent does previous singing experience affect adolescent boys' attitudes towards singing in secondary school?

Research that identifies reasons for low participation rates of adolescent males in singing activities will be of value to syllabus direction in Australia and provide insight into ways of redressing the gender bias. It may also contribute to a reduction in the number of "missing males". After all, as Cooper (1953) has maintained,

a boy who is led to believe that he cannot (or should not) sing will be a permanent music casualty; later he might quite logically become a parent with decidedly adverse views on music as a school subject (p6).

Specific terms which are used throughout this study are presented with definitions below in order that their intended meaning will be clear.

Definitions

Adolescence	period of transition from childhood to adulthood - the process of maturation from a physical, mental and emotional level
Break or breaking of the voice	an inaccurate term still used by some to refer to the change of voice - nothing breaks or is broken
Change of voice	a change in the speaking and singing voice of an adolescent boy, resulting from the thickening of the vocal folds with consequent lowering of pitch
Diaphragm	muscular partition between chest and abdomen which acts as breath controller and which separates the respiratory and digestive systems
Larynx	a cartilage box situated at the top of the wind pipe containing the vocal folds, and also referred to as the vocal mechanism
Palate	roof of the mouth
Pharynx	frontal surface of the wall of the throat which acts as a resonator
Puberty	the early stage of adolescence
Pubescence	the beginning of puberty
Register	a series of consecutive voice tones of equal or similar timbre whose origins can be traced to a special kind of mechanical muscular action, and which can be distinguished from an adjoining series of tones
Vocal folds	two pieces of malleable tissue, the infoldings of the mucous membrane lining the larynx attached to the inside of the larynx

Vocal mechanism	often referred to as the larynx, situated at the top of the windpipe, consisting of vocal folds, and false vocal folds surrounded by thyroid and arytenoid cartilages
Voice mutation	another term for change of the voice
Voice change status	the state of a boy's voice in its progression through the voice change

Literature pertinent to the study is reviewed in Chapter Two.

CHAPTER TWO

Review of Literature

This study seeks to identify factors that may influence the formation of attitudes in adolescent boys which result in their rejection of participation in choral singing and singing activities in learning situations. The intention of this investigation is to improve vocal pedagogy. Some of the possible factors which could affect boys' attitudes have been identified in Chapter One as: ethnic background, family influence, gender equity, peer pressure, previous singing experience, sex role endorsement, teachers attitudes, and voice change status. However, this study will focus on two particular issues which are likely to influence the formation of adolescent boys' attitudes towards singing. The first factor to be addressed is voice change status and the extent to which it affects adolescent boys' attitudes towards singing at secondary school. The second factor is the adolescent boys' previous singing experience and how it affects their attitudes towards singing at secondary school.

This chapter reviews literature that relates to the principal issues of the investigation and it commences with an examination of the nature of adolescence and its relationship to attitude formation, with particular reference to boys. Next, self esteem and motivation are viewed in the context of the adolescent boy, followed by some ideas on the the phenomenon of the changing voice, viewed from the perspectives of basic physiology, the process of voice mutation and indicators for recognising its onset. The importance of

vocal registers during voice mutation is also discussed, and the review closes with some discussion of research on the perceptions of previous singing experiences.

Adolescence

Goethe's expression, "sturm und drang" (storm and stress) has often been used to characterise that period of growth now referred to as adolescence. Indeed Head (1997) states that the "accepted definition of "the phase of life between childhood and adulthood" gives no hint of the concerns and controversy which surround it" (p1). Jensen (1985) refers to adolescence as an "authorised delay of adulthood" (p90) giving young people time to work through problems and try to achieve a complete identity. Within the debate in the literature as to whether the period of adolescence is indeed a period of storm and stress there is "general agreement that adolescents have a number of adjustment problems" (Frydenberg and Lewis 1996 p47). Erikson's (1950) model of personal development incorporating the concept of identity, presents the life cycle as a series of stages during which each stage is marked by psychosocial crises that require the resolution of opposite or bipolar traits. He names the fifth stage of adolescence as one of the most important of the eight stages in this life cycle. The stages are viewed as being hierarchical, and possessing an inner logic, and it is only after a satisfactory outcome at one stage that an individual can cope effectively with the next. Erikson elaborates on the period of adolescence as being "primarily concerned with what they appear to be in the eyes of others as compared with what they feel they are" (p235). He warns that the danger of this stage of adolescence can be role confusion. This statement is particularly relevant when viewing the position of the adolescent male in Australia, who is constantly faced with the dichotomy of being a "good bloke"; that is,

conforming to the accepted male stereotype while at the same time needing to express his confused emotional feelings (West 1998). While confirming Erikson's view, Gardner (1982) considers adolescence as a long period which centres on the problems of identity (p572). According to Sprinthall and Sprinthall (1990), "of all the stages of development, none is more radical than adolescence, and (it) obviously marks a major qualitative departure from the past" (p154). They clarify adolescent development by suggesting that it is determined by a combination of internal changes, (glands, physiological makeup) and outside changes (society's expectations and rites of passage). Elkind (1970) points out that the adolescent becomes excessively egocentric and self-conscious, and is thus vulnerable to peer pressure and the need to conform, and Head (1997) confirms that "young adolescents tend to be very conformist ... the coherence of the group is maintained by criticism or exclusion of those who do not conform" (p30).

Phillips (1992a) considers that adolescence is "a period of maturation that can be fraught with insecurity" (p75), and is a particularly difficult time for boys when the physiological and psychological changes encountered require new ways of dealing with life. This is particularly so because of the many changes which occur during adolescence, from the most obvious ones of physical growth including change of voice, through to the less obvious but equally important increase of mental capacity and developing emotional state. In addition, the adolescent boy's self-image is modified according to body changes and the varying expectations of the school and community (Phillips 1992b). Frydenberg and Lewis (1996) acknowledge that with regard to adolescents forming relationships, both school and gender are significant influencing variables. They also affirm that boys are less likely to express concern in the

area of relationship formation than are girls (p59). They report, however, that a greater degree of concern in all areas of their study is expressed by females, and suggest that this could indicate a greater willingness on the part of girls to express or display their feelings, while boys are unable to do so as readily. Frydenberg and Lewis (1996) highlight the need to consider context when dealing with adolescents, and point out that school, home, socio-economic status and gender all have significant influence (p62).

Head (1997) suggests that while the weight of contemporary psychological opinion indicates that adolescence is not the only time of extraordinary stress, it is apparent that adolescents have to cope with a number of tasks (p5). This agenda, he explains, involves the young adolescent in not only achieving a sense of personal identity, but also an increasing sense of autonomy by loosening ties with adult authority figures and further, by increasing the importance of the peer group influence. Coleman and Hendry (1990) point out that the biggest anxiety amongst boys in early adolescence is the potential of heterosexual activity, causing them to be increasingly conformist within their peer group, while Phillips (1994) highlights the perceived need by adolescent boys to build upon their "macho attitude of strength and stoicism" (p75). When discussing the concept of adolescent identity development, Head (1997) suggests that "children are largely defined by the significant adults in their life, but in adolescence they have to make a series of self-defining choices to allow them to function as autonomous adults" (p7). He further indicates that it is unlikely that children will possess either the self-knowledge or the knowledge of the wider world to be able to make realistic matches between their own selves and the society in which they live. He points out that unless this process of making self-defining choices is undertaken in the adolescent years then the

“transition to adulthood will be problematic” (p7).

Such problems often manifest in relationship problems, depression and, increasingly, suicide. For example, Head (1997) cites English statistics which show that from 1971 to 1992 the suicide rate for young males aged between fifteen and twenty four had more than doubled. West (1998) asserts that the suicide rate of adolescent males in Australia at this time is amongst the highest in the world. The statistics for suicide during the years 1960 and 1980 were viewed by Finlayson et al (1987), who discovered that during this period, the rate of suicide in females between the ages of fifteen and nineteen years had remained stable, but in males of the same age group, the suicide had increased from five per million in 1960 to nearly twelve per million in 1980 (p135). A decade ago, Eckersly (1988) stated that “suicide rates for males aged fifteen to twenty four have doubled over the last twenty years” (p1). These indicators should sound a warning about the problems faced by adolescent males. It is an open question whether adolescents now face a more difficult task in growing to adulthood than in the recent past. “What is beyond dispute is that they are having to enter into a society which is undergoing rapid change” (Head 1997 p5).

Faced as he is with all the accepted problems of adolescence, physiological and psychological changes, and the search for identity, the modern adolescent boy's problems are exacerbated by his very maleness. Of particular importance is his need to come to terms with “what is acceptably male” (West 1998), which in itself poses numerous questions for the growing boy. In Australia at the present time, this “acceptable maleness” appears, in general, to exclude involvement in singing or vocal ensembles. “The interesting question is whether this is a

difference (between male and female) that has been socialised (into them) or whether the school is in fact compounding the problem by passing on its own value orientations which reinforce earlier socialisation patterns" (Poole 1983 p271).

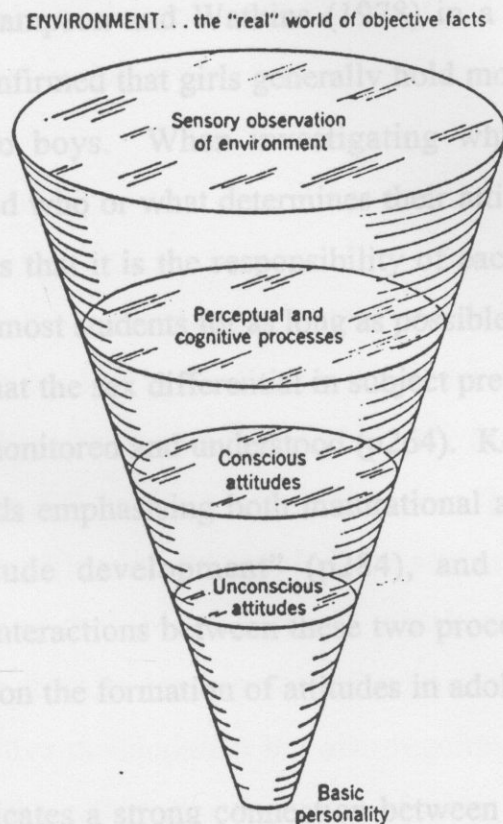
Attitudes

The construct of attitude is an abstract concept used to explain and classify the reasons underlying what people say or what they do. In this instance, the attitudes under investigation relate to why adolescent males decide not to sing at all. Keil (1990) defines attitudes as "positive or negative feelings that an individual holds about objects, persons or ideas" (p279) and advises that attitudes are generally regarded as "enduring, though modifiable by experience and/or persuasion, and as learned rather than innate" (p279). He also cites the "necessity of describing the complex interactions which occur between experiential and maturation factors ...which strongly influence the development of attitude" (p281).

This "learned network of complex interactions between facts as believed, feelings and values" (Cutietta 1992 p296) will be explored in an attempt to discover both the subjects' attitudes towards singing and the reasons for these attitudes. Abeles (1994) reports that "attitudes are caught not taught" (p145). Cutietta (1992) suggests that "anything that can be conceptualised or experienced ... is an appropriate focus of attitude"(p295). Abeles (1994) reports that attitudes are formed through "association, reinforcement and the desire for consistency" (p145). Kahn and Cannell (1957) offer a schematic diagram (shown in Figure 2.1) of what they call the "cone of consciousness" which depicts graduated levels or strata of the individual's psychological life.

At the top level are sensory observations, or that information about the environment which reaches the individual through sensory stimulation. These stimuli are organised and take on meaning through the processes of perception, thinking and learning, which are represented at the second level. Attitudes are represented at the next levels. It can be noted that there are two levels of attitudes: conscious and unconscious. Kahn and Cannell make it clear that the levels they have specified are not actually discrete stages but merge into one another with no sharp line in between. Furthermore, they state that the various strata are continually interacting, and that each is modifying and changing the other. They place particular emphasis on the point that perceptions near the top of the cone are dramatically affected by unconscious attitudes which are represented near the bottom of the cone.

Figure 2.1 The Cone of Consciousness (Kahn, 1957 p153)



This diagram provides a thought-provoking pattern to those instrumental on the adolescent's pathway to attitude formation.

Rosenberg (1965) defines attitude as "broadly to include facts, opinions, and values with regard to the self as well as favourable or unfavourable orientation towards the self" (p5). The principles of imitation and reinforcement are cited by Keil (1990) as accounting for the initial acquisition of attitudes (p281) and he confirms that a number of variables such as "parental attitudes, the child's

socio-cultural background and the influence of mass media, education and peers" (p282) are influential in forming attitude development. Campbell (1992) discloses that "schools are second only to families in shaping children's attitudes" (p112). Sampson and Watkins (1978) in a large survey of NSW secondary schools confirmed that girls generally hold more favourable attitudes to schooling than do boys. When investigating why students prefer one subject to another, and who or what determines their attitudes to these subjects, Poole (1983) suggests that it is the responsibility of each school to engage the interest and liking of most students for as long as possible regardless of sex. She further admonishes that the sex differential in subject preferences and in dislikes needs to be closely monitored and understood (p264). Keil (1990) describes the "current trend towards emphasising both maturational and experiential factors as they affect attitude development" (p284), and further refers to the complexities of the interactions between these two processes which impinge in such a complex way on the formation of attitudes in adolescents.

Vaughan (1973) indicates a strong connection between attitude and creativity, and asserts that "creativity is largely an outgrowth of attitude, rather than an activity, a set of predispositions rather than a production line" (p73-74). Sink (1984) indicates that music preferences and attitudes form the basis for a person's ability to evaluate music experiences and make decisions (p610). She agrees with Vaughan that certain teaching strategies maintain positive attitudes toward music but confirms, with Cutietta (1984), that positive attitudes towards music decrease between elementary (primary) and junior high school (p610). Evans (1965) is of the opinion that, "just as we can arrange for our children to acquire particular information and to learn particular skills, so we can arrange for them to acquire particular attitudes and interests" (p141).

Formation of attitude is an extremely complex subject which has been approached by scholars of many different persuasions and “it would be difficult to over stress the influence of attitudes and interests in the lives of individual people” (Evans 1965 p1). According to Phillips (1992a), the “relationship of attitude to singing is an important area in which little research has been conducted” (p573).

Self-esteem

Attitudes formed during adolescence are invariably linked to the child's image of the self, and the personal level of self-esteem. Evans (1965) contends that a child's attitude to other people and things is “likely to depend on his feelings about himself (sic)” (p64), while Mead (1934) sees the self as a structure of attitudes. Rosenberg affirms that “people have attitudes towards objects and that the self is one of the objects towards which one has attitudes” (p5). Gardner (1982) states that the development of a sense of self lies at the core of an individual's affective development but also requires a degree of cognitive sophistication. He further asserts that this sense of self is

pivotally located at the intersection of cognitive capacities and affective themes, tying together the aspirations of the individual with the constraints and values of the culture, the developed sense of identity or self serves as a principal signpost for the remainder of one's life (p578).

The formula originated by James (1890) as a definition of self esteem, which is quoted by many researchers (for example, Coopersmith 1967, Rosenberg 1965, and Kalandyk 1996) is seen thus:-

$$\text{self-esteem} = \frac{\text{success}}{\text{pretensions}}$$

and can be seen as showing that one's feelings of self-worth are dependent on the ratio of one's actual accomplishments to one's supposed or desired potentialities. Kalandyk(1996) considers that the "achievement of positive self-esteem in an individual's life has been regarded as crucial by a large number of personality theorists" (p13).

Cooley's (1912) discussion of the "looking-glass self" proposes the involvement of three principal elements: the imagination of one's appearance to others; the imagined judgment of that appearance; and "some sort of self-feeling, such as pride or self-mortification" (p152). Rosenberg (1965) confirms that "Cooley and others agree that the individual's self-opinion is largely determined by what others think of him (sic)" (p25).

Kalandyk (1996) offers the self-concept as a hypothetical construct, not directly observable which can be defined as "totality of attitudes, judgment and values relating to the individual's behaviour, abilities and qualities" (p6).

Most scholars agree with the necessity for the adolescent to develop a comfortable degree of self-esteem. Rosenberg (1965) suggests that "high self-esteem expresses the feeling that one is 'good enough'" (p31). That is not to say that the individual considers a self superior to others, but rather feels "a person of worth" (Rosenberg 1965 p31). The growing adolescent also needs to acquire respect for the self, to become aware of personal virtues and deficiencies and to be "accepting without regret" (p31). Rosenberg (1965) points out that "anxiety tends to generate low self-esteem" (p151). Gardner (1982) discloses that adolescent boys' general satisfaction with their personal situation correlates with their achievement and self-esteem (p568).

There is a need to differentiate between the “self-concept”, defined by Santrock (1983) as “how adolescents view themselves” in terms of intellectual beliefs, (p377) and ‘self-esteem’, which is the “emotional evaluation that adolescents make about themselves generally” in the form of approval or disapproval and feelings about the self (Coopersmith 1967 p96). Kalandyk (1996) considers that “many researchers insist on a clear distinction, (between self-concept and self-esteem) where self-esteem is viewed as the evaluative part of the self-concept” (p7). External factors which affect self-esteem are suggested by Rosenberg (1965) as: socio-economic status, “neighbourhood dissonance” family break up, sibling structure, and parental interest (p149). Rosenberg (1965) suggests that interpersonal success in high school is “both a cause and a consequence of self-esteem” and he considers it could have a “reinforcing and spiralling effect” (p191). In a study of high school students involvement in extra-curricular activities, Rosenberg (1965) discovered that the lower a student’s self esteem, the less likely was he or she to be highly involved in extra-curricular activities (p193). However, he noted that one of the very few exceptions to this principle was the Glee Club or Choir where students with low self-esteem were able to be “buried or integrated in the collective self” (p195). Moustakas (1967) considers that it is “only from the search into oneself” that the creative can emerge (p27).

Scholars agree on the importance of the need for the growing child to develop a comfortable and healthy degree of self-esteem. The period of adolescence is particularly critical in this regard and the development of self-esteem can be seen as a compromise between adolescents’ level of success, balanced against their personal expectations. For adolescent boys, their expectations of success are highly coloured by societal expectations to conform to the “acceptable

male" image, which can cause confusion and doubt. The boy's level of self-esteem can also have a substantial impact on the degree to which he becomes motivated to learn and also become involved in such activities as singing.

Motivation

Acknowledging Rosenberg's (1965) statement that motivation "is an important determinant of most, if not all, attitudes" (p8), it is pertinent to pursue some points of interest in the field of motivation.

Day (1990) defines the study of motivation as the "examination of factors in a person-environment interaction that allow an understanding of why certain behaviours are performed over others" (p245). He then elaborates that his study is an attempt to explain why certain behaviours occur. He further declares that there has been a proliferation of motivational theories in the last few decades "of which no one theory has ever been universally accepted" (p245) "to the point where any attempt at an overview must perforce omit many of them" (p249).

Mussen, Conger, Kagan and Huston (1984) declare that children's achievement at school, and achievement in adult life depends not only on their abilities but also on their motivation, attitudes and emotional reactions to school and other achievement situations. One of the earliest constructs proposed by psychologists to describe this aspect of achievement was "achievement motivation" (p281). This, they explain, is a desire to do well in a particular domain (eg football, or music) and a tendency to evaluate performance spontaneously (Mussen et al 1984, p281). Feld, Ruhland and Gold (1979) define motivation as "a tendency to evaluate one's performance against

standards of excellence, to strive for successful performance and to experience pleasure contingent on successful performance" (p45).

Day (1990) states that motivation is "an attempt to explain why certain behaviours are performed above others" (p245). He suggests that for an understanding to apply the application of motivational principles, it is necessary to attempt to understand some of the many theories that abound on this subject, particularly in educational situations, but warns that "no current theory of motivation is able to explain, and ... predict the behaviour of an individual consistently" (p245). Many theorists agree that the scope of the theorising in the field of motivation "can be as broad as the differences amongst theoreticians in psychology" (Day 1990 p245). The commonality amongst these theorists is that "individuals begin life with a plastic armoratorium and that this can be shaped by events both intrinsic and extrinsic" (Day 1990 p245). Day (1990) suggests that two forces - the drive for stability, and the need to expose oneself to instability - provide the interaction which have given rise to an "infinite array of theories", and further adds that "none of these theories has ever been universally accepted" (Day 1990 p245).

According to Thomas (1992) "Research on motivation in music education is clearly in a preliminary stage of development" (p434). If we are to discover why it is that adolescent boys generally refuse to sing class, or become involved in vocal ensembles, it becomes necessary to discover what motivates the students, or as Thomas (1992) poses the question, "what do we understand about how students take up an instrument or somehow come to take singing seriously?" (p425). The question of what determines a child's level of motivation in a particular task area seems to be a particularly vexing one.

Psychologists investigating this question, according to Mussen et al (1984), have focused on four components. The first, it is claimed, is the value that the child places in that area, in other words, the degree of incentive or attainment that the child can see in the area. In this investigation, the question is what value does the boy place upon singing in his life. The second component is the child's expectancies of success, which in this investigation is, what level of achievement does the boy expect as a successful outcome of his involvement in singing. As Mussen et al (1984) disclose, "children who expect to succeed and who believe that they have the ability to perform a task, do in fact perform well" (p283). The third factor they propose is the child's attributions about the reasons for success or failure, which in this investigation is what reasons does the child give for either their lack of involvement in a singing group or for their participation in one. The final factor is the child's standards of performance, which in this investigation is the boy's own evaluation scale of his performance in singing (p282).

Scholars such as Thomas (1992), Day (1990), Ames (1986) and Abeles (1984) all agree on the terminology of intrinsic and extrinsic motivation. Intrinsic motivation has been investigated by those researchers who subscribe to the cognitive school while behavioural learning theorists have been mostly interested in extrinsic motivation. Abeles (1984) refers to the cognitive school as exploring intrinsic motivation, and "seeking to develop theories to explain complex mental processes" (p192). He suggests that the behavioural learning theorists are more involved with extrinsic motivation and have "focused on developing practical explanations for simple learning problems" (p182).

It could be inferred from Gardner's (1983) theory of multiple intelligences that learning processes, and particularly the development of motivation, would be common to all disciplines. Thomas (1992), however, suggests that the nature of music learning and "music's unique position in students' lives point to important additional challenges" (p425), and further indicates "that music is a live performance art which sets it apart from most other kinds of school learning" p428). From the above references it would appear that the only thing upon which motivational theorists seem to agree is that no one agrees.

The adolescent boy's motivation to become involved in a singing group can be highly coloured by his perceived lack of control of his own voice. As previously noted, adolescence is an extremely traumatic time and the changing voice is a particularly significant milestone as the boy begins to approach manhood. Before beginning a discussion on the change of voice it is necessary to understand the vocal mechanism.

The Physiology of the Vocal Mechanism

Writing around the turn of this century, Heller asserts that "it is impossible to teach singing properly without a sound knowledge of the vocal mechanism and the manner in which it should be exercised" (nd p49). Indeed, Heller proposed a proficiency certificate and demanded that it should be a criminal matter to teach singing unless one had received such certification (ibid p49). Behnke and Browne reflect that "it was reserved for Manuel Garcia, the famous professor of singing, to show the world the value of the little laryngeal mirror, to settle beyond the shadow of a doubt, the true theory of voice production (1884 p147).

The With Garcia's invention of the laryngeal mirror, considerable progress was made of in understanding the mechanism of the voice. Figure 2.2 shows the process of pho laryngeal examination as it was further advanced by Tobold to use artificial light she instead of relying on the sun, to observe "the vocal ligaments, easily 1884 recognisable by their pearly white colour" (Behnke and Browne 1884 p150)

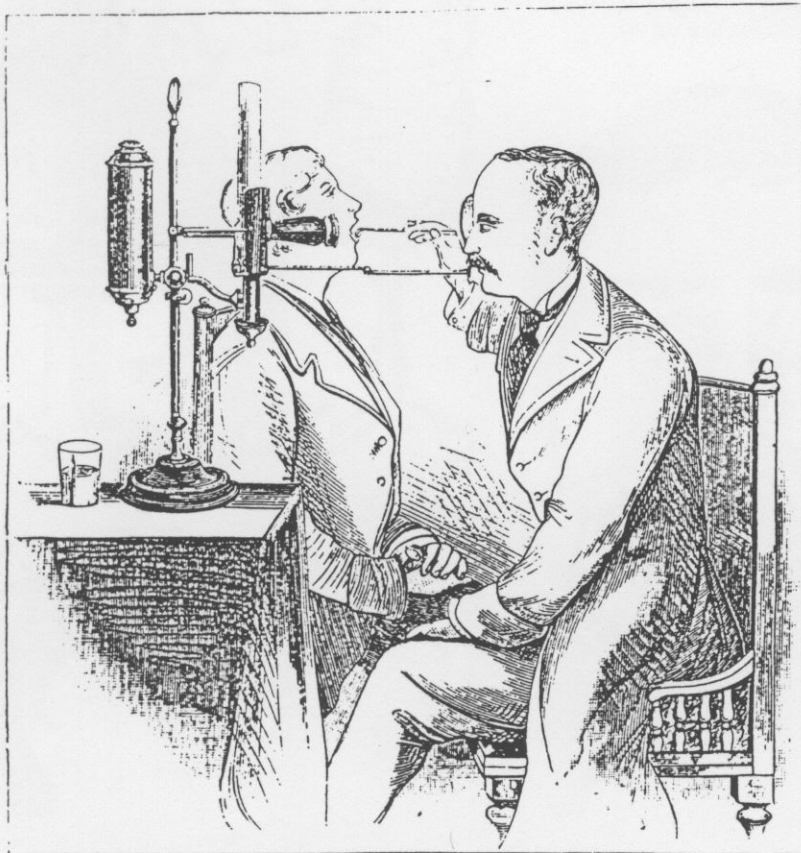
in *Anatomy* (Gardner et al 1969) which, almost one hundred years later,

des **Fig. 2.2 Demonstration of use of laryngoscope** of what can be observed.

Apr (Behnke and Browne 1884 p150) minology, the facts presented are almost

identical with that promoted by Behnke and Browne in 1884. Figure 2.3

demonstrates the current method of laryngoscopy.



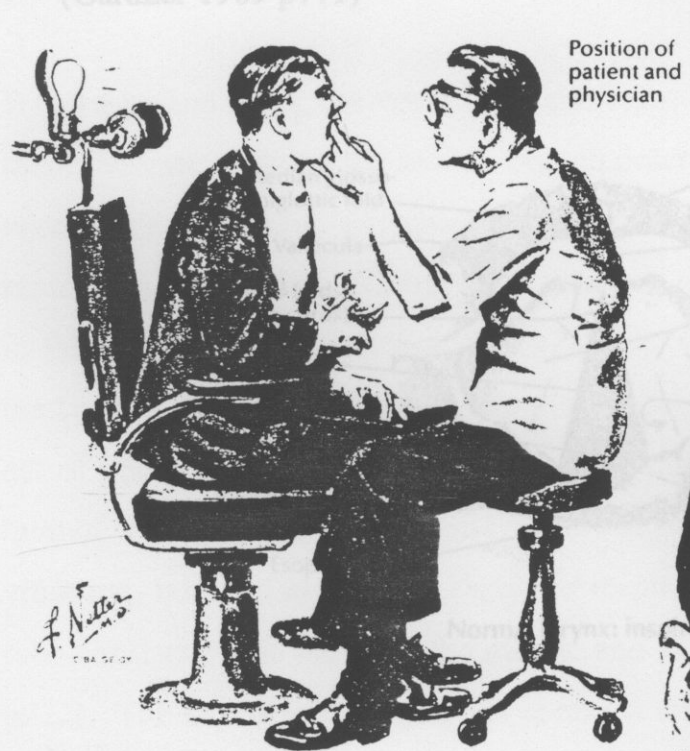
DR. TOBOLD'S LARYNGOSCOPE.

The right hand of the observer is represented as introducing the mirror into the mouth for the purpose of examining the larynx.

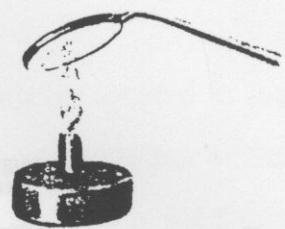
The diagrams included by Behnke and Browne show thorough understanding of the vocal mechanism. The frontispiece of their text includes a remarkable photograph, showing the laryngeal mirror in use on a male adult larynx, which shows advanced photographic techniques for the time. (Behnke and Browne 1884 frontispiece). An interesting comparison with this information is provided in *Anatomy* (Gardner et al 1969) which, almost one hundred years later, describes “direct laryngoscopy” and offers a diagram of what can be observed. Apart from some changes in the terminology, the facts presented are almost identical with that promoted by Behnke and Browne in 1884. Figure 2.3 demonstrates the current method of laryngoscopy.

Figure 2.3 Current method of laryngoscopy

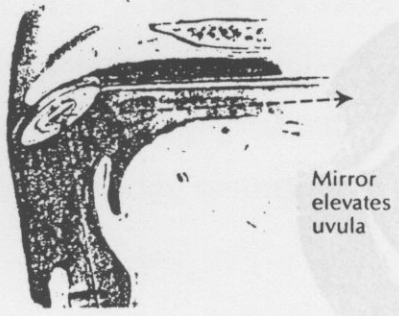
(Gardner et al 1969 p771)



Position of patient and physician



Mirror warmed over alcohol flame to prevent fogging, then tested on back of physician's hand



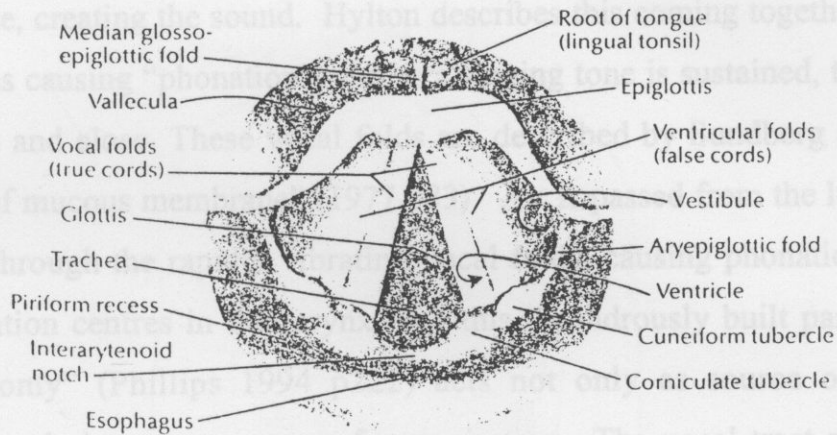
Technique

Mirror elevates uvula

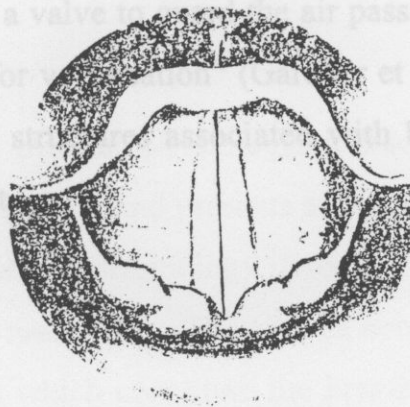
Normal larynx: phonation

Figure 2.4 shows the larynx with vocal folds and associated cartilages, as seen from above by laryngoscopy, during both inspiration and phonation (Gardner 1969 p773).

Figure 2.4 Larynx as observed through laryngoscope
(Gardner 1969 p771)



Normal larynx: inspiration

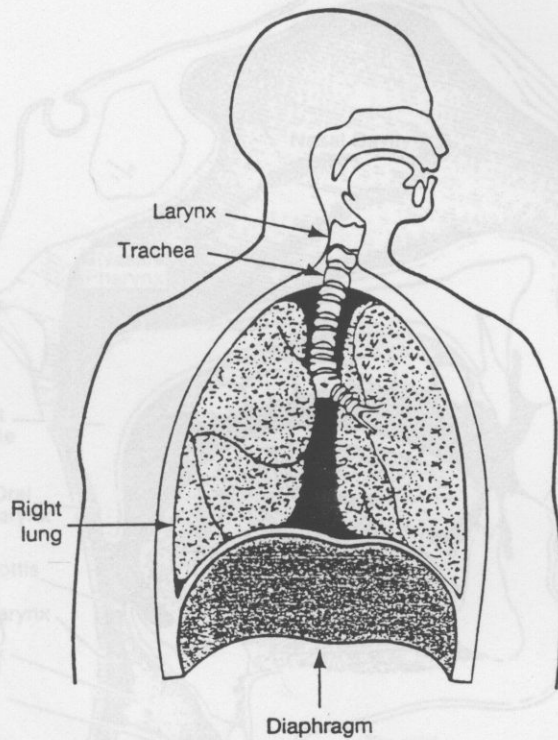


Normal larynx: phonation

Thus far we have observed simply the vocal folds within the larynx. While the author agrees with Hylton when he states that “the whole body is the vocal instrument” (1995 p6), this review will confine itself to the investigation of the physiological structures and processes directly involved in the act of singing, these being, “phonation, resonance and breathing” (Hylton 1995 p7). It therefore is necessary to have an understanding of the total vocal mechanism.

When a person sings, the vocal folds and adjacent small muscles located in the larynx vibrate, creating the sound. Hylton describes this coming together of the vocal folds as causing “phonation”, and as a singing tone is sustained, the folds rapidly open and close. These vocal folds are described by Sundberg as “twin in-foldings of mucous membrane” (1977 p83). Air is passed from the lungs via the trachea through the rapidly vibrating vocal folds, causing phonation. The act of phonation centres in the larynx, and this “wondrously built part of the human anatomy” (Phillips 1994 p222) acts not only as source of sound vibration, but also as a passageway for respiration. The vocal tract resonator tube consists of the pharynx, the mouth, and at times, the nose. (Phillips 1994 p222). The larynx is the organ that connects the lower part of the pharynx with the trachea. “It serves as a valve to guard the air passages, for the maintenance of a patent airway, and for vocalisation” (Gardner et al 1969 p76). Figure 2.5 shows the physiological structures associated with breathing, and places the larynx in a bodily context .

Figure 2.5 Physiological structures associated with breathing
(Hylton 1995 p9)

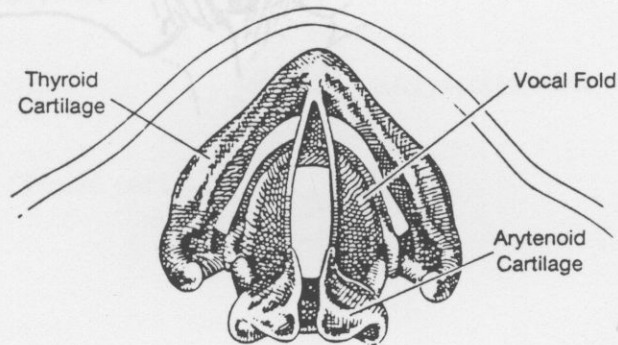
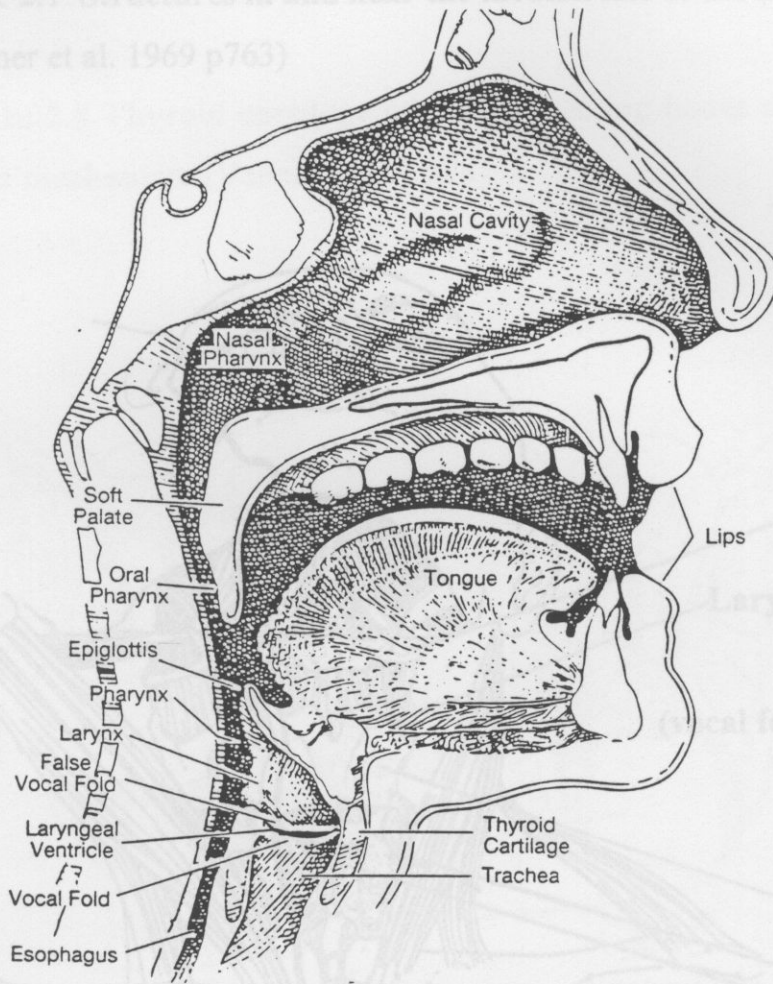


Seen in combination with the physiological structure of the larynx, Figure 2.6 shows the vocal mechanism and presents a profile of a portion of the head and neck showing the correct terminology used for the vocal mechanism, whence come phonation and resonance. The trachea connects lower down through the bronchi to the lungs which constitute the breathing apparatus. This diagram has been used by several writers on voice, including Hylton (1995 p9) and Miller (1986 p49).

Figure 2.6 The vocal mechanism

(Sundberg 1977 p83)

Figure 2.7 Structures in and near the median line of the neck
(Gardner et al. 1969 p763)

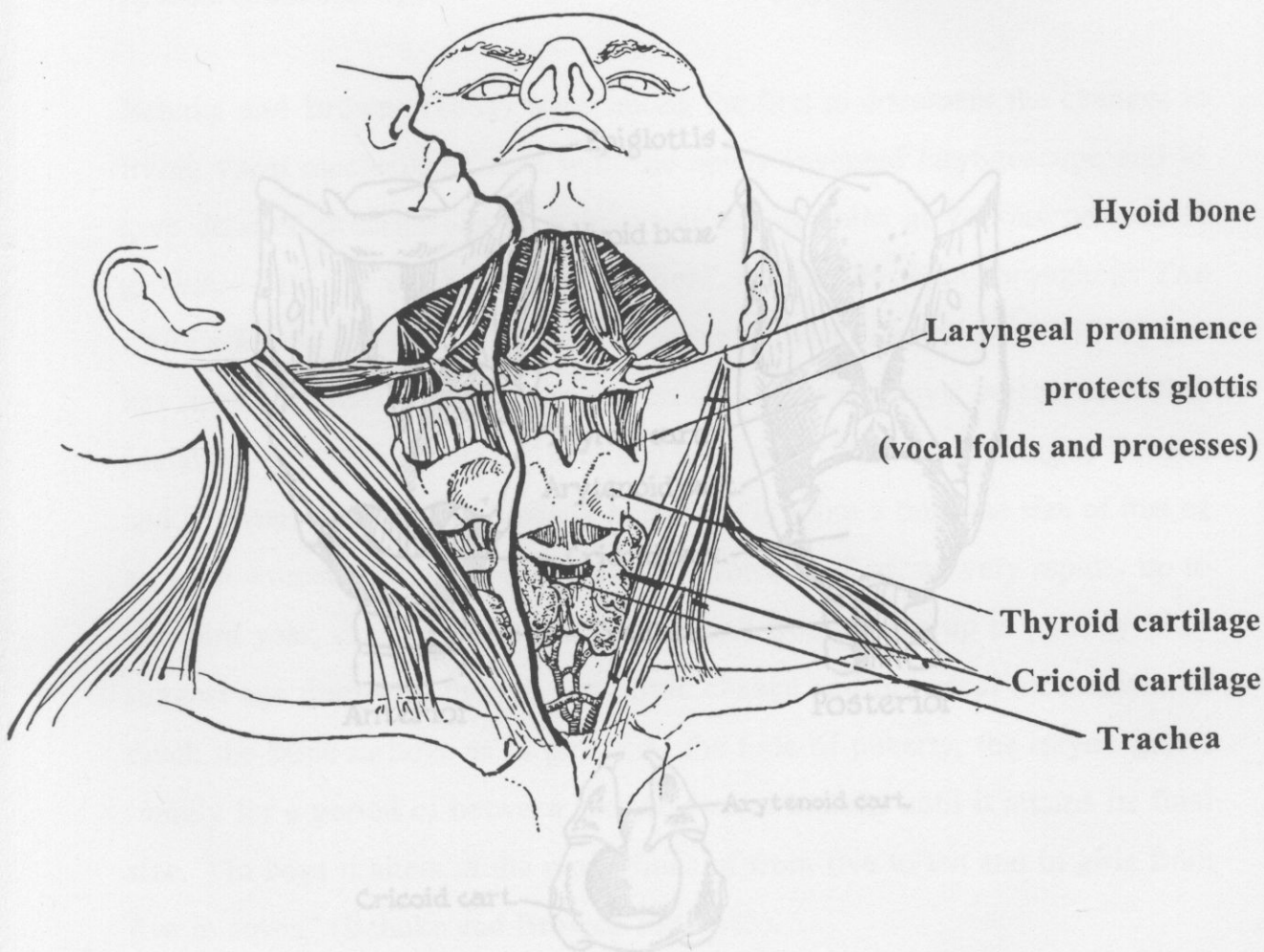


To place the vocal mechanism clearly in perspective, examination of Figure 2.7 shows a cross section of the head and neck.

Figure 2.7 Structures in and near the median line of the neck

(Gardner et al. 1969 p763)

Figure 2.8 Thyroid cartilage with surrounding bones and cartilages of the vocal mechanism (Vennard 1967 p24)



Having discussed the adult vocal mechanism, it is relevant to examine the changes associated with this mechanism during puberty.

Voice mutation in adolescent males and indicators for its recognition

Voice mutation refers to that series of changes which occur in the adolescent male and female voices at puberty. This study, however, is concerned only with adolescent males, and, as Dan (1918) has advised, "changing voices introduce peculiar problems" (p5).

Behnke and Browne (1884) were among the first to document the changes in living vocal mechanisms seen with the newly invented laryngoscope and to give detailed descriptions of it in males and females at various periods of growth. The use of the term "mutation" is used by them throughout *The Child's Voice: Its Treatment with Regards to After-Development* (1885) and has since been used by numerous writers on adolescent boys' voices, including Melallieu (1902), McKenzie (1956) and Cooksey (1994). According to Behnke and Browne, the larynx of a newly born baby is about a third the size of that of an adult woman. They describe how the "voice box" grows very rapidly up to the third year, slows down up to age six, and from thence up to puberty (they suggest age fourteen), there is very little change and the vocal mechanism, is much the same in boys as in girls. At the time of puberty, the larynx grows rapidly for a period of between six and twelve months until it attains its final size. "In boys it alters in the proportions of from five to ten and in girls from five to seven" (Behnke and Browne 1884 p83).

Behnke and Browne (1884) also describe changes in the "vocal ligaments", an expression which they prefer to the practice of the time of using the term "vocal

cords" (often misspelt as "chords"). They describe the larynx of boys as increasing more in depth than in height, thus lengthening the vocal ligaments, and producing lower tones. "At this time the voices are said to be breaking ... the uncertainty of the boy's voice during the time of mutation is a curious phenomena" (p84). They offer the probable explanation that the cartilages grow faster than the muscles, and the muscles consequently lose control over the cartilages until everything is finally and permanently adjusted. They also note that after puberty, the male larynx is not only larger than the female's but has also changed shape and angle (p5).

Sibley (nd c.1900) refers to the changes in the larynx in both girls and boys of pubertal age, which he suggests begins at about 13 and 15 respectively. With reference to the boys he speaks of the voice dropping an octave in pitch, "a result commonly known as the 'breaking' of the voice". He then adds, referring to both boys and girls, that these changes take from one to three years. He admonishes that during this time, singing should not be attempted, and all unnecessary strain of the speaking voice should be avoided.

White (1938) writes that in the child's head there is no sphenoid sinus. He describes the physiology by referring to the four bones which form the two cells (one cell on each side), which, he claims, exist only separately until puberty. He gives this as the physical reason for boys' voices being soprano, because they use chiefly the frontal sinuses as resonance for singing. White further clarifies his description by adding that when at the age of fourteen or fifteen, the new sinuses begin to form and come into use, the young man will now have three resonating passages each side, instead of two, as not only do the sphenoid sinuses form, but the other sinuses get considerably larger (p36). He later

speaks of the marked difference between the “vocal cords” of boys of ten and those of fourteen. The cords of the younger boy are “of the usual white colour, which act quickly in phonation, the older one has cords which are slightly red, and they are slower in action” (p37).

A study by Kahane (1978) of the prepubertal and pubertal larynx has identified that by puberty, the male larynx is significantly larger than the female, that the thyroid cartilage has become more prominent, forming the “Adam’s Apple” and that the “overall length of the male vocal folds is over twice that of the female” (p11). A further study by Titze (1988) has recorded the fact that when a boy’s voice changes, the vocal folds thicken, and lengthen, which results in a drop in pitch of approximately one octave. The thyroid cartilage protrudes more in men than in women because the male larynx tends to grow disproportionately in the front-to-back direction, the length increasing considerably more than the width, thus creating the characteristic “Adams Apple” (p196).

Sataloff and Spiegel (1989) state that the time of onset and duration of voice mutation varies from study to study and depends somewhat on “the techniques used to measure and define voice change” (p8). They suggest that clinically, voice change usually only takes between three and six months, though add that vocal instability can last for as long as a year. Further changes that they have documented during this period are that the male vocal folds grow from four to eight millimetres, the angle of the thyroid cartilage changes from approximately one hundred and twenty degrees to approximately ninety degrees, while the voice drops approximately one octave (ibid p59). Voice change during puberty is caused by major alterations in laryngeal anatomy that occur “coincident with the development of other secondary sex characteristics” (Sataloff and Spiegel 1989 p58).

These changes in the larynx, and consequently the voice, are also directly related to primary and secondary sexual characteristics. Phillips (1994) reports that the phenomena of the changing voice is brought about by hormonal changes during adolescent years, which most often begin when a boy is approximately twelve years old. He suggests as indicators of this phenomenon, "growth spurt, physical awkwardness, development of sex organs, growth of body hair and facial blemishes" (p77). Amongst the considerable number of changes documented as signifying a boy is on the way through puberty, are "accelerated general growth, lengthening of the neck, receding of the hairline, development of underarm and pubic hair, and last but not least, growth of the larynx" (Brodnitz 1983 p87). It is interesting to note that recently, the expected age for onset of puberty is given as approximately twelve years old by Phillips (1994) and Cooksey (1994) compared to that of the "fourteen to fifteen years" quoted by such as Behnke and Browne (1884), Mellalieu (1902) and Dawson (1909). When comparing these early approximate age suggestions for the onset of puberty with those of more recent researchers it becomes obvious that the average age for the onset of puberty has fallen considerably over the last seventy years.

Detailed tests carried out by Pedersen et al (1986) on a selection of boys aged eight to nineteen, which involved "singing masters" (sic), phoniaticians and medical practitioners, confirmed that there was a direct link between "voice categories, somatic puberty and androgen development" (p39). This was a longitudinal study and involved tests on large numbers of boys over an extended period, focusing on muscular development, sperm count, pubic hair and measurements of vocal mechanism. The investigation effectively demonstrates that voice change status is directly linked to physical growth

changes. Swanson found that the voice change in adolescents is directly related to the onset and development of the primary and secondary sexual characteristics during puberty. The most useful predictors of voice change are the secondary sexual characteristics, such as the growth of pubic hair. Secondary sexual characteristics are also described by Gardner (1982) as "beard growth and change of voice pitch" (p201).

Apart from the indicators of puberty cited above, the most obvious preliminary indicator to the onset of puberty in an adolescent male is the fact that there is, for a short period, a 'brightening' and an increase in brilliance of tone in the upper register of the voices, which has been well documented by Curwen (1899), Mellalieu (1902) and Phillips (1994). It should be noted that this brilliance may only be detected if the boy is already singing regularly in a choir or vocal ensemble and he can be observed and heard by a teacher who is aware of the quality of his voice.

It can be seen that there are many accepted indicators for recognising the onset of voice mutation in adolescent boys. The one fact that becomes very clear is that there is no set age for this onset, and that every boy's progress through the change is unique. Another important feature in this process of voice mutation is the importance of vocal registers.

Vocal registers and voice mutation

The question of register "is the basis of one of the greatest controversies ever raised in the whole history of singing" (Rose 1962 p206), and becomes particularly complex when combined with the problems of the changing voice. Vocal pedagogues from Garcia (1894), Behnke (1885) and Mellalieu (1905) to

McKenzie (1956), Swanson (1973), Sataloff, (1989) and Phillips (1994) have all made reference to vocal registers as part of their methodologies for treating or understanding the changing voice.

The trained adult male voice is capable of a range of approximately three octaves, and this range can be divided into groups called registers. A register can be defined as “a group of like sounds or tone qualities whose origins can be traced to a special kind of mechanical (muscular) action” (Reid 1983 p296). Phillips (1994) further elucidates that registers result from “the way the vocal folds vibrate in each mode and how the resulting sound couples with the vocal resonators” (p41).

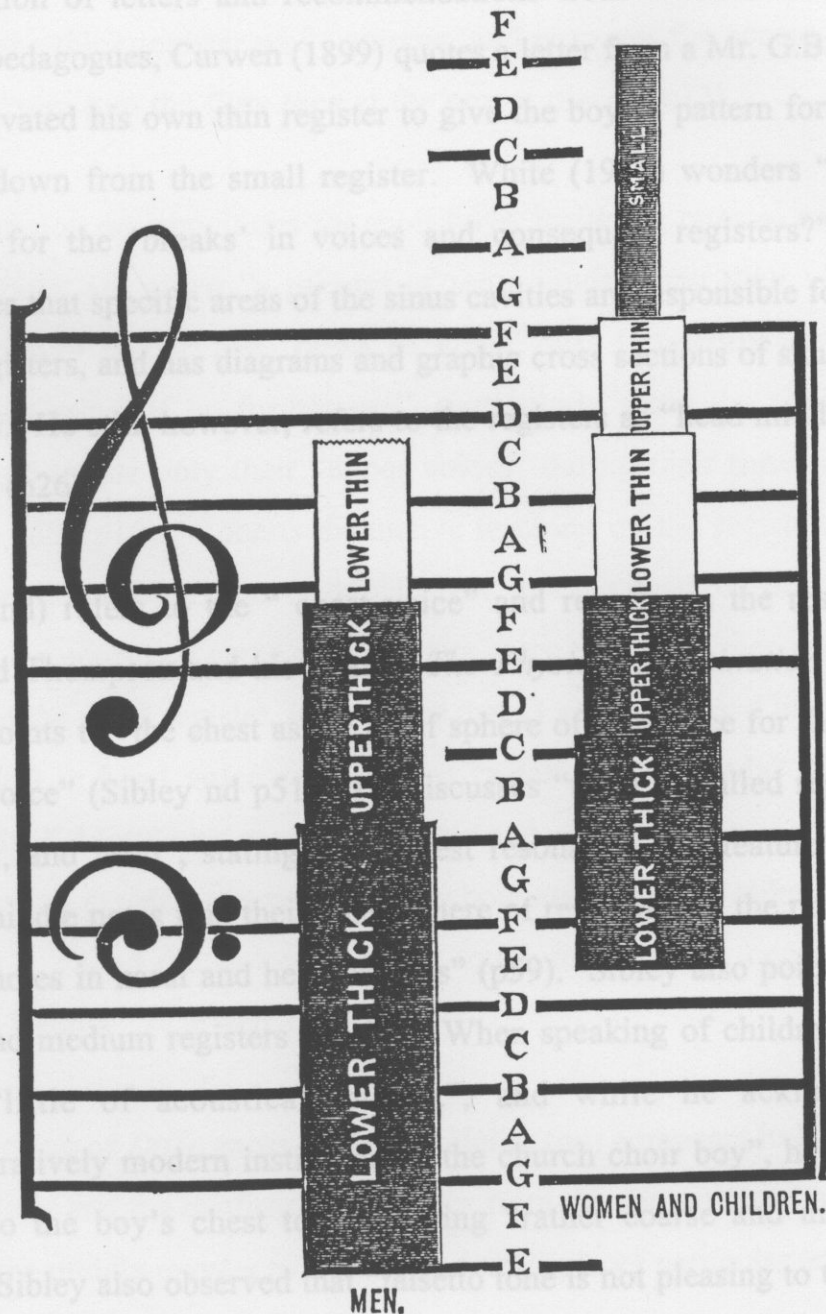
Garcia (1894) was the first to describe the basic actions of the vocal folds, which lead to the formation of registers, noting that the folds vibrate on their thin inner edges, producing an upper voice, or across their full width, producing a lower voice, noting that there is a “crossover” area which produces a third, middle level. He also states that “each of the three registers has its own extent and sonority which vary according to the sex of the individual and the nature of the (vocal) organ” (p7).

Behnke and Browne (1884) refer to the “so-called ‘head’ voice”, i.e. the highest register of the female voice” (p76). When discussing the importance of the soft palate they refer to its position, “standing lower in ‘falsetto’ than in the corresponding high ‘chest’ tones”. In *Mechanism of the Human Voice*, Behnke (1881) gives a chart across the two staves displaying the comparative registers of men women and children, using the terms ‘lower thick, upper thick, lower thin and small’. On this chart he demonstrates that each type of voice has

several distinct ranges, all of which produces a different vocal timbre. This chart can be seen as Figure 2.9

Figure 2.9 Registers of the human voice

Behnke and Browne 1884 (p171)



When discussing the acoustics of the voice, Sibley (nd c.1900) writes at length on the need for singers to make the transition from one register to the next, referring to them as “head”, “medium” and “chest” and declares that the singer’s “constant aim should be to equalise the volume and tone throughout the entire compass of the voice, so as to conceal any apparent break” (p59). In a collection of letters and recommendations from “choirmasters” (sic) and singing pedagogues, Curwen (1899) quotes a letter from a Mr. G.B. Gilbert who had cultivated his own thin register to give the boys a pattern for bridging the change down from the small register. White (1938) wonders “how can we account for the ‘breaks’ in voices and consequent registers?” (p26). He postulates that specific areas of the sinus cavities are responsible for each of the three registers, and has diagrams and graphic cross sections of skulls to support his ideas. He still, however, refers to the registers as “head middle and chest” registers (p26).

Sibley (nd) refers to the “chest voice” and reports on the research of Dr. Reginald Thompson and his treatise *The Physical Examination of the Chest* which points to “the chest as the chief sphere of resonance for the lower notes of the voice” (Sibley nd p51). He discusses “three so-called registers, chest, medium, and head”, stating that “chest resonance is a feature of the lower notes, middle notes find their chief sphere of resonance in the pharynx and the higher notes in nasal and head cavities” (p59). Sibley also points out that the chest and medium registers overlap. When speaking of children’s voices, he finds “little of acoustical interest”, and while he acknowledges the “comparatively modern institution of the church choir boy”, he disparagingly refers to the boy’s chest tone as being “rather coarse and unmanageable” (p68). Sibley also observed that “falsetto tone is not pleasing to the ear, but its

penetrating quality has been made to serve some useful purpose in church choral music" (p62). Thus, Sibley agrees with many of his predecessors and contemporaries (Behnke 1881, Iredell 1902, Stubbs 1908, and Moody 1923), that while they found the falsetto register disagreeable, and even coarse, it was nonetheless recognised as a specific vocal timbre. In giving advice for choosing boys for a church choir, Curwen (1899) suggests an avoidance of those who force up the thick register while singing, and proposes the acceptance of those who can "turn into the fluty tone at the proper place" (p13).

In a discussion on conditions for choir boys, including rates of pay, it is noted that the boys are given "a present of ten pounds when their voices break" (Curwen 1899 p62). The "break of voice" was frequently associated with choristers "being of no further use", particularly since the choir boys were encouraged to use only their "upper voices" during their time with the choir (Curwen 1899 p16). Roberts distinctive teaching on the registers names only two, the chest register, from middle C to A, and the head register, from B up to high A. He notes that some choirmasters carry the head voice down so low as to abolish the chest register, but advises that G and A (second line and space of treble clef) in head voice can become "weak and unsteady" (Curwen 1899 p73). Mr. E Lloyd was commended as a successful trainer of choristers as he took pains to develop the voice "as a whole and render it alike through all its compass." Lloyd did not concentrate much on registers, concluding, "I owe much to Behnke" (Curwen 1899 p75).

When writing of *Differences in Voices*, Heller (nd) compares Italian and English terminology and the confusion that arises from the former's use of "falsetto" to refer to the middle register (p50). Bates (1907) places particular emphasis on the

development of the “Head Voice” believing that children and choirboys who use it will “always sing well in tune, and they can sing for quite a long time without tiring their voices”(p12). He also claims that use of this register “beautifies and preserves the voice”(p12). Conversely, he refers to the “Chest Voice” as “Forced Voice”, insisting that it is really a combination of speaking and shouting instead of singing, and abjures all teachers of young voices to ensure that head voice only is used, and to entirely avoid the “raucous chest voice” (Bates 1907 p13).

Forster (1934) discusses the general acceptance of two such areas Head Register and Chest Register, and describes how there is a ‘crossover’ area where both registers overlap, and this is commonly known as the middle register. (Forster 16-17). (Vennard (1967) and Klein (1972) also endorsed the three register concept. The most commonly accepted terms for registers have come to be Head and Chest with a ‘cross over’ area referred to as Middle, although Phillips (1994) prefers his own terminology of the word adjustment instead of register. Appleman (1969) states firmly that in the human voice, registration is a physiological and acoustical fact, and adds that “years of research have contributed evidence of its existence and have verified that all voices have three registers that may be utilised in singing” (p86).

The difficulties of bridging the registers to form the universally desirable smooth even tone, becomes a minefield for the adolescent boy who has little control over his speaking voice, let alone his singing voice. Phillips (1994) gives the three register approach as a rationale for establishing healthy pedagogy for child and adolescent vocal training. He notes that “the whole voice is exercised, and when pitches are produced in the correct register, the sound is robust and pleasing” (p44).

The conclusion of this section of vocal registers and the changing voice can be left to Curwen (1899) who asserts "it is undesirable to tell the boys anything about the registers ... the theory of registers is for the teacher, not the pupil, the teacher's job is to conceal them" (p13).

Changing opinions

The problem of adolescent voice mutation is not new. Weiss (1950) refers to the Greeks and Romans as seeking ways to preserve the boy-like qualities of the singing voice, and to their being fascinated with its powerful and unusual sound. History has it that "methods of castration were applied as early as 2000 BC ... and reached their apex in Italy during the seventeenth and eighteenth centuries" (p126). For generations the focus appears to have been the preservation of the boy's unchanged voice.

One of the earlier commentators on how to deal with a boy's changing voice is Garcia, (1894) who states that with regard to vocal training, "serious study should not begin until the change is complete, as any tampering at this delicate period may ruin the voice for ever"(p8). As a proponent of the Italian Bel Canto style, but resident in England for many years, Garcia was sympathetic to the English choral tradition which kept all boys singing in their upper register for as long as they were useful to the choir, and then effectively disposed of them. This was also the tradition in Europe, although some choral directors did encourage boy sopranos to use their lower register, in particular, those of the Viennese Boys Choir (Rainbow 1989).

In 1885, one of the earliest published works on the subject of the boys voice in England recognised two opposing theories. Emil Behnke, a well recognised voice teacher and writer of educational texts on the subject, and Dr. Lennox Browne, a specialist laryngologist had questioned over 200 choirmasters and singing teachers, and recorded experiences of three hundred students in training colleges. They concluded on the one hand that “the bulk of the evidence most strikingly proves the injurious and even ruinous consequences arising from the exercise of the voice by singing during the period of change”, but admitted that on the other hand the boy’s voice may change “gradually and imperceptibly”, in which case there is no break, and singing *may* possibly be continued, under the guidance of a competent teacher, without detriment” (Behnke and Browne 1885).

Curwen (1899) declares that the boy’s voice, “though an immature organ of delicate structure, is capable of much work, providing only that its mechanism be lightly used and not forced” (p1). Curwen (1899) refers to Mr. D.W.Rootam of Bristol, who, as boy at Cambridge, sang for seven years at five services every Sunday, and who now is “middle aged and a fine baritone voice” (p2). However, Curwen (1899) submits both sides of this discussion, as on one hand, he says, “there is no doubt that it is undesirable for a boy to continue to sing after his voice has shown signs of breaking” (p3), then, on the next page, he writes “it is a most arbitrary and unnecessary rule to lay down that every boy should rest at this time, the vocal organ is beneficially exercised when singing is allowed in moderation” (p4). He then adds, “in spite of this, the the preponderance of evidence is in favour of rest” (p5).

Brodnitz (1983) writes about an interesting discussion between Garcia, and Sir Morell MacKenzie, a prominent laryngologist. MacKenzie saw no reason why singing should not be continued during the voice change, provided proper training could be administered. Curwen (1899) summed up the feelings of the time when he wrote of McKenzie as “the only medical writer who has advocated singing during the change, and not even his authority can upset the weight of evidence on the other side” (p3). Bates (1907) was one of the emphatic dissenters, and declared that during this period of “the break” the boys should not sing at all for an average of two years (p50).

In describing the conflicting opinions, Cooksey (1977) wrote of that time as a “major controversy (which) continued well into the early part of the twentieth century” (p5). Evidence of this is well documented, for example by Weiss, (1950) and MacKenzie (1956). Dr. C. H. Moody, organist of Ripon Cathedral, favoured a three year rest period, and other leading choirmasters of the time apparently agreed with him, as demonstrated by the following dissenting voice in the *Musical Times* of July 1932,

If perfect rest could be achieved there might be something to say for Dr. Moody's views, but we know that no power on earth can stop the boys from shouting at their games ... it is difficult to see how properly controlled and directed singing during the adolescent period could do one hundredth the part of the damage that is done by uncontrolled shouting and yelling (Grace 1932 p636)

One of the first to really address the problem with sound pedagogy, was Melallieu (1904) who carried out a long term project over a seven year period at the Royal High School in Edinburgh. He reports that during this period, “a careful record has been kept of each boy's voice, and the conclusions which are here stated have been based on these records” (p6). Mellalieu was very much

in favour of having boys sing through “the changing period,” as he called it. “Voices do not break”, he sternly stated, “unless a great strain is placed upon them” (p11). He not only gave a detailed description of each step in the changing process, but outlined a series of vocalises and exercises to assist in their training.

When discussing the onset of voice mutation, Curwen (1899) explains that the middle register becomes weak, without any diminution of power and quality in the upper notes, while at the same time, the “thick register becomes stronger and the boy can strike tenor C with firmness”. He adds that the musical value of the boy’s voice is reduced to a low ebb and it becomes husky and of uncertain intonation (p3). He reports that “Sir Morell McKenzie is the only medical writer who has advocated singing during the change ... not even his authority can upset the weight of evidence on the other side” (p3). Heller (nd) also informs us that a boy’s voice undergoes a much greater change during the period of mutation, and advises that all singing at that time should be strictly forbidden. He suggests a three year break and, “afterwards, the voice being about an octave lower, training may with advantage be resumed” (p64).

One of the few English music educators to take a positive attitude towards having boys continue to sing through the change was Clement Spurling, who was for many years the director of music at the legendary Oundle school. This traditional school for boys, with the support of its enlightened headmaster “Sanderson of Oundle” (Wells 1924) became famous for its annual “whole school” performances of oratorios such as Handel’s Messiah, and of large choral works such as Bach’s B Minor Mass. Spurling, outlining his philosophy and methods, maintained that every boy in the school sang every day, and was

moved through various voice parts as his voice descended (Spurling 1927). About the same time in New Zealand, another program was instigated by Vernon Griffiths in which the whole school community became "a massed six-part choir" of eight hundred voices (McKenzie 1956 p126), where particular attention was paid to the adolescent male voices. Griffiths devised a series of classifications for the voices of these boys and thence prepared the "*Dominion Song Book Series*" (1944) with material to suit his classification. This program was admirably extended by the young Frank Callaway before he moved to Australia (Comte 1994 p13) Meanwhile, with the exception once more of Mellalieu and his publication of the *Clarendon Song Book for Boys* (1932), the English choral tradition continued, and boys were dismissed from Cathedral choirs as soon as their voice ceased to be of use to the choir director.

It was really not until the 1930s that a change of attitude began to take place in England. Dr April Winn, an Inspector of Music in the Public Schools of England, encouraged publishers to write music to fit the narrow limits of the male changing voice (Rainbow 1989).

In the United States of America, the problem of the changing male voice came into focus when the junior high school came into existence in the early 1900's. The question was not whether the young adolescent male should sing during mutation, but rather how the voice should be classified and trained during that time. There was a strong emphasis on getting all students involved in music-making activities (Keene 1982). It should be pointed out that the large amount of research on voice mutation in adolescent boys in America has arisen largely out of necessity. Performing arts, particularly music, are studied in high schools in practical components such as choir, band, and orchestra, and these are often

programmed in vertical timetabling. This means that subjects are made available for any student within the school, and are not confined to students in a particular year or age group as in Australia. American Junior High schools generally cover the crucial years of twelve to fifteen, and hence there was a pressing need to discover methods of guiding delicate young voices through the changing period while allowing them to continue singing.

Such American music educators as Tomlins (1914), and Dan (1918), both introduced song books containing limited-range parts for the changing voice. McLeod (1932) warned that, while insisting on good vocal tone, teachers should be careful to “keep an especially alert ear ... that neither forcing or repression occurs” and later added that full resonance should not be insisted upon during this period of change, though all boys were encouraged to sing throughout the whole time of change (Foreword).

In the 1950s and 1960s three distinctive theories about the junior high school male changing voice emerged in America. Duncan MacKenzie, (1956) formerly an English inspector of music, espoused a “middle of the road” alto-tenor approach. The term, alto-tenor, describes the boy’s voice after it has lowered to the stage when the changed voice begins to develop. MacKenzie believed that all male voices go through this stage of development, that their voices do not suddenly drop into the lower bass clef once the mutation process begins. The voice generally follows a gradual lowering into the bass clef, and there is a corresponding change in quality as this happens. McKenzie says that the speaking voice is the most reliable indicator of the change; as its pitch lowers, so does the range of the singing voice, the former slightly preceding that of the latter. As the muscles of the larynx develop during this time, some breaks or

pitch uncertainties in the changing alto-tenor voice may persist, but this condition disappears as the voice matures.

Irvin Cooper (1952) proposed the Cambiata Plan. He was primarily concerned with describing and dealing with the mutational aspects of voice change and noting its corresponding effects on the quality, range, tessitura, and agility of the young male adolescent voice during puberty. He felt that the majority of junior high school teachers needed to understand the problem more clearly, and it was important that the profession as a whole build and develop new criteria for selecting choral music appropriate for young singers. Cooper espoused that the change was a gradual process, and that over ninety percent of boys develop what he called the Cambiata quality. He believed all boys spend some time with their voices in this range. A former student of Cooper's, Don Collins founded Cambiata Press to disseminate appropriate vocal literature.

Frederick Swanson (1955) discovered the "adolescent bass". He totally discounted the gradual change theory and suggested that the change, far from moving through a series of gradual progressions, was rapid and erratic, and that potential basses and even possible basso profundos were being lost through lack of teacher support and appropriate material. He later elaborated on this principle (Swanson 1982) and suggested, that the "scandalous imbalance between the number of boys and girls enrolled in our choral music groups" (p9) was due to the fact that teachers were too indoctrinated in the theories of the first quarter of this century. He also insisted that teachers write vocal arrangements to suit these young voices.

Recent progress

In the 1970s there was a renewed interest in the issues concerning the adolescent male changing voice. Some teachers recognised the fact that serious re-assessments concerning the classification, vocal training and development of the adolescent male singer needed to be made. One such person was John Cooksey who wrote a series of articles propounding his theories (Cooksey 1977). He had been a student of Cooper, but found the Cambiata approach too limiting and suggested a number of stages, which he subsequently researched and revised. The emphasis was on recognising the stages of voice mutation and assisting the students to understand their voice while continuing to sing (Cooksey 1992). Another was Phillips (1994) who, after prodigious research, devised a system of classification of stages of voice mutation and included them in a comprehensive instructional text. More recently, Hylton (1995) has added to the research on choral work with adolescents by including his ideas for guiding the young boy to sing through his period of change. Other researchers, such as Herman (1988) and Rao (1987, 1993), have espoused various methods of dealing with young voices, but all point to the fact that young people, particularly boys, need to keep singing, if gently, throughout the period of voice mutation. A significant pedagogical advancement was espoused by Herman (1988) which involves knowing each singer's voice capabilities and keeping records of each one's movement through the change. This of course necessitates creating new music or arrangements to suit these voices.

While there have been times in the past when choral trainers and voice teachers have agreed that the adolescent boy should refrain from singing during his time of voice change, current thinking is now almost totally of the opinion, (with the exception of a small number of church choir trainers of boys' voices) that a

boy's voice is much better served by singing through his voice change, provided it is gentle, and is done with intelligent guidance.

Previous singing experience

When the results of the author's survey were analysed, it became apparent that many responses from the boys regarding their primary school singing experiences were negative, or unhappy. Extensive literature search has provided little in the domain of adolescents' previous singing experience. Stocks (1951) stressed the importance of gaining the interest of students when they are young, and proposes that the teacher must "contrive so that learning to sing shall be one of those interests" (p6). Gardner (1983) asserts that frequent exposure to music learning, as an integral part of the early education process, can enable any individual to participate with some facility in musical activities, including, singing. Campbell (1992) affirms this idea and suggests that "the foundations for such (musical) interests often develop at an early age" (p80).

Pestalozzi's (Green 1913) method of teaching follows the path of nature, allowing children to proceed slowly by means of their own efforts from sense-impressions to abstract ideas, and stresses the importance of beginning these impressions at an early age. He further states that "choral music strengthens the social bond"(p318-9).

In her research with "Reception" (Kindergarten) children, Flash (1990) places importance on making music integral to, and as "the acknowledged centre" (p64) of the first year of children's schooling, and advises that it is a subtle means of "expressing and redefining many of the concepts with which Reception children need to become familiar" (p65).

Maidlow (1998) bases a methodology on "construct psychology". She suggests that "we hypothesise that each encounter will be similar to a previous one; thus, the 'constructs' we hold about our lives are based on our own particular experiences" (p38). Maslow (1968 p196) suggests that experiences are "frequently far more important than classes" and uses his own unhappy early musical education as an illustration (p70).

Campbell (1995) quotes her research participants (white males, aged fourteen to sixteen), as remembering their early school music classes as boring and having little relevance to their real interests, and records that they particularly make negative comments about their school music class singing experiences (p16).

Stollack and Stollack (1996), when discussing choral participation, stress the importance of "positive musical experience early in life in determining the likelihood of future participation in music" (p27).

Temmerman (1997) propounds that "children learn more quickly in the first few years of life than at any other time" (p33). She also suggests that it would be "unrealistic to propose that all early childhood music programs on offer in Australia provide children with ideal music making experiences" (p33). In reporting a NSW state wide survey of generalist primary teacher trainee's school music experiences, she suggests that school music experiences "appear to have a lasting affect on people's lives, but that this influence is most often perceived as unfavourable rather than favourable terms" (Temmerman 1993 p59). Her research discloses that twenty-five percent of the respondents indicate primary school music experiences as their "worst music experiences" (p62). She reports other research which suggests that the opinion of the

general Australian public is that “inability to fully appreciate and participate in some music art forms stemmed from school experiences, in particular, the type of curricular, and quality of teaching encountered, which often had a discouraging effect” (p59).

When discussing a project in Birmingham, UK, which is developing a choral program for young children, to lay the ground work in providing future singers for adult choirs, Halsey (1998) suggests that “secondary school is too late” and advised that any such program “must be introduced early in the primary school” (interview). Rainbow (1967) also asserts that “the teaching of singing should begin with the simplest elements” (p71).

Ainley, Robinson, Elsworth and Fleming (1994) indicate that earlier school achievements are strongly associated with secondary subject enrolments, and suggest that there is “evidence the negative association between earlier school achievements and enrolments (in creative arts subjects) (is) stronger for males than females” (p115).

Reports from various researchers such as Wilder (1985) Flash (1990), Addison (1990), Green (1993), Russell-Bowie (1993), and Temmerman (1997) all indicate the importance of early childhood experiences in having lasting effects into adulthood. Killian (1997) records accounts by male adolescents of embarrassing experiences with their changing voices which had long term effects, causing some to refuse further involvement in choirs or singing (p528).

The paucity of literature in the specific area of early or previous singing experiences points to the need for research in this field.

This review has considered literature pertinent to the study. Scholars have been consulted with reference to adolescence and the formation of attitudes, as well as the foundations of self-esteem and motivation in adolescence. The vocal mechanism physiology has been discussed in conjunction with the process of vocal mutation, and vocal registers during mutation with the associated conflicting opinions. Finally, the subject of previous singing experience was investigated.

The design of the study is the subject of chapter three.

CHAPTER THREE

Methodology

This chapter describes the methodology employed in the investigation of the attitudes of adolescent boys to singing, and begins with an explanation of the survey-based design of the study. A preliminary activity involving secondary school boys which formed the basic direction of the investigation is outlined and details of the participants in the study are given. The development and administration of a questionnaire, the principal data collection instrument used in the study, is described. Finally, the approach to the analysis of the data is discussed.

Design of the study

A study of the problem relating to the small number of boys involved in choral singing has a number of challenges. For example, it is not possible to engineer or manipulate an already existing situation, such as in an experimental study, as the variables are too numerous, are out of the researcher's control, and their manipulation would not provide realistic data. The author, therefore, proceeded with an *ex post facto* study. Busch and Scherbor (1992) state that such studies provide the researcher with "the ability to predict and estimate using regressive techniques" (p126), and in this instance, the method of a co-relational study is appropriate as a method of estimating the strengths and relationships among variables. Cohen and Manion (1994) advise that this method is a valuable exploratory tool, providing useful information concerning "what goes with

what under certain conditions” (p152), and suggest that it is particularly appropriate when searching for cause and effect relationships. While accepting that this method of investigation has limitations, which could include the researcher’s lack of control in being unable to manipulate the dependent variable, (in this instance, the non-involvement of boys is already established), this was seen to be a positive indication of the need to attend to this type of study. Another limitation could also be the fact that there could perhaps arise a “chicken-egg” situation in which the possibility of reverse causality needs to be considered (Cohen and Manion 1994 p153). Taking these limitations into account, the author conducted an *ex post facto* study, with the principal data collection instrument being a questionnaire designed to survey the attitudes of adolescent boys to singing in school.

This questionnaire is designed to investigate such areas as the participants’ self-perceptions of their voice, their feelings about singing alone and in the presence of others and their musical experiences. It also has the purpose of discovering some reasons as to why the participants join, or refuse to join a singing group, in addition to seeking recollections of the participants’ primary school singing experiences.

The study focuses on two core issues critical to the investigation of the attitudes of boys to singing in school. The first is voice mutation in adolescent males, comparing attitudes of boys with unchanged voices to the attitudes of those boys whose voices were already moving through the change, to determine the extent to which voice change impacts on the decision of boys to participate in singing activities. The second issue central to the study is the bearing of previous and present singing experience on attitudes to participation in singing amongst boys.

After a search of the relevant literature, it was apparent that a new survey instrument needed to be developed in order to conduct this investigation. A questionnaire was therefore designed to discover the reasons underlying the boys' lack of enthusiasm for singing and to search for clues as to how this problem might be addressed, with reference to the two core issues of voice mutation and previous singing experience.

Participants in the study

This investigation targets boys in the eleven to fifteen age group, who researchers Behnke and Browne (1885), Mellalieu (1905), Cooper (1954) Swanson (1974), Cooksey (1977a), have shown, are most likely to refuse to be involved in any singing activity. These studies have also shown that if boys of this age do become involved in a singing group, there is a strong likelihood that they will cease that involvement after a short time. Cooksey, for instance, in his investigation of this situation in choral programs in America, found that the numbers of adolescent males involved in choral singing was declining "at an alarming rate" (Cooksey 1977a p5). Extensive experience in secondary and primary music education have enabled the author to observe, over many years, the paucity of boys involved in singing in schools.

Participants in this study are drawn from a population of eleven to fifteen year old boys from rural and urban areas of New South Wales. The sampling procedure is based on a purposive model, with the aim of achieving a broad spread of geographic and socio-economic areas. Twenty high schools throughout New South Wales were targeted, with these schools being drawn from three sources, the *Directory of Government Schools in New South Wales* (1997), *Directory of Catholic Schools and Colleges in NSW* (1996) and the

Schools List of the Association of Independent Schools of NSW (1997). In total, these sources listed over five hundred schools. This final sample includes both government and private schools, as well as co-educational and single-sex boys schools. The boys selected to participate in the survey, from these schools, were all in either year seven or year eight. The total number of boys involved in the study is four hundred and four (404). The distribution of the subjects according to age can be seen in Table 3.1. Six boys did not record their age.

Table 3.1 Age distribution of study participants

Age in years	11	12	13	14	15
Number in age group	7	162	200	25	4

Preliminary activity

The original concept for this project arose from activities involving a group of twenty-nine boys who attended the same school. These boys, all aged between fourteen and sixteen years, were members of elective music classes in years nine, ten and eleven. The purpose of these exploratory sessions was to elicit some responses from them as to why they appeared to be so antagonistic towards involvement in any singing activity at their school. These sessions, involving emotively charged informal discussions with the boys, were used to assess the most appropriate and effective means of conducting a survey to ascertain boys' attitudes towards singing. As a result of these preliminary discussions, a simple questionnaire was designed, and, after some discussion with teaching colleagues and academic specialists in the areas of vocal pedagogy and music education,

was administered to three elective music classes in the same school as a small pilot study. This preliminary questionnaire can be seen in Appendix I. The questionnaire was given to all class members both for ease of administration and also to keep the responses of the girls for future research.

These preliminary activities were fruitful in that they brought to light a number of issues concerning the boys' attitudes towards singing. It was possible to discern from the discussions with these boys that there were issues of self-esteem associated with their feelings about their voices. The problems associated with the subject of self-esteem also brought to light the perspective of equality in educational opportunity and the issue of gender in schooling, as well as highlighting their memories of primary school experiences in music.

Development of the questionnaire

The preliminary activities suggested that the survey instrument needed to be simple and easy to administer, bearing in mind the age group of the proposed participants and a reliance on the support of their teachers to execute the survey. The format for the survey was developed with reference to Payne (1951) and Belsen (1981), with particular reference to questionnaire design, and Belsen (1986) for achieving validity. Best (1981), Gordon (1986), Oppenheim (1994) and Minichiello (1995), were also consulted. The introductory questions, requiring written responses, were designed to elicit demographic and individual information. The remaining questions, which focused on attitudes of the participants towards their own voice, and their attitudes towards various aspects of singing at school, largely followed a "yes/no" format.

A draft questionnaire was designed and presented to a panel whose members had expertise in questionnaire design and vocal pedagogy. The panel consisted of high school music teachers and private instrumental and vocal teachers, practitioners who are currently involved in music education research and academic specialists in the areas of vocal pedagogy and music education. The panel was consulted on a range of issues associated with the design of the questionnaire. Some of these issues were: achieving acceptable questionnaire reliability, establishing questionnaire validity, question wording, sequencing of questions, and the structure and lay-out of the questionnaire. Upon the panel's recommendation, a process of review was undertaken. This review procedure resulted in considerable modifications to the questionnaire, with each return to the review panel achieving further refinement. In addition to this review procedure, the appropriate Ethics approvals were sought and obtained. Appendix II is the final text of the Questionnaire.

Implementation of the study

Procedures for the administration of the questionnaire were developed. These included a letter to the principal of each school, a letter to the music teacher in each school and a copy of the the Ethics permission letter, as well as a permission letter from the Department of Education and Training. This documentation can be viewed in Appendices III, IV, V and VI. The questionnaire was copied and packaged with appropriate documentation as well as a stamped self-addressed envelope for easy return. The packages were then posted to the principals of the twenty selected schools. Delivery of the questionnaire through the selected principals is, of course, the appropriate protocol, but this procedure was also pursued with reference to See (1957), who makes the point that when a person in a senior position passes on a

questionnaire to a staff member, there is an implied feeling of obligation from that staff member to carry out the exercise and hence a greater chance that the survey will be returned.

The music teachers of the selected schools were requested to administer the questionnaire to one year seven class and one year eight class. This method was suggested in the hope that more teachers would agree to give the questionnaire to their classes in co-educational schools if it did not pose logistical problems of separating boys from girls. The author also concluded that even though the focus of the study is on boys, data collected from girls may prove useful for cross referencing purposes and for future research.

Response to the questionnaire

A total of twelve hundred (1200) questionnaires were distributed. The response rate to the survey was sixty (60) percent. After excluding all responses from girls, the responses from boys totalled four hundred and four (404). This was considered to be a favourable response, as according to Oppenheim (1994), thirty percent is considered to be the average rate of return for a survey instrument.

Approach to data analysis

A spreadsheet was set up using *Microsoft Excel* (1994). Numerical codes were allocated to each question and the data recorded. Coding and data entry were cross checked by two independent witnesses. The completed database was then transferred to the program *SPSS* (1994) and a frequency distribution recorded for every question number. Frequency distributions were further cross-referenced using the program *Statview* (1994) and all further calculations

were interpreted in this program. The graphs were executed through the program *ClarisWorks* (1994).

Data from the questionnaire responses were analysed by cross tabulations to determine relationships between the variables. In particular, focus was placed upon that of voice change status. After viewing this descriptive data, the author made a decision to use chi-square tests to determine the level of significance of the differences between the responses of boys whose voices had changed in comparison with those whose voices had not changed. The decision to use chi-square was made after reference to Burns (1997 pp183-195), who advises the appropriateness of using chi square as a simple non-parametric test of significance suitable for nominal data. A study by Mizener (1993) was referred to, as it was also an attitudinal study which used a questionnaire to elicit information in the domain of choral participation and assessed singing skill. Authorities in statistical analysis such as Ferguson (1989), Asmus (1992) and Busch (1992) were also consulted.

All results were reported, with a few minor exceptions, in percentages rounded to the nearest whole number. In some instances, the total of the percentage points for a particular question did not aggregate to one hundred, as there were numerous respondents who left some questions blank. These were allocated a "no response" category which accounted for the differential. There were also some participants who wrote "don't know" or "not sure" instead of ticking either a "yes" or a "no" box. These responses were also allocated a separate classification number.

The analysis of the data is recorded in chapter four.

CHAPTER FOUR

Presentation of Data

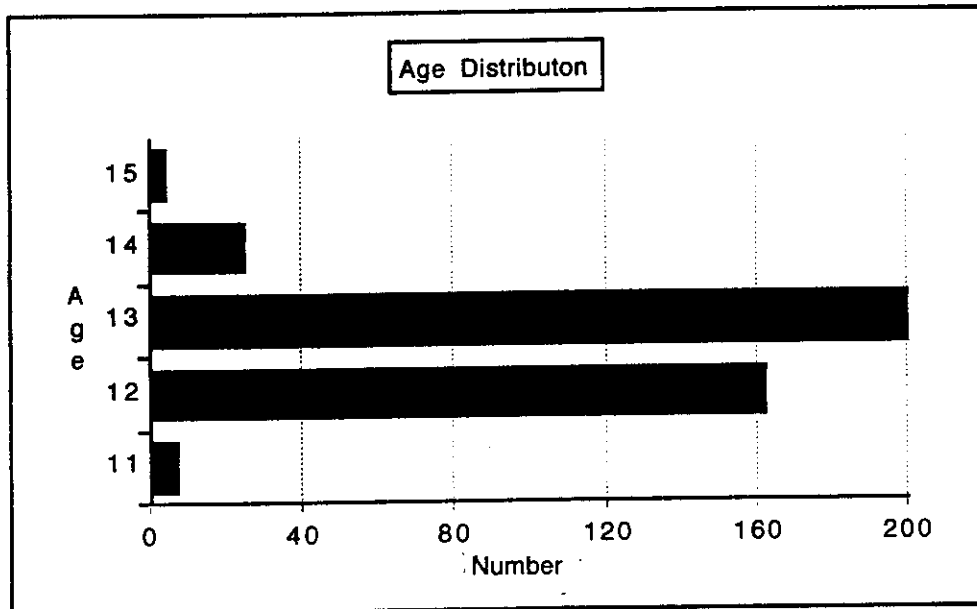
This chapter presents the results of the study that were collected from the responses to the survey instrument. It reports demographic information given by the participants, and then discloses the remainder of the data in relation to the principal research questions. Results are presented in relation to these research questions, namely:

- i To what extent does voice mutation affect adolescent boys' attitudes towards singing in secondary school?
- ii To what extent does previous singing experience affect adolescent boys' attitudes towards singing in secondary school?

The study participants

The study participants consisted of four hundred and four boys aged from eleven through to fifteen, with fifty one (51) percent of these participants being in year seven, and forty nine (49) percent in year eight. A graph depicting the age distribution of the participants is presented as Figure 4.1

Figure 4.1 Age distribution of study participants



When viewed from the perspective of schools which participants attended, eighty two (82) percent of the subjects of this study are from co-educational schools, and eighteen (18) percent are from single sex boys' schools.

Voice Change Status

In surveying an overall picture of the information gathered on the total sample of participants, it became evident that in answers to some of the questions there were substantial differences in the responses of those boys whose voices had already begun to change, compared with the responses of those boys whose voices were as yet unchanged. Thus, it became necessary to take voice change status into account when analysing the data. In particular, when considering responses which related to the effect

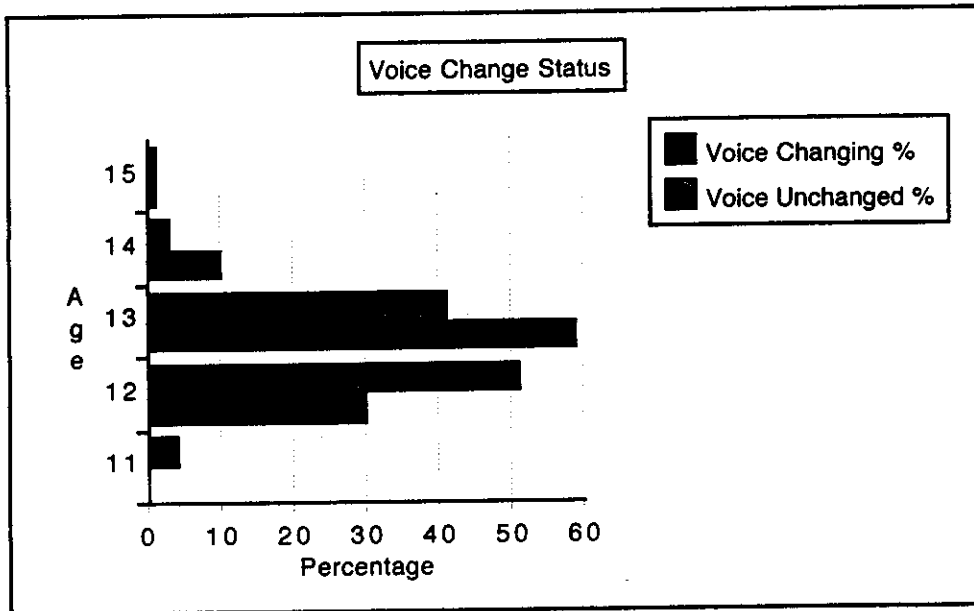
of voice change on adolescent boys' attitudes towards singing in secondary school, for the purposes of analysis, the responses of the participants were split and analysed according to their voice change status. It is important to note that the term "changing" was used, as it would be unusual for a boy between eleven and fifteen (the ages covered in this study) to have a completely settled fully mature voice, or to be familiar with the term "voice mutation" The numbers of changing and unchanged voices in the sample can be seen in Table 4.1.

Table 4.1 Voice change status according to age distribution

Age	Number in sample	Voice Changing % of age group	Voice Unchanged % of age group
11	7	0	4
12	162	30	51
13	200	59	41
14	25	10	3
15	4	1	1
Unknown	6		

A graph depicting voice change status according to age distribution is shown in Figure 4.2

Figure 4.2 Voice change status according to age distribution



This distribution of subjects by age and changing or unchanged voice, showing the highest percentage of boys with voices beginning to change at age thirteen, is not surprising when viewed in the light of recent studies by Cooksey (1994), Phillips (1994) and Moore (1995). While these scholars agree that the change of voice can begin as early as age nine or as late as age sixteen, the consensus at present is that the age of thirteen is the average age for the onset of voice mutation.

Reaction to voice change

The results of the survey indicate that there was a high level of understanding of the concept of the change of voice. Ninety nine (99) percent of the boys indicated that they understood the concept of this process of the change of voice. Thirty four (34) percent of the

participants felt that boys should not sing while their voice was changing, while the percentage of participants who agreed that it was “difficult for boys to sing in tune” was thirty six (36) percent. When analysed according to voice change status, forty (40) percent of boys with changing voices found it difficult to sing, whereas thirty (30) percent of boys with unchanged voices encountered difficulty when singing. Boys whose voices had begun to change found it more difficult to sing. This differential can be seen in Table 4.2.

Table 4.2 Comparison (according to voice change status) of responses to question on difficulty in singing

Question	Total Yes %	Voice Changing %	Voice Unchanged %	Difference % between Ch.Voice/ Unch.Voice	Chi-square df=1 N =379	P
Q67. It is difficult for boys to sing in tune	36%	40	30	10	=3.68	> .05

In order to investigate whether there was a statistically significant difference between the responses of the participants whose voices were changing, compared with those whose voices had not yet begun to change, chi-square calculations were carried out on the raw score numbers, not on the percentages.

The chi-square calculation of data, on the difference between the responses of boys with changing voice and those of boys with unchanged voice on the perception of difficulty of singing in tune, did not reach significance at the $p=.05$ level, but came very close. The critical value required for $p < .05$, is 3.84, whereas the observed value was 3.68. Thus, while the analysis revealed that boys whose voices were changing found that it was more difficult to sing in tune than those whose voices had not yet begun to change, the difference is not statistically significant.

Singing Proficiency

When questioned about their feelings towards singing at home alone, fifty two (52) percent of the total sample felt comfortable enough with their voice to agree that they did "sing along" at home. When viewed from the perspective of voice change status, responses to this question were equally distributed between those with changing voices and those with unchanged voices.

Of the total sample of participants, twenty (20) percent responded that they were able to "sing along" to their own live accompaniment, thus indicating that they had access to, and at least some facility on, a musical instrument. Once again, the responses were evenly distributed between subjects with changing voices and those with unchanged voices.

Subjects were asked about their willingness to sing to pre-recorded music, and these responses are shown in Table 4.3.

Table 4.3 Comparison (according to voice change status) of responses to questions on willingness to sing to pre-recorded music

Question	Total Yes %	Voice Changing %	Voice Unchanged %
Q11. I sing along to tapes/CDs when alone	79	81	78
Q12. I sing along to tapes/CDs when others are there	55	51	60

Responses indicated that seventy-nine (79) percent of participants “sang along” to pre-recorded music when alone. When responses to this question were split according to voice change status, it became evident that of the total seventy-nine (79) percent, of affirmative responses, there were eighty-one (81) percent whose voices were changing and seventy-eight (78) percent whose voices were still unchanged, thus showing only a slight difference. Responses to this question bear close comparison with the statement which followed it, which was used to determine if the subjects “sing along to CDs and tapes when others are there”, the indication being that participants were comfortable about singing when alone, but not in the presence of others.

When viewed according to voice change status, the responses relating to singing in the presence of others indicated a substantial difference between those of changing voice and those of unchanged voice. The percentage of boys whose voices were changing, was fifty one (51), while the percentage of those with unchanged voices was sixty (60). While a

marked difference is evident it did not prove to be statistically significant at the $p < .05$ level.

Perceptions about voice change

In response to the statement about being embarrassed by their voice in the presence of others, twenty-two (22) percent of the total sample agreed. Of voices that were changing, twenty-eight (28) percent were embarrassed, while seventeen (17) percent of those with unchanged voices were embarrassed. When these responses were compared using a chi-square test, there was a significant difference between those whose voices had begun to change and those whose voices had not yet begun to change [$\chi^2 (df = 1, N = 379) = 5.26, p < .05$], suggesting that boys whose voices are changing experience embarrassment with their voice in the presence of others.

Thirty-five (35) percent of the total sample who responded agreed that they liked the sound of their voice when singing. Of this total positive response, thirty-one (31) percent of the subjects had changing voice and forty-one (41) percent of them had unchanged voice. A statistically significant difference was found at the .05 level, [$\chi^2 (df = 1, N = 383) = 4.20, p < .05$]. The difference between the results for changing voice status compared to those of unchanged voice status on both questions fifteen and sixteen, supports the contention that boys with changing voices have a higher level of embarrassment in the presence of others than those whose voices have not changed. The differences can be observed in Table 4.4.

Table 4.4 Comparison (according to voice change status) of attitude towards voice

Question	Total Yes %	Voice changing %	Voice unchanged %	Difference Changing/ Unchanged	Chi-square df = 1 N=379	P
Q15. My voice embarrasses me when others are there	22	28	17	11	5.26	0.05
Q16. I like the sound of my voice when I sing	35	31	41	10	4.20	0.05

Responses to the statement “my voice will not do what I want it to do,” indicate that twenty-five (25) percent of the total sample answered in the affirmative. When these responses were considered with regard to voice change status, the percentage of changing voice compared with unchanged voice was thirty (30) percent and twenty (20) percent respectively. This information is presented in Table 4.5.

Table 4.5 Responses (according to voice change status) regarding perceived ability to use own voice

Question	Total Yes %	Voice Changing %	Voice Unchanged %	Difference Changing/Un ch %	Chi-square df=1 N=380	P
Q19. My voice will not do what I want it to	25	30	20	10	4.81	< .05

With regard to participants' responses to the statement about being able to manipulate their voice at will (as shown in table 4.5), boys whose voices had begun to change were more insecure about the use of their voice than were those whose voices had yet to change. The Chi square calculation showed a significance at the .05 level [$\chi^2 (df = 1, N=380) = 4.81, p < .05$]].

Twenty (20) percent of the total sample agreed that they would like to sing but did not think they could. In terms of their perceptions of their vocal range, twenty three (23) percent of boys did not join in class singing because they felt that the vocal range of the songs was too high or too low for their voices.

Of those students who acknowledged that they had a school song, fifty three (53) percent agreed that they always joined in the singing when it was being sung. Eleven (11) percent of this total were embarrassed by their voice and did not join in the singing. Twenty-four (24) percent of the total sample agreed that it was "not cool" to join in singing the school song.

Singing Experience

The participants were asked to respond to a range of statements reflecting attitudes towards singing in the home. Sixty four (64) percent of the total sample had family members who sang for fun in the home.

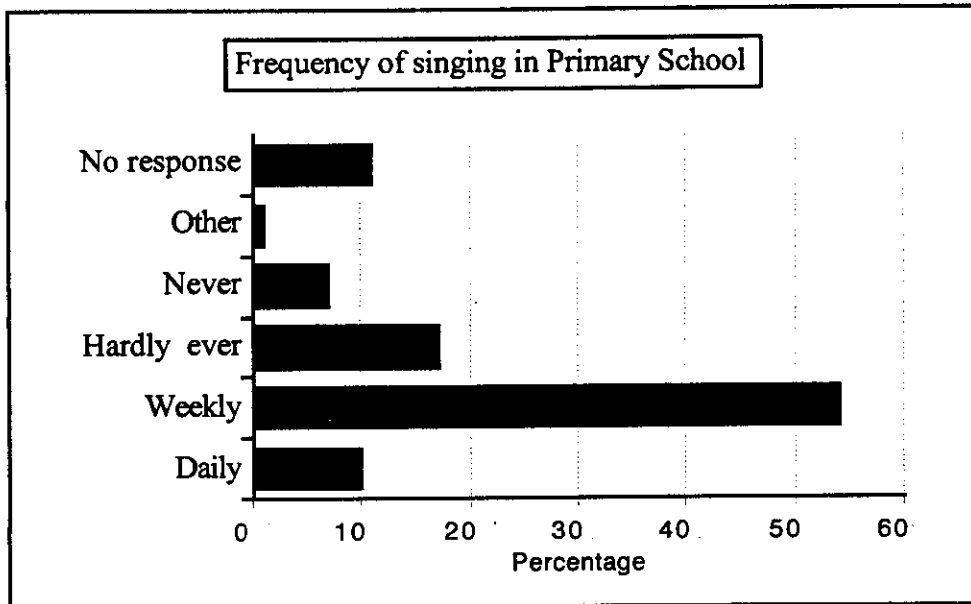
When questioned about their primary school musical involvement, fifty five (55) percent of all subjects responded affirmatively that they sang in a musical production of some sort while attending primary school. The subjects were asked to state the frequency with which they sang in school when they were in primary school. Ten (10) percent confirmed that they sang every day, fifty-four (54) percent indicated that they sang once a week, eighteen (18) percent said that they hardly ever sang in primary school, and seven (7) percent said that they never sang in primary school at all. In interpreting these results, it needs to be remembered that these subjects were in years seven and eight and thus would be expected to have a reasonable recollection of their primary school experiences. These figures are represented in Table 4.6.

Table 4.6 Frequency of singing in primary school.

Every day	Once a week	Hardly ever	Never	Other	No response
10%	54%	17%	7%	1%	11%

A graph depicting the frequency of the participants' singing in primary school is shown in Figure 4.6.

Figure 4.3 Frequency of singing in Primary School



When asked to recollect a song they enjoyed singing in primary school, seventeen (17) percent responded by writing either “none” or “nothing”. The remainder of the subjects gave no response.

Twenty-nine (29) percent of the total sample of boys surveyed did not consider that they had singing as a regular part of their music lessons. When it came to appreciation of singing at school, seventy-four (74) percent said that they did not enjoy singing in class. Further, when considering the responses to the statement that “the songs we sing in school are fun,” seventy-four (74) percent responded in the negative.

When responding to the prospect of having input into choosing the songs they sang in class, seventy-four (74) percent of the total sample indicated

that they had no choice at all. Also, when asked to comment on their preparedness to sing, eighty five (85) percent of the total sample agreed that they did no vocal warm up or vocal exercises before they sang.

Musical experience

On the subject of live musical experiences in the previous twelve months, six (6) percent of the total sample had been to an opera, twenty one (21) percent had attended a rock opera ("such as Jesus Christ Super Star") and twenty two (22) percent had been to a rock concert. The percentages of attendance at choral and orchestral concerts were eighteen (18) percent and sixteen (16) percent respectively.

Of the total sample, the percentage of subjects currently involved in a rock band was six (6) percent as an instrumentalist and five (5) percent as a singer. All of the participants who indicated that they sang in a rock band had voices which had begun to change. Twelve percent of the total sample were actively involved in playing in a stage or concert band at school.

Membership of a singing group

The total number of participants actively involved in a singing group or vocal ensemble was very small. Because these numbers were so low, the figures are reported principally as raw numbers.

A total of fifteen ($n = 15$) were involved in a mixed voice ensemble at school, with thirteen of these fifteen boys' voices already changing. Of a total of seven ($n = 7$) belonging to a single sex voice group, only one voice was of unchanged status. None of this last group was from a single

sex school. There were twelve ($n = 12$), students involved in a co-educational singing group outside school, with nine ($n = 9$) of these having voices already changing, and three ($n = 3$) as yet unchanged. "A singing group not listed above" drew affirmative responses from thirty four ($n = 34$) boys, with eighteen ($n = 18$) voices changing and thirteen ($n = 13$) unchanged (three were "non-response" to this category). These figures are displayed as Table 4.7.

Table 4.7 Participants involved in singing groups

Type of Voice Group	Number of Yes Responses	Voice changing	Voice Unchanged
School based (boys and girls)	15	13	2
School based (boys only)	7	6	1
Non-school (boys and girls)	12	9	3
Other not listed	34	18	13

It would appear from Table 4.7 that from a total sample of four hundred and four boys, sixty eight ($n = 68$) were involved in various types of vocal groups, with by far the largest group being outside the organisation of the school. However, when these figures were cross referenced, it became clear that many students were involved in more than one singing group, so after allowing for this, there were in fact only a total of thirty-nine ($n = 39$) boys from the total sample of four hundred and four who were actually involved in a singing group, either in or out of school, with the largest

group still being the “outside school”. From this total of thirty-nine, five ($n = 5$) also played in a school band or orchestra. Thus, of the total sample of four hundred and four boys, less than ten (10) percent (9.65) were actually involved in any type of choral activity.

Reasons for joining a singing group

Students were asked to choose reasons for being involved in a singing group. Once again, due to the fact that the number of students is very small, these responses are again reported as raw numbers. Most students agreed with more than one statement.

Twenty seven ($n = 27$) boys joined their singing group “to have fun”, while twenty-one ($n = 2$) joined because they enjoyed performing. To “get out of school time” was agreed to by fourteen ($n = 14$) while nineteen ($n = 19$) agreed to joining because their friends were already members. Fifteen ($n = 15$) joined because they felt they needed to learn how to use their voice, and these respondents’ voice change status was evenly spread over changing and unchanged voice types. Nineteen ($n = 19$) of the participants already in a singing group joined because they wanted to learn the songs, while seven ($n = 7$) of the subjects who joined a singing group did so at teacher invitation.

When these responses were cross referenced according to voice change status, several students either gave no response or wrote “don’t know” which accounts for the difference in the numbers. The figures are summarised in Table 4.8.

Table 4.8 Participants' reasons for joining a singing group

Question - "I joined ..."	Total % Yes responses	Total % voice changing	Total % voice un-changed
Q34 To have fun	68	68	67
Q35 Because I enjoy performing	52	55	57
Q36 To get out of school time	35	19	60
Q37 Because my friends were in it	48	36	67
Q38 Because I wanted to learn how to use my voice	38	36	36
Q39 Because I wanted to learn the songs	49	55	43
Q40 Because my teacher asked me to	18	14	7

Of the thirty four boys (n=34) who were in a singing group, eighteen (n=18) acknowledged that they did not do any vocal-warm ups or exercises as a regular part of that activity. Of interest to note is that of these thirty four (n=34) who answered in the affirmative to being in a singing group, only one responded to name "a song you enjoy singing now in your group". He wrote "all".

Reasons for not being in a singing group.

The participants were asked to indicate, again by a yes or a no response, their reasons for either leaving a singing group or never joining one. Fifty

(50) percent of the total sample responded that “it was not fun”, and agreed that they “would have to miss out on lunch”, while fifty six (56) percent did not like the songs that were being sung. Thirty (30) percent of the boys agreed that their friends made fun of singers. Sporting activity was considered to be a higher priority for sixty-nine (69) percent of the boys, thirty-eight (38) percent were of the opinion that they “could not sing those songs”, and fifty-seven (57) percent did not join because the “teacher chooses all the songs”. Finally, all these responses were cross-referenced according to voice change status. These results are summarised in Table 4.9.

Table 4.9 Reasons for leaving, or not joining, a singing group.

Question - I left my singing group or never joined one because:-	Total % Yes responses	Voice changing %	Voice unchanged %
Q42. It is not fun	50	45	55
Q43 I would have to miss out on lunch	50	56	43
Q44 I do not like the songs they sing	56	57	55
Q45 My friends make fun of singers	30	29	31
Q46 My sporting activity is more important	69	68	68
Q47 I could not sing those songs	38	38	38
Q48 The teacher chooses all the songs	57	55	59

Sixteen (16) percent of the participants agreed with the statement “all girls sing well”, while twenty two (22) percent of all boys agreed that choirs should be for girls only. Forty one (41) percent of all participants surveyed agreed that boys who sing in choirs are “sissy”. Finally, a total of sixty six (66) percent agreed that singing in a rock band was or would be “excellent”.

The conclusions to be drawn from the data submitted in this chapter are presented in chapter five.

CHAPTER FIVE

Principal Findings and Conclusions

This chapter presents the principal findings of the research and the conclusions drawn from them. The chapter begins with a restatement of the problem which is followed by the reiteration of the purpose of the research and the two research questions. Seven principal findings are presented as the main outcomes of the research. Conclusions are drawn from these outcomes, and finally, recommendations for further research are submitted.

Restatement of the problem

While there are pockets of male voice ensembles, and some specific programs of balanced choral involvement can be found in NSW, the gender balance in most adult choral organisations shows a very low ratio of male to female voices. The author surmised a direct link between this imbalance in adulthood and the low participation rate of adolescent boys singing in secondary school.

Restatement of the purpose

This study sought to establish the extent specific factors influence the formation of attitudes of adolescent boys in junior secondary school, causing them to reject participation in choral singing and singing activities in learning situations. The study focused on two specific factors which the author considers central to the issue in order to explore and assess the

extent of their influence. These factors were presented as the research questions:

- i To what extent does voice mutation affect adolescent boys' attitudes towards singing at high school?
- ii To what extent does previous singing experience affect adolescent boys' attitudes towards singing at high school?

The research has been intentionally focused toward recommendations for improving choral pedagogy and the development of concrete strategies to address the imbalance of boys involved in singing in secondary school and, thereby, ultimately to improve the balance of males in adult choral ensembles. Research that identifies the reasons for low participation rates of adolescent boys in singing activities will be of value to syllabus direction in primary and secondary schools in Australia, particularly in NSW, and provide insight into ways of redressing the gender bias. It may also contribute to a reduction in the number of "missing males".

Principal findings

Seven issues have emerged which can be seen as embodying the principal findings of the research.

- 1 The low number of boys involved in any form of choral activity
- 2 The reluctance of boys with changing voices to sing when not alone
- 3 The paucity of regular singing in primary schools
- 4 The high level of student dissatisfaction with primary school singing
- 5 The low priority placed on vocal health in junior secondary schools
- 6 The disparity between students' choices and teacher's choice of songs
- 7 The importance placed on sport taking precedence over creative endeavours

1 The low number of boys involved in any form of choral activity

The total sample of four hundred and four (404) boys, was drawn from both government and private schools across a broad geographic spread of NSW, and included a wide socio-economic distribution. Of the four hundred and four (404) boys, only thirty-nine (39) were involved in a vocal ensemble or singing group. This figure, while confirming the author's own experiences and expectations, was even lower than anticipated and should be a matter for serious consideration by music educators everywhere. The difficulties associated with this finding are confirmed by O'Doherty (1995) who states "the idea that the education of boys poses special difficulties is not new" (p1).

2 The reluctance of boys with changing voices to sing when not alone

It became obvious early in the process of analysing the raw survey data, that voice change status of the participants was an important issue. To every survey question, where the results were split and analysed according to the voice

change status of the respondent, there was a substantial variance in the responses. Respondents whose voices had begun to change indicated some degree of embarrassment or expressed unwillingness to use their developing voice to sing when not alone. Where the responses were analysed according to voice change status, the difference between those of changing voice and unchanged voice proved to be statistically significant, or very close, to the $p < .05$ level. All of which leads to the deduction that voice mutation (and lack of true understanding of the process) could be an important factor in preventing adolescent boys from joining a singing group or from singing in the presence of others. This deduction had been predicted by Leeder and Haynie (1959) when they stated that "the incidence of the boy's changing voice determines the value of singing activities in junior high school classes or elective choral groups" (p29).

3 The paucity of regular singing in primary schools

Of the total sample of four hundred and four (404) boys, only ten (10) percent affirmed that they sang every day in primary schools. Scholars from Pestalozzi (in Green 1913) and Dewey (1934) through to more recent researchers such as Russell-Bowie (1993), Temmerman (1997) and Halsey (1998) confirm the importance of early childhood learning, and place importance on the frequency and repetition of the learning experiences to facilitate successful outcomes. An analysis of the statistics obtained from the author's research suggest major problems in the quality of the teaching and learning of singing in primary schools in NSW. More than fifty (50) percent of the total sample of students defined their involvement with any form of singing in primary school as only one session a week. Of even more concern were the seventeen (17) percent who responded that they sang at school "hardly ever", and the seven (7)

percent who responded “never” to the question relating to the frequency of singing at school. The NSW Kindergarten to Year Six Music syllabus (1984) specifically describes singing as a learning activity, and has proficiency in singing as a desired outcome, it could be inferred that there are many teachers who are not complying with the requirements of this syllabus.

4 The high level of student dissatisfaction with primary school singing

Seventy four (74) percent of the total sample of boys gave a negative response when answering the question about their primary school singing experiences. In other words they had not enjoyed singing in primary school. In addition, seventy four (74) percent of the respondents indicated that they considered the songs that they did sing in class were “not fun”. The information obtained from these responses demonstrates the existence of an inordinately high degree of negativity, and points to another unhappy conclusion, that both the methods of teaching singing, and the song material used in a high percentage of the primary schools attended by this survey’s participants, are not conducive to successful learning outcomes.

5 The low priority placed on vocal health in junior secondary schools

Eighty-five (85) percent of the total sample of student responded that they did no vocal warm ups or any type of activity that would loosen vocal mechanism muscles or prepare young voices for singing. Researchers such as Herman, (1988), Phillips (1994), Cooksey (1994), and Rao (1987), experienced in training young voices, agree on the high importance of vocal health, and stress the importance of limbering up the anatomical vocal mechanism before singing. Secondary school years seven and eight are the crucial years for the onset of voice mutation in both sexes, yet a high percentage of the trained music

teachers of the participants in the survey gave the vocal health of the adolescents in their care no recognition at all.

6 The disparity between students's choice and teacher's choice of songs

The survey revealed a considerable inconsistency between students' choice of songs to "sing along for enjoyment at home", and the choice of songs, where there was very little student in-put, that the students experienced at school. Only twenty-six percent (26) of all students said that they had some say in the choice of the songs they sang in class. Students were asked to name the songs that they enjoyed "singing along to" at home. When this list was codified and examined, it could be read as a type of "popular hits for early teens". With the exception of one song popularised by "Pavarotti", one "Phantom of the Opera" song noted by a student who had been to see the live performance, and one Beatles song, all were recent pop or soft rock songs. When the list of student choice songs was compared with the list of songs that the students disliked singing in class, there was no commonality. While it is not suggested that a junior music program be built around current popular hits, there is clearly a need for the choice of material used in music education to have relevance to the students, as well as being "quality music of lasting value" (Cooksey 1978, p5). Experienced musicians and teachers of secondary students such as Vulliamy and Lee (1982) and have shown the efficacy of incorporating popular music into a secondary curriculum.

7 The importance placed on sport as taking precedence over creative endeavours

The high percentage of participants (sixty-nine [69] percent) who consider their sporting activity should receive higher importance over singing activities raises

a number of concerns. Most importantly, students should not have to make a choice between sporting and creative activities. All students are entitled to have all their multiple intelligences (Gardner 1983) challenged and extended by teaching and learning programs that recognise the principle of gender equity and “a fair go for all” (NSW Department of Education 1996b).

Conclusions

Many conclusions can be drawn from the research presented in the forgoing chapters. The following conclusions presented are those the author considers to be the most compelling, for primary, secondary, and tertiary music educators.

- 1 Vocal mutation directly linked to low participation of boys in singing
- 2 Importance of previous singing experience
- 3 Primary teachers inexperience and lack of knowledge in teaching singing
- 4 Secondary music teachers limited understanding of the importance of vocal health
- 5 High priority placed on sport

1 Vocal mutation directly linked to low participation in singing

Even though a very high percentage of the total sample of survey participants indicated that they “understood the change of voice”, it is not clear that the physical and anatomical changes are understood and appreciated. It is argued that the general lack of knowledge of the actual process of the voice change, particularly with regard to temporary limited range and lack of vocal control is a direct cause of low self esteem in adolescent boys in relation to the use of the voice for public singing.

2 Importance of previous singing experience

It is suggested that many teachers, both primary and secondary are not conversant with the musical interests of their students outside the school, nor are they responsive to the importance of making these early singing experiences both enjoyable and conducive to successful educational outcomes.

3 Primary teachers' inexperience and lack of knowledge in teaching singing

The results of the research show that many primary teachers seem ill equipped to deal with teaching singing, and demonstrate little knowledge of and/or interest in vocal skills, or the teaching of these skills. It is suggested that many teachers are not aware of the views of scholars such as Leeder and Haynie (1959) who state that "singing is a very important activity in the general music class ... it is the most logical and natural mainstream for teaching (all) aspects of music" (p28). It is also suggested that educators of primary teachers seem unaware of the need to equip student teachers with this valuable skill. Kavanagh (1995) refers to research which shows that over ninety percent of America's top chief Executive Officers and corporate presidents had music lessons when they were young, while over ninety percent of the criminals in death row had not had this experience.

4 Secondary music teachers' limited understanding of the importance of vocal health in adolescents

It would appear that many secondary music teachers are not conversant with the full educational and social ramifications of the adolescent changing voice, particularly with regard to the crucial age group under discussion. This again

highlights the importance of voice mutation in boys' lack of involvement in choral singing.

5 High priority placed on sport

Many high schools, both in their structuring of curriculum and in the unspoken attitudes of staff, encourage students, particularly boys, to place a higher priority on sporting prowess, and establish this in opposition to creative activities instead of as complementary. This also confirms the masculine stereotype and highlights the importance of gender equity in all teaching and learning programs. Many boys "have grown up with the idea that singing is for girls ... singing is considered a 'sissy' thing". (Leeder and Haynie 1959 p76).

Implications for this research

Having analysed the results of the research, it is appropriate to return to the original question of Julius Sumner Miller - "Why is it so?". We have "the need to know" (Carlson 1994 p181) why do adolescent boys reject involvement in choral activities in secondary school?

Conclusions reached by analysis of information obtained through a survey of junior secondary school students provide some insight to the research questions:

- i To what extent does voice mutation affect adolescent boys' attitudes towards singing at secondary school?

The boys' general lack of knowledge of the process of voice mutation causes

them to consider that they cannot sing, or that they “do not have a voice”. This has considerable impact on their attitude formation, particularly with regard to becoming involved in choral activities in secondary school.

- ii To what extent does previous singing experience affect adolescent boys’ attitudes towards singing at secondary school?

Boys’ previous singing experiences appear to have a major and complex impact on their attitudes towards singing in secondary school.

Recommendations

Lowell Mason held that “all children should be taught to read music and to sing” (in Goodman, 1987, p37) and while this dictum would appear to be intrinsic to the NSW Primary Syllabus in Music, it becomes apparent that many primary teachers are not able to fulfil this requirement, particularly with regard to singing. The recommendations which have arisen from this study are presented with the long term view of improving choral pedagogy.

Six issues have been highlighted:

- 1 Focus on voice as communication medium
- 2 Specialist voice teachers in primary schools with emphasis on segregating boys and girls for singing
- 3 More male teachers in Infants and Primary Schools
- 4 Inservicing of secondary teachers in voice
- 5 Emphasis on voice in training of secondary music teachers
- 6 Availability of choral resources

1 Focus on voice as communication medium

The voice should be considered as a unique means of communication, the mechanism of which needs to be understood by every teacher, regardless of their musical inclinations or talents. From this premise, can be drawn several additional important proposals.

2 Specialist voice teachers in primary school with emphasis on segregating boys and girls for singing

There is an urgent need for specialist voice trainers in all primary schools. These could be peripatetic and service, for example, all the schools in an education district. Elliot (1995), for example, confirms the importance of “musical teachers for children everywhere” (p253). These voice specialists could also provide ongoing inservice for primary teachers, both in the use of their own voices and in assisting young voices to communicate vocally and to sing. There is already a precedent for the efficacy of such a program, detailed by Kempton (1998 p7) particularly when the support voice specialist works with separate boys and girls groups. This method is reinforced by Leeder and Haynie (1959) who indicate that “many boys ... enjoy singing in a group of ‘men only’” (p76).

3 More male teachers in Infants and Primary Schools

Boys must be encouraged to consider infants and primary teaching as career options. The uneven balance which currently exists in many primary schools, between the high number of women teachers, who are often seen as carers and nurturers, and the small number of men in executive positions, who can be seen as holders of power, and who do not express creative emotion, does not give enough positive role models for either boys or girls.

4 Inservicing of secondary teachers in voice

Secondary school music teachers need frequent inservicing in the problems of adolescent changing voices - both boys and girls.

5 Emphasis on voice in secondary training

There needs to be a greater emphasis in the training of secondary music teachers on use of voice as both means of expression and a medium of communication as well as an instrument (equal to, if not superior to a manufactured instrument).

6 Availability of choral resources

There should be the provision of appropriate, accessible, quality choral music available for primary teachers, with suitable support teaching material, particularly accompaniment tapes, and suggested teaching strategies. These could be part of resource packages for non-music-trained primary teachers. The NSW Department of Education and Training Curriculum Development Unit in the Creative Arts Key Learning Area has already begun to develop support material in music for primary teachers and this can be seen as a positive initiative.

All of the above recommendations can be seen as important in implementing strategies for improving choral pedagogy and for ultimately redressing the male imbalance in adult choral societies.

Future research

Due to the breadth of the survey conducted by the author, there is a large amount of data available which is outside the scope of this particular thesis. Numerous topics have therefore been uncovered which provide ample grounds

for further research. The most relevant ones are listed below.

- 1 A comparison of the boys' responses in this study with the equivalent responses obtained from the girls who participated in the survey
- 2 Gender stereotyping in teaching methodology
- 3 Attitudes of primary teachers to teaching singing
- 4 Training programs for primary teachers
- 5 Influence of ethnicity, Aboriginal, Torres Straight Islander background on singing in schools.

This study has had the objective of improving choral pedagogy by seeking to establish the extent to which specific factors influence the attitudes of adolescent boys causing them to reject participation in choral singing and singing activities in learning situations. The author, through a self-designed questionnaire, has elicited data which shows that both vocal mutation and previous singing experience have substantial influence upon the attitude formation of adolescent boys towards their non-involvement in choral singing. This data has also pointed the direction for a considerable amount of future research, for, as Lehmann (1902) has expressed, "one is never done with learning, and that is especially true of singers" (p4).

APPENDIX I

Pilot Survey

AGE

SEX

SCHOOL NOW

PRIMARY SCHOOL

M..... F.....

1 Were you ever involved in a special singing group when you were in :-

infants school
primary school

Y.....n.....
Y.....n.....

2 in infants school

can you recollect if this was by your choice
or the teachers

Y.....n.....
Y.....n.....

3 If by your choice was it because :-

your friends were in it
you really wanted to

any other reason

4 Primary school

can you recollect if this was by your choice
or the teachers

Y.....n.....
Y.....n.....

5 If by your choice was it because :-

your friends were in it
you really wanted to

any other reason

6 If your selection was by the teacher, did you have to 'audition' or sing alone?

Y.....n.....

7 Was this a bad or good experience for you?

b.....g.....

why

8 Do you have any recollection of singing in class in primary school Y.....n.....

9 Was this a regular occurrence? Y.....n.....

10 How often? (eg daily, once a week, hardly ever)

- 11 Can you recall any happy experiences through singing in either primary or infants school? y.....n.....
- 12 If the answer to 11 is yes, would you briefly note a few words of detail

- 13 If the answer to 11 was no would you briefly note a few words of detail

- 14 Have you experienced significant changes in your speaking voice in the last 4/5 years y.....n.....
- 15 If yes, how old were you when these began? _____
- 16 If yes, do you think your 'new voice' is fully settled? y.....n.....
 are you completely comfortable with this new range y.....n.....
- 17 Did you feel confident singing, even in a group before these changes? y.....n.....
- 18 If no, why not? _____

- 19 Have you tried experimenting with your 'new' singing voice y.....n.....
- 20 Do you feel 'in control' of this new instrument? y.....n.....
- 21 If the answer to 19 or 20 was no would you please give a few reasons as to why

- 22 Have you ever voluntarily joined a singing group while in secondary school y.....n.....
- 23 If the answer to 22 was no, could you please list the following in your priority order
 --- Too embarrassed to use voice
 --- Don't feel 'in control' of voice enough
 --- Rehearsal time took time away from sport
 --- Rehearsal time took time away from friends
 --- Any other reason _____

Questionnaire

THIS QUESTIONNAIRE IS TOTALLY CONFIDENTIAL

DO NOT GIVE YOUR NAME

You may return the questionnaire without filling it in if you wish.

MOST OF THE TIME YOU SIMPLY CIRCLE YES OR NO

PLEASE TAKE A LITTLE TIME TO READ THE QUESTIONS CAREFULLY

THANK YOU FOR YOUR HELP!

1	I am a:-	(please circle)	girl		boy
2	On 1st June 1997 my age will be:-				
3	In 1997 I am in Year	(please circle)	7		8
4	My school is co-ed (both girls and boys)		YES		NO
5	My school is all boys		YES		NO
6	My father's birth country was Australia		YES		NO
	<i>If no, please complete: My father's birth country was</i>				
7	My mother's birth country was Australia		YES		NO
	<i>If no, please complete: My mother's birth country was</i>				
8	In my home people sing for fun sometimes		YES		NO
9	I sing at home by myself		YES		NO
10	I sing at home by myself with my own live accompaniment, (guitar, piano, etc)		YES		NO
11	At home I sing along to CD or tapes when I am alone		YES		NO
12	At home I sing along to CD or tapes when others are there		YES		NO
13	<i>A song I really enjoy singing along to now is:-</i>				
14	My voice has started to change		YES		NO
15	My voice embarrasses me when others are there		YES		NO
16	I like the sound of my voice when I sing		YES		NO
17	My family jokes about my voice		YES		NO
18	My friends joke about my voice		YES		NO
19	My voice will not do what I want it to.		YES		NO
20	I would like to sing but do not think I can		YES		NO
	IN THE LAST 12 MONTHS I HAVE BEEN TO :-				
21	an opera		YES		NO
22	a rock opera or a musical (eg Jesus Christ Super Star or West Side Story)		YES		NO
23	an orchestral concert		YES		NO
24	a choral concert		YES		NO
25	a rock concert		YES		NO
26	any other musical event (please give details)				
	PERFORMING				
27	I sing in a rock band		YES		NO
28	I play in a rock band		YES		NO
29	I play in a school orchestra and/or school stage or concert band		YES		NO
30	I am a member of my school singing group which has both girls and boys		YES		NO
31	I am a member of my school singing group, single sex only		YES		NO
32	I am a member of a singing group NOT AT SCHOOL (mixed girls and boys)		YES		NO
33	<i>I am a member of a singing group not listed above which is:-</i>				

IF YOU ARE NOT IN A SINGING GROUP NOW, GO TO QUESTION 42

IF YOU ARE IN A SINGING GROUP NOW, GO ON WITH QUESTION 34

Letter to Principal

IF YOU ARE NOT IN A SINGING GROUP NOW, GO TO QUESTION 42

IF YOU ARE IN A SINGING GROUP NOW, GO ON WITH QUESTION 34

34	I joined my singing group to have fun	YES	NO
35	I joined my singing group because I enjoy performing	YES	NO
36	I joined my singing group to get out of school time	YES	NO
37	I joined my singing group because my friends were in it	YES	NO
38	I joined because I wanted to learn how to use my voice	YES	NO
39	I joined because I wanted to learn the songs	YES	NO
40	I joined because my teacher asked me to	YES	NO
41	In my singing group we do warm up voice exercises	YES	NO
<i>The song I most enjoy singing in my group now, is:</i>			

IF YOU ARE IN A SINGING GROUP NOW, GO TO NUMBER 49

IF YOU ARE NOT IN A SINGING GROUP NOW, GO ON WITH QUESTION 42

I LEFT MY SINGING GROUP, OR I HAVE NEVER JOINED ONE BECAUSE:-

42	It is not fun	YES	NO
43	I would have to miss out on my lunch time	YES	NO
44	I don't like the songs they sing	YES	NO
45	My friends make fun of singers	YES	NO
46	My sporting activity is more important	YES	NO
47	I could not sing those songs	YES	NO
48	The teacher chooses all the songs	YES	NO

MORE ABOUT PERFORMING

49	I have sung in a school musical production (in primary or high school)	YES	NO
50	At my school we have singing as part of our music lessons	YES	NO
51	I enjoy singing in class	YES	NO
52	The songs we sing in school are fun	YES	NO
53	A song I really enjoy singing in class now is:-		
54	A song I really dislike singing in class now is:-		
55	Class members help choose the songs we sing	YES	NO
56	We do breathing and/or singing exercises before we sing songs	YES	NO
57	I do not sing even if I like the songs because they are too low or too high for me	YES	NO
58	At my school we have a school song	YES	NO

IF YOU HAVE A SCHOOL SONG ANSWER THE NEXT THREE QUESTIONS

IF YOU DO NOT HAVE A SCHOOL SONG GO TO NUMBER 62

59	I always join in singing the school song	YES	NO
60	I do not join in because my voice embarrasses me	YES	NO
61	I do not join in singing because it is not cool	YES	NO

FINALLY

62 In my primary school we sang:- every day/once a week/hardly ever/never

Please circle one of the above or write how often you did sing

A song I really enjoyed singing in primary school was:

63	I understand what the change of voice is	YES	NO
64	I was told to stop singing when my voice began to change	YES	NO
65	All girls sing well.	YES	NO
66	Boys should not sing while their voice is changing.	YES	NO
67	It is difficult for boys to sing in tune.	YES	NO
68	Singing in choirs or groups should be for girls only.	YES	NO
69	I think that boys who sing in choirs are sissy.	YES	NO
70	Singing with a rock band would be/is excellent	YES	NO

THANK YOU FOR YOUR HELP!

Letter to Principal



The University of Sydney
SYDNEY CONSERVATORIUM OF MUSIC
Macquarie Street Sydney NSW 2000 Australia



11th April 1997

11th April 1997

Dear Principal.

The music staff of your school are invited to take part in a survey which is looking at the attitudes of adolescent boys to singing. I am a high school music teacher, currently engaged in post-graduate research for a Master of Music (Music Education). My study is in the area of Gender Equity, directly in line with Agenda '97.

I seek your permission for one year seven and one year eight class from your school to participate in a survey that will require approximately 15-20 minutes, and am hopeful that you could offer me support by enlisting the cooperation of your music staff, to administer the enclosed questionnaire.

All aspects of the questionnaire will be strictly confidential, and I will be the only person to have access to the returned copies. All questionnaires are anonymous, and at no time will you, your staff or school, or the demographic area be identified in any way. A report of the study may be submitted for publication, but the results will only be reported in summary. I will be happy to provide your school with a copy of my final report.

I have enclosed sufficient copies and a reply paid envelope.

If you have any concerns or complaints about the conduct of this research, please contact the Secretary of the Human Ethics Committee, University of Sydney on (02) 9351 4811

Yours sincerely,

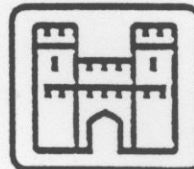
Leigh Vaughan
065 546062

Letter to Colleague Music Teacher



The University of Sydney

SYDNEY CONSERVATORIUM OF MUSIC
 Macquarie Street Sydney NSW 2000 Australia



Phone (02) 9351 4811 Fax (02) 9351 6706

*Ms L Vaughan
 PO Box 10
 Forest NSW 2439*

11th April 1997

Dear Colleague.

You are invited to take part in a research study which is looking at the attitudes of adolescent boys to singing. I am a high school music teacher, currently engaged in post-graduate research for a Master of Music (Music Education). My study is in the area of Gender Equity, directly in line with Agenda '97, and is aimed at discovering the reasons why the numbers of boys involved in singing in schools, (apart from rock bands) is so incredibly small, and appears, in some areas, to be diminishing.

I would be most grateful if you could give the enclosed questionnaire to **one year seven and one year eight class**. I have included sixty copies, and a reply-paid envelope to enable you to return it to me at your earliest convenience.

I would also appreciate any comments you care to make. You will notice that the students are requested not to use their names. To ensure the total confidentiality of this information, no student or teachers names nor the names of the schools will be used, nor will the demographic areas be referred to. I will be the only person to see the questionnaires and to collate the information.

If you have any concerns or complaints about the conduct of this research, please contact the Secretary of the Human Ethics Committee, University of Sydney on (02) 93514811

Yours sincerely.

L Vaughan
 Leigh Vaughan
 065 546062

*Dr J D G Wilson
 Chairman
 Human Ethics Committee*

c.c. Dr P Brennan, Sydney Conservatorium of Music, C41



University of Sydney
 Sydney N.S.W. 2006
 Human Ethics Committee

Room N420, Main Quad, A14

Telephone (02) 9351 4811 Fax (02) 9351 6706



CORPORATE PERFORMANCE

Leigh T. Vaughan
 PO Box 16,
 FORSTER, 2428

Ms L. Vaughan
 PO Box 16
 Forster NSW 2428

SERAP Ref: 97053

10 June 1997

Dear Ms Vaughan,

Title: Attitudes of adolescent boys to singing

Ref No: 97/5/10

Thank you for your correspondence addressing comments made to you by the Committee.

After considering the additional information relating to the above protocol, it was the Committee's opinion that there were no ethical objections to the project, and therefore recommends approval to proceed.

The additional information will be filed with your application.

The procedures outlined in the protocol must be adhered to.

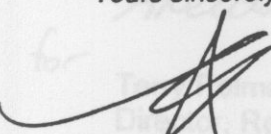
Please note, the Subject Information Sheet and Consent Form must be on University of Sydney letterhead and must include the full title of the research project and telephone contacts for the researchers.

The following statement must appear on the Subject Information Sheet:
Any person with concerns or complaints about the conduct of a research study can contact the Secretary of the Human Ethics Committee, University of Sydney on (02) 9351 4811.

Approval for the protocol is given on the understanding that you will return the "Report Form - Monitoring of Research", which will be provided by Committee, as a progress report on your research by no later than 30 June 1998.

Approval has been given for one year and renewal is contingent upon the provision of the progress report.

Yours sincerely


 Dr J D G Watson
 Chairman
 Human Ethics Committee

c.c. Dr P Brennan, Sydney Conservatorium of Music, C41

APPENDIX VI



NEW SOUTH WALES
DEPARTMENT
OF SCHOOL
EDUCATION

CORPORATE PERFORMANCE

Leigh T. Vaughan
PO Box 16,
FORSTER. 2428

BIBLIOGRAPHY

Dear Leigh

SERAP Ref: 97053

I refer to your application to conduct a project in Departmental schools entitled:

The attitudes of adolescent boys to singing (1984) *Foundations of Music*

I am pleased to inform you that I have approved your application to conduct research in NSW government schools. I ask that you now contact the principals of the nominated schools to seek their participation. This approval remains valid until:

7/7/98

In conducting research, you should be aware of the following requirements:

- the principal must approve the methods of gathering information in the school and has the right to withdraw the school from the study at any time;
- the privacy of the school and the students is to be protected.

You are reminded that the participation of teachers and students must be voluntary and must be at the school's convenience. Note that in advising principals that approval has been given for you to seek their support in your study, you should include a copy of this letter with the documents you send to schools.

When your study is completed, please forward your report marked to my assistant, Annette Reidsema, at the Department of School Education, Locked Bag 7, Hamilton Mail Centre, Hamilton. 2303

I wish you every success with your project.

Yours sincerely

A. Reidsema

for

Terry Palmer
Director, Research and Development
7 July 1997

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