Aspects of motivation, self-concept and coping strategies in boys in Australian independent schools: a contextual comparison

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ABSTRACT

This thesis records an empirical study into psychological aspects reported by early adolescent and mid-adolescent boys. The research described in this thesis considered three different psychological characteristics, namely motivation, self-concept, and coping strategies, in 13-15 years old boys in Australian independent schools. These characteristics were considered within the context of two different school types, co-educational or single-sex boys. A total of 330 boys were tested, with samples from two year groups (Year 8 and Year 10) in each of two co-educational schools and two single-sex boys' schools. The four schools surveyed were located in large urban areas in two Australian states, and they were non-Catholic Christian day and boarding schools taking enrolments from pre-Grade 1 (four and a half years old) to the final year of secondary education, Year 12 (seventeen years old).

The psychological tests used were the School Motivation Analysis Test (motivation), the Self-Description Questionnaire-II (self-concept), and the Adolescent Coping Scale (coping strategies). Additionally, a demographic questionnaire obtained details of family background, socioeconomic status of children in the school, ethnic origin, occupation of parents, number of years spent in co-educational schools and single-sex schools, number of brothers, number of sisters, whether a day boy or a boarder, and date of birth.

Statistically significant differences were found between the two groups in each of the three psychological characteristics studied; multiple regression analysis showed that these differences were indicated by school type more frequently than any other independent variable. Finally, suggestions for future work in this area are made.

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DECLARATION

None of the material contained in this thesis has previously been submitted for a degree in the University of Durham, or any other university. The research in this thesis has been the sole work of the author, Bruce Alexander Cook, as part of the requirements for the degree of Doctor of Education in the University of Durham.

STATEMENT OF COPYRIGHT

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Chapter 1: An Introduction to the Problem

This thesis describes a research project which explored differences - if any - between boys educated in single-sex boys' schools and those educated in coeducational schools. A decision had to be made as to which characteristics were to be measured and it was decided to concentrate on three behavioural characteristics, namely motivation, self-concept, and coping strategies. The rationale for choosing these three characteristics was in part because it was felt that each of these constructs is relevant to the achievement, behaviour and goal orientation of boys, and thus if significant differences are found in any of these, we may be led towards a better understanding of optimal learning factors for boys in schools and in turn may be better able to provide those factors for them, thereby enhancing and strengthening their educational prospects.

There is a significant and growing concern from educators and educational researchers around the world that boys are failing. This concern does not go unchallenged, as will be discussed, but despite the challenges, the claim persists. In almost all western countries, boys are falling behind girls in standardised measures of attainment, and the proportion of boys exhibiting learning difficulties, manifesting delinquent behaviour in school and having a tendency to drop out of school early has risen steadily in the past decade. Canada (2000) writes about the North American context and he suggests that even though there have been great advances in medicine and technology, the current generation of boys is in more trouble than ever before. His research in 1996 uncovered the facts that amongst young people aged 15 to 25, three out of four deaths are of males, males are five times more likely to die from homicide than are females, six out of seven suicides in this age range are by males, and nine out of ten arrests are males (Canada, 2000:16).

In Australia, Fletcher (1996) notes the academic superiority of girls in schools and suggests that schools are serving boys poorly. Further, Browne and Fletcher (1995) quote compelling statistics on boys' health in the 15 to 24 year age group. They report, similarly to Canada, that boys have three times the mortality rate of females in this age group as a result firstly of motor vehicle accidents, and secondly from suicide. The age group studied (15 to 24 years) has a four to eight times greater likelihood of being admitted to hospital with other-inflicted injuries, often as a result of fights. Sports based injuries requiring hospital admission are tenfold higher for males compared with females for the 10 to 20 year group. Sports and general over-exertion by males lead to a higher rate of head injuries. Hence the life outcomes of boys vary markedly from those of girls, and Browne and Fletcher (1995) suggest that there are changes that can be made in education to address these issues.

In terms of academic and social outcomes for boys, Browne and Fletcher (1995) indicate that 10% fewer boys finish Year 12, 75% of school suspensions are related to boys, 60% of school counsellor referrals are for boys (and it appears that the problems for which these boys are referred are quite often behavioural problems such as disruption of the classroom), 75% of those in intensive reading classes are boys, and 90% of those in special education classes are boys. Boys do considerably worse in basic English tests at all ages.

Alloway and Gilbert (1997) have looked specifically at literacy levels found in boys, and whilst acknowledging that on many measures, boys are out-performed by girls in literacy-based tasks, Alloway and Gilbert express caution in the interpretation of these results. They note that literacy test results only represent a small component of the totality of literacy competence, because literacy tests and literacy testing reflect class and cultural biases. Accepting these warning notes, it remains the case that in the primary grades, according to Alloway and Gilbert (1997), results from South Australia, Western Australia, New South Wales and Queensland consistently show that the girls are ahead of the boys in literacy tests. Final High School results for English in Queensland indicate that nearly twice as many girls as boys achieve the highest band of achievement ('Very High Achievement') while more than twice as many boys as girls were placed in the two lowest-achieving groups ('Limited Achievement' or 'Very Limited Achievement' respectively) (Alloway and Gilbert, 1997:36-37).

The pattern is similar elsewhere; in Western Australia an analysis of performance in the Tertiary Entrance English Examination indicates that twice as many boys as girls fail English. West (1996, 1998) and West (1999) cite similar evidence from Australia, the United Kingdom and the United States. Kefford (2000) states that in Western Australia at the end of 1999, girls topped Chemistry, Applicable Mathematics, Economics and Accounting, previously regarded as traditional 'boys' subjects. According to Kefford, in New South Wales at the same time girls topped 22 of the 29 tertiary entrance subjects. Kowaluk (1999) also provides similar evidence, and adds that not only are girls leaving the boys behind in literacy-based subjects, but even the lead held by boys over girls in numeracy and the sciences is being eroded. In England and Wales, girls are uniformly scoring higher than boys on standardized tests conducted at ages five, seven, nine and eleven (Pollack, 1998). Even though boys in these two countries (England and Wales) are scoring more strongly in Mathematics in the teenage years, in the General Certificate of Secondary Education (GCSE), taken at age 16, 48 percent of girls - but only 39 percent of boys - score the highest grades

in five or more subjects (Employment, 1996). The literature leaves little room for doubt that, taken as a group, boys are faring less well than girls, particularly in the humanities, Languages and most subjects concerned with communication.

There are critics of this 'boys at risk' scenario. Kenway, Watkins and Tregenza (1997) acknowledge the 'grains of truth' (1997:73) in the suggestion, but argue that it is simplistic and unhelpful. They provide a review of what Bakker (1996:7) calls the 'gender paradox of restructuring' – the 'contradictory effects' of the 'dual process of gender erosion and intensification'. Gender differences in work are intensified because while some core, traditionally male, labour markets are shrinking, other peripheral, traditionally female, labour markets are expanding. However, Kenway *et al.* (1997) conversely posit that there is a gendered convergence of labour market experiences, with females moving into what used to be traditionally male jobs and males moving into traditionally female jobs.

Kenway *et al.* (1997) also look closely at the concept of 'risk', in which popularly boys are seen to be failing at school and at life, in comparison to girls. They suggest that this may not be so, and cite the statistical studies of Teese, Davies, Charlton and Polesel (1995) which challenge the assumption that girls overall are more successful at school than boys, and lead to the suggestion that because gender differences increase with the increasing social disadvantage of the parents, the real question 'is not whether girls as a group or boys as a group are more disadvantaged but which girls and which boys' (Teese *et al.*, 1995:109).

The evidence from the United States is just as alarming. Pollack (1998) states that 'Boys on the whole are not faring well in our schools' (1998:15). Pollack counters the view that schools 'shortchange girls, fail in providing gender equity and fairness, and actually hinder women's intellectual advancement in society' (1998:233). He states that boys are assumed to be doing well in school because many of the brightest academically-performing students, especially in Mathematics and Science, are boys. Pollack provides statistics which seem, on the surface, to show that boys are doing well: boys outnumber girls by 3 to 1 in the top 10 percent in Mathematics and Science; in the top 1 percent, boys outnumber girls by 7 to 1; in some Science tests, no girls scored in the top 3 percent (Pollack, 1998:233). However, Pollack believes that the relatively small numbers of boys at these levels skew the perception of how boys are performing in general.

Pollack cites a University of Chicago study that reveals a new gender gap, with a predominant number of boys in the lowest categories of achievement in reading and writing

skills. This study, bringing together results from six surveys of educational achievement for thousands of boys and girls over thirty years (Pollack, 1998:234), confirms the more recent evidence in other countries discussed above. Additionally, Pollack reports that the percentage of boys attending college (university) has dropped dramatically in 20 years; in the United States in 1998, 58 percent of male high school graduates attended university compared to 67 percent female high school graduates, and women were awarded 55 percent of all bachelor's degrees, a proportion which is continually growing (Pollack, 1998:235).

Parallel to these concerns, but over a much longer period of time, has been research into a greater understanding of motivation in education, and hence the interest in motivational factors affecting boys in schools becomes obvious. Schools have been recognized in the research literature as organizations which may significantly affect adolescent development and behaviour (Frydenberg and Lewis, 1993; Hargreaves, 1982; Reiss, 1995). The research to be described here measures a range of behavioural characteristics of boys in both single-sex boys' schools and co-educational schools. Reiss (1995:309) holds that schools organize differently for boys and girls. Increasingly, the view is becoming more clearly articulated that single-sex boys' schools differ from co-educational schools in culture, pedagogy, style and tone, and through these differences, they may be able to shed some light on what works best for boys. There is a need to bring informed debate to the future of boys' education.

It seems clear from some studies that the type of school as defined in this thesis is important in the development of some attitudes in boys. Lee and Bryk (1986), in a well-controlled study of the effects of single-sex schooling, found that in terms of academic achievement, aspirations, locus of control, attitudes and behaviours, single-sex schooling delivers specific advantages to both boys and girls. They used a random sample of 1,807 students from 75 Catholic high schools in the United States, 45 of which were single-sex schools (21 boys only, 24 girls only) and 30 of which were coeducational schools. Their data was drawn from the High School and Beyond (HSB) project, a national survey on American secondary education conducted in 1980 and sponsored by the National Center for Education Statistics. Lee and Bryk concluded that single-sex schools, for both boys and girls, may facilitate adolescent academic development by providing an environment where social and academic concerns are separated.

In some more recent work by Stables (1990), over 2300 pupils in mixed (coeducational) and single-sex schools in England were tested on their attitudes to Science in general, to

Physics, Chemistry and Biology, and to school. They were also asked to rank in order all their school subjects, both in term of liking and of perceived importance. Stables found that the polarisation of subject interests between the sexes was greater in coeducational schools than in single-sex schools, that there was a clear preference for Languages, Drama and Biology amongst the single-sex-educated boys when compared with boys in coeducational schools, and that boys in single-sex schools tend to have more positive attitudes to school than boys in coeducational schools.

Connell (1996) found that schools figure powerfully in the development of boys' masculinities. He showed that even young boys are aware of the gender of the person in charge of their school, whether men or women are teaching primary school classes and, in the case of boys in co-educational schools, there is an attitude that certain subjects are 'girls' subjects whereas other subjects are 'boys' subjects. Another study using boys in Grades 1 to 3 attempted to determine whether the sexual composition of classes (all male or co-educational) affected the boys' sex role association for reading (McCracken 1973). The subjects in this study were all taught by female teachers and the boys scored 35 items in 2 groups associated with male or female usage. Eighteen items were clearly sex typed to establish obvious gender boundaries, seven were miscellaneous children's items, and ten of the key items were directly related to reading. From the results, boys in all-male classes associated reading related items with males more than boys in co-educational classes. In summary, McCracken found that boys attending a single-sex male school are more likely to judge school related reading as a male activity than boys attending co-educational classes. He did find, however, that this effect was limited primarily to items which are actually used in school, and did not generalise to other reading related items.

Obviously, there are many factors which may affect manifested characteristics of adolescent children, and only one of these factors is the context which is the subject of this research, namely, type of school (either coeducational or single-sex boys). It has been demonstrated by Lee and Marks (1992), Baker, Riordan and Schaub (1995) and Connell (1996) that the learning context may affect behavioural characteristics such as motivation, self-concept and coping strategies. As will be described, attempts are made to control for other factors which could possibly have an influence on these characteristics. Three behavioural characteristics will be measured in this research, and these are motivation (measured by the School Motivation Analysis Test: Krug, Cattell and Sweney, 1976), coping behaviour (measured by the Adolescent Coping Scale: Frydenberg and Lewis, 1993) and self-concept (measured by the Self Description Questionnaire–II: Marsh, 1992).

The next three chapters will deal with background work on these three behavioural characteristics.

Chapter 2: Motivation: The Literature

The major work on the development of motivation theory by psychologists has been carried out over the past 100 years. This evolutionary process has worked its way through psychoanalytic, ethological, and sociobiological theories to drive theories, Gestalt and field and balance theories, expectancy-value theories and attributional theories. Each of these theories will be considered in turn in this chapter.

Motivational psychology is defined by Weiner as relating to the reason 'why human and subhuman organisms think and behave as they do' (Weiner, 1992:1). Motivation is 'the study of the determinants of thought and action – it addresses why behavior is initiated, persists, and stops, as well as what choices are made' (Weiner, 1992:17). The earliest approaches to understanding human motivation were seen in the work of Freud, and the theories of ethology, and sociobiology, according to Weiner (1992). Freud's theory of motivation depended on the requirement that the acts of thinking and actually doing things used energy. In Freud's view, human beings were closed energy systems, and from this view, according to Weiner, the important concepts of homeostasis and hedonism were developed (Weiner, 1992). Homeostasis is the tendency to maintain a constant and stable internal environment, and to Freud the requirement for internal stability meant that automatic corrections constantly occurred in order to bring an organism back to a state of equilibrium. Weiner puts this as 'a detected discrepancy between an ideal and an actual need state (which) initiates activity to reduce the need' (Weiner, 1992:29). The concept of hedonism, which is the seeking of pleasure and happiness, was used by Freud and it may be surmised that it became an important part of his thinking because once an organism is satisfied, or has obtained pleasure or happiness, then it has reached a balanced, homeostatic state and ceases activity.

Other important concepts relating to Freud's ideas about motivation were instinct - viewed by Freud as a 'measure of demand made upon the mind for work' (in Weiner, 1992:29), and now regarded as synonymous with drive - the id, and the ego. Freud devised the term 'id' to mean the place in an individual where the primitive, instinctual drives originate; it relates to biological drives and is governed by hedonistic principles. The 'ego', on the other hand, is, according to Freud, a higher-order structure which moderates the activities of the id in order to survive and flourish in the real world.

As far as ethology is concerned, the (arguably) two most significant ethologists of the twentieth century, Lorenz (1952) and Tinbergen (1951), looked for explanations to

behaviour that they called 'fixed action patterns'. These were predictable behaviours executed by animals as a response to a 'trigger', an event that appeared to release the energy which then allowed the fixed action pattern to occur. The attack response of the male stickleback fish toward the colour red is probably the most famous example of a fixed action pattern response to a trigger. The difficulty with this theory of motivation is that it depends on the concept of stored energy, which is released by the trigger, allowing the instinctive fixed action pattern to occur. This stored energy has not been demonstrated to exist. However, there are some elements of ethology theory, such as vacuum behaviour, which may well be important to human motivation. The term 'vacuum behaviour' refers to the observations in nature that certain behaviour patterns become more likely to occur, the longer it has been since they were last enacted.

Sociobiology is a more recent approach which looks at behaviour over a longer time scale than ethology, and places the behaviour within an evolutionary context. It is defined as the study of the biological bases of social behaviour, or the application of evolutionary theory to the study of social behaviour (Wilson, 1975). Sociobiologists believe that all behaviour is either selfish, or directed towards perpetuating one's own genetic pool. This latter is the ultimate motivator of action, according to sociobiologists.

The first four or five decades of the twentieth century saw the development of the drive theory school of psychological thinking. The leading theorist in this school was Hull, who in his two books (1943, 1951), expounded his determinist ideas, looking for causes of acts occurring. Although both Hull and Freud were determinists, Hull was much more mechanistic in his approach to motivation (see Weiner, 1992). He did not accept that actions were or could be caused by mental processes, but rather by bodily needs and reactions.

Hull's theories about drive centred around the idea that survival needs generated the necessary energy, and

> 'Since a need, either actual or potential, usually precedes and accompanies the action of an organism, the need is often said to motivate or drive the associated activity. Because of this motivational characteristic of needs they are regarded as producing primary animal drives... The major primary needs...include the need for food of various sorts (hunger), the need for water (thirst), the need for air, the need to avoid tissue injury (pain), the need to maintain an optimal temperature, the need to defecate, the need to micturate, the need for rest (after protracted exertion), the

need for sleep (after protracted wakefulness), and the need for activity (after protracted inaction)' (Hull, 1943:57, 59-60).

Hull later came to realize that humans often behave in ways which are not dependent on primary drives such as those listed above, and so he devised the concept of secondary or learned drives to explain this behaviour. Along with incentives and nonspecific energizers, these make up the components of Hull's theory of action. Weiner (1992), who is principally known as an attributional theorist, critiqued Hull's drive theory in relation to five significant areas: anxiety, conflict, frustration, social facilitation, and cognitive dissonance. Weiner suggests that Hull sees anxiety as a nondirective drive, and that the study of conflict indicates that it can be viewed in terms of any change in the strength of avoidance motivation as a function of the distance from the goal being greater than the change in the approach gradient. Hull further views frustration as a source of drive to account for the energizing effects of not attaining a goal. Penultimately, Weiner suggests that Hull believes that the presence of others (social facilitation) increases drive level, interacting with habit in enhancing or diminishing performance, and finally, Hull posits that 'inconsistent cognitions' (cognitive dissonance) also have drive properties to motivate the organism (Weiner, 1992:109).

Gestalt theory was historically the next developmental area in motivational theory and it produced two theories of motivation, namely Lewinian field theory and Heider's balance theory. The ideas of Lewin (1935) and Heider (1958) argue that the behaviour of an organism occurs within a psychological field of forces, which tends to reach equilibrium ('balance'). Thus the organism's behaviour at any single point of time will be determined by many interacting forces. The Gestalt theorists developed theories of motivation which took account of complex human behaviour, rather than the non-human organisms which were often the subjects of the research of the drive theorists.

Understandings about motivation took a major step forward with Atkinson's (1964) work on achievement motivation. Atkinson described 'dispositional' elements which were those elements that children brought with them to the learning situation and which would predispose the children to behave in particular ways when confronted with different stimuli. Because these dispositional elements are inherent and internal, they are not as likely to be influenced by any actions of a teacher. Atkinson introduced the notion that motivation can vary depending upon the internal perceptions of the student as to levels of satisfaction, approval of peers, pleasing the teacher or, indeed, how important failure or success are to

the student involved. Several of these particular factors were shown to be important in the research which is the subject of this thesis.

Atkinson also posits the interesting theory that while the greatest chance of success comes from attempting a relatively easy task, the greatest value comes from achievement at a very difficult task. The conflict here, Atkinson suggests, is resolved by an individual aiming towards tasks of intermediate difficulty which offer a reasonable chance of success but also have a reasonable 'difficulty' value attached to them. Leading out of Atkinson's work is a very important point that people demonstrate either 'adaptive' or 'maladaptive' motivational characteristics. Within a school context, 'adaptive' motivational behaviour is seen in students who strive to achieve mastery of the material and work hard to do so. 'Maladaptive' motivational styles are seen either after repeated failure (when there may be a tendency to give up altogether) or, after failure, an attempt to achieve success at an even more difficult level because subsequent failure can then be attributed to the level of difficulty of the material rather than an inherent lack of ability within the student. Atkinson's work was subsequently taken up by Weiner (1992).

Attributionists hold that individuals ascribe causes to events, and in this sense Weiner argues that

> 'the perceived causes of success and failure may be arranged along a network of dimensions (internal-external, stable-unstable, controllable-uncontrollable, global-specific, leading to intended-unintended consequences) with the implications of the success or failure being influenced by the location, on this network of dimensions, of the causes held to be responsible' (Galloway, Rogers, Armstrong and Leo, 1998:30).

One of Weiner's important polarities, 'stable-unstable', is challenged by Nicholls (1989) in that whereas Weiner takes the position that ability inherent in any individual is a stable unitary model which is not able to be improved upon, no matter how much effort is applied, Nicholls suggests that at certain stages children hold an incremental model of capacity or ability which allows the idea that intellectual ability or capacity can increase incrementally, little by little, with practice and effort. Nicholls' work dovetails with that of Dweck (1975) who acknowledges that ability can be seen as either incremental or as a fixed entity, but if it is seen to be incremental, then, in general, children will be positively motivated to learn, whereas if ability is held to be a fixed entity, then only children who are highly confident of their ability will be motivated positively.

Drawing the threads of all these theories of motivation together, then, it would seem that, as made clear by Galloway *et al.*, (1998), there is no universally accepted view about the precise nature of motivational causes and characteristics. Leo and Galloway (1996) suggest that any proposal of motivation as a single concept would almost certainly be in error. Although Leo and Galloway use Ames' definition of motivation as 'A set of cognitions that children have about themselves, the task, their performance and others' (in Leo and Galloway, 1996:35), their paper looks at a number of different ways of studying motivation, including personality, behaviourism, social learning theory, locus of control, attribution theory, intrinsic motivation, social-cognitive theories and goals and cognitions.

As we have indicated, the origins of current motivational research therefore probably emanate from the drive theories first explored by Hull (1943) and modified in Hull (1951). Hull's ideas about drive theory originated from the concept of instinct but drew a difference between drive and learning. Instincts, according to Weiner (1992), correspond to bodily needs and may be pictured mentally as wishes and desires. Weiner represents Hull's ideas about instincts as being characterised by drives which are seen to be a source of tension, activating behaviour within a person towards the end result of preserving the individual and/or the species. Linked to basic needs, drive was used to describe the duration and the intensity of a particular behaviour, whereas learning was the term used to explain the direction of the behaviour.

Simplistically, this theory posits that if a student comes to the classroom with sufficiently high levels of drive (motivation) then a teacher can effectively turn this motivational energy into learning by providing the appropriate surroundings and educational experiences. Thus as far as the teacher is concerned, according to this theory of motivation the teacher will be effective with students who have high levels of drive but less effective for those who are lacking in the required drive levels and therefore are seen to be unmotivated. This view has been challenged by Galloway *et al.*, (1998), who question the validity of the assumed distinction between drive and learning, and who propose that motivation may well be seen as an integral component of learning, where both these things can be affected by the quality of the teaching that goes on.

Behaviourist theorists took this argument further and suggested that if all motivation is based on drives, instincts, and emotions, then it will be predictable. This is a highly mechanistic viewpoint which would seem to fail to take into account the subtleties seen in behaviour within a classroom context presenting, as it does, an enormous variety of background

stimuli and 'noise', individual blood sugar levels, prior knowledge, learning and understanding, and all sorts of other factors. Thus, according to this approach the level of motivation of students can be indicated by the amount of time they appear to be 'on task'. Behaviourists assumed that being 'on task' was observable and measurable and, therefore, precise levels of motivation could be determined.

Classroom practitioners quickly saw that this approach led to the happy suggestion that strategies designed to improve time 'on task' would lead to higher levels of motivation and therefore stronger outcomes in terms of student learning. The dual spectres of rewards and reinforcement were attacked however by Deci (1975) whose work exposed the possible negative effects of rewards and reinforcement in classrooms. Clearly, with the observation that behaviour is not always predictable, this mechanistic behaviourist approach is now seen to be not entirely satisfactory.

In essence then, it is clear, as Galloway *et al.* (1998) point out, that there is no consensus on motivational styles, and they can be categorised in a number of different ways. De Charms (1968, 1976), for example, developed theories which classified individuals as either origins - who are internally directed - or as pawns, who demonstrate externally driven personality. At times, depending on the context of the environment, De Charms felt that individuals might act either as pawns or as origins, and his work on improving classroom climate and therefore learning outcomes for the students grows out of this.

On the other hand, Nicholls (1989), in investigating children's motivational styles, determined that there were three different orientations, which he called 'task orientation', 'ego orientation', and 'work avoidance'. He used the term 'task orientation' to describe motivational styles shown by children who have focussed predominantly on achievement. 'Ego orientation' was used by Nicholls to reference children who were concerned with their standing relative to others in the group, and who felt most strongly motivated by their desire to do better than others at their school work. Finally, Nicholls used the term 'work avoidance' to characterise those children who gained satisfaction from getting away with doing as little as possible without getting into trouble.

Motivational styles can, therefore, be seen as adaptive or maladaptive as discussed briefly earlier. Adaptive motivational styles are perhaps best categorised as 'mastery orientation', a term spearheaded by Dweck (1975), but maladaptive motivational styles can be seen in the already-described 'pawns' of de Charms (1968, 1976), the 'work avoidance' of Nicholls

(1989), Seligman and Maier's (1967) 'learned helplessness' category, and finally Covington's (1984) 'self-worth motivation'. The early work on learned helplessness was carried out by Seligman and Maier (1967) whose theories built on the earlier notion of 'hopelessness' developed by Mowrer (1960). Seligman and Maier found that animals which had been pre-treated with an unavoidable electric shock later failed to avoid an electric shock in a situation where the test animal could escape from it by performing a simple response. Seligman and Maier used the term 'learned helplessness' in reference to the learning of independence or perception of independence between an individual's behaviour and the presence or absence of aversive events (Seligman and Maier 1967). In the school context, Abramson, Seligman and Teasdale (1978) suggest that in some children, lack of success is attributed to lack of ability, and this lack of ability is something over which they have no control. These children give up in the face of difficult tasks, rather than trying harder. The more these children fail, the more they reinforce the feeling that they will never be able to succeed at difficult tasks, and therefore there is little point in trying. The point is that the performance of a learned helpless child tends to deteriorate in the face of failure.

The work on self-worth motivation was carried out by Covington (1984). Mastery orientation is categorised by students wishing to achieve success rather than attempting to avoid failure, and wanting to master the learning for its own sake and value rather than as a means of demonstrating to one's colleagues or classmates that one is better than they are. Learned helplessness is characteristically seen in students who believe that they lack the ability to achieve successfully at various tasks and therefore learned helpless children, when confronted by challenging and difficult tasks, quickly abandon their efforts and take no further interest in the activity.

Self-worth motivated children on the other hand are those whose motivation is based on maintaining a positive sense of self-worth. These children may use a wide range of strategies to 'justify' lack of effort. For example, if a challenging task is likely to lead to failure, then poor performance could be justified by their not putting effort into the task. This allows the suggestion that if greater effort had been applied, then success would have been achieved and therefore a positive ego or sense of self-worth would have been maintained. Thus when both learned helpless and self-worth orientated children are confronted with a difficult task, the learned helpless children are more likely to give up because of their belief that their level of ability is too poor to bring about success in the task, whereas the self-worth motivated children commonly devalue the task in order to justify to themselves their failure to make an attempt. They believe that if they fail it is simply because they did not

exert sufficient effort, rather than them not having sufficient ability. In other words, self-worth motivated children who fail in a difficult task tend to attribute this failure to insufficient effort being applied by them to the task, rather than ascribing it to lack of ability (Covington, 1984).

In terms of more recent work relevant to the design of the project upon which this thesis is based, Anderman and Maehr (1994) have reviewed research on social-cognitive views of motivation during adolescence and have attempted to apply this research to improvements in middle school students. Anderman and Maehr remind us that despite a number of recent important reports, particularly in the United States, all of which express a concern with learning and young people, the 'problem of adolescence', as they describe it, remains (Anderman and Maehr, 1994:287). Their important work points up the findings of other research which clearly suggests that students' attitudes towards school in general – and in particular towards Mathematics, Science and Art – decrease as children get older and that during the middle grade years students appear often to show a waning of motivation towards succeeding at academic tasks, as well as some other things.

This effect is particularly marked at the transition point from primary to secondary school, with studies showing a sharp decline in positive motivational styles (adaptive styles) at the primary-secondary interface, followed by improvement, though not to the level seen at the final year of primary schooling (Rogers, Galloway, Armstrong, Jackson and Leo, 1994; Galloway, Leo, Rogers and Armstrong, 1996).

So there seem to be generalised age-related declines in motivation towards academics, at the same time, interestingly, as an apparent increase in the valuing of sports. Further, Anderman and Maehr believe the research shows that declines in some aspects of motivation during adolescence are not merely a result of changes associated with puberty but, in fact, may well be attributed to other contextual and other environmental factors.

Therefore, the question arises as to how much of this decline is attributable to factors over which the school has control? Clearly, if this question can be answered then schools may well discover powerful tools in terms of contextual changes within their control which could lead to a major improvement in levels of motivation and interest. Anderman and Maehr describe their own Goal Theory analysis of motivation, and they focus their research on what they call task-focused goals (in which the students focus on the mastery of tasks and learning for purely intrinsic reasons), and ability-focused goals (which are those where

students are interested in showing their ability compared with other students in the group). Anderman and Maehr (1994) make the point that the way in which the school is run and in particular the ways in which classrooms are managed have an important effect on the motivation of the students, depending on whether the management arrangements in the school are concerned with task-focused goals or ability-focused goals. It is even suggested that students may adopt different goals in different classrooms, relating to the differing management and organisational strategies used by different teachers.

Further, it appears that the higher the students are in the school educational spectrum the greater will be the influence of contextual factors within the school on the students' motivation. In other words, as the students move into higher grades the school's culture has a greater impact on their motivation. Anderman and Maehr highlight the potential interference of school-wide values – such as an emphasis on high grades for their own sake – on task-oriented strategies in classrooms which are those concerned with improvement, progress, mastery, innovation and creativity. Anderman and Maehr's underlying focus in their work is to use research in motivation in order to guide changes to the way schools and teachers operate in order to achieve the best possible outcomes for the students. Their final, very plausible, suggestion is that motivation change 'in the middle grades will eventuate in the transformation of school culture' (Anderman and Maehr, 1994:301). However, it is perfectly possible that something in the school culture itself is producing the motivation changes observed in the middle grades or elsewhere.

Coming at this from another angle, Dweck and Bempechat (1983) gave a group of children a total of twelve problem sets where all children were capable of solving the first eight problems but failed on the final four. The children in this study were asked to verbalise aloud after the seventh problem set as they performed the entire task, in order for the researchers to monitor the thinking of the children on a moment-by-moment basis. The children in the study had previously been assigned to one of two groups following their responses to an attribution questionnaire. The groups were called 'learned-helpless' and 'mastery-oriented', and Dweck and Bempechat found that the 'helpless' group were very negative in their vocalisations when faced with failures after the series of successes, while the 'mastery-oriented' children were very positive. Dweck and Bempechat also found that the 'mastery-oriented' children recalled their successes more and their failures less frequently than the 'helpless' children. Dweck and Bempechat (1983) then move on to a discussion of teacher's views of intelligence, and categorise these views as either the 'entity' view, where intelligence is seen as a fixed quantity and is unable to be improved, versus those teachers

who view intelligence as 'incremental' and therefore able to be increased by appropriate practices. From this the suggestion is made that the teachers who view a child's intelligence as an ever-growing quantity will be the teachers who create classroom experiences for their children that are long-term and require planning and persistence and in that sense mirror the challenges of real life. They go on to say that 'although our research findings and the earlier discussion may give the impression that it is good to have an incremental orientation and bad to have an entity orientation, it is clear that what is good or bad (i.e. adaptive, maladaptive) depends very much on the environment in which the child is asked to perform' (Dweck and Bempechat, 1983:253).

In Chapter 1 of this dissertation, evidence was cited for a trend toward significant differences in school-based performance when boys are compared to girls. Of incidental interest here is research into gender differences in motivational style such as that carried out by Rogers, Galloway, Armstrong and Leo (1998). This study compared the motivational responses of girls and boys in the curriculum areas of Mathematics and English, using two different measures of motivation. The results indicated that on one measure of motivation (a task-based measure) there were no gender differences, but on the other (a self-report on goal strength) a pattern of differences appeared which suggested advantages for girls. The area of interest in the research project described in this thesis is whether the presence of girls (in a co-educational school) is associated with significant differences in motivational styles in boys when compared with boys in single-sex schools.

Following on from this point, Hulse (1997) conducted a study which compared boys in two schools in New York City, one an all-boys' school and the other a co-educational school. Both schools were old prestigious Kindergarten to Twelfth Grade Independent Schools in the borough of Manhattan. The schools were similar in many ways, drawing students from the same geographic areas, and they were comparable in terms of tuition fees, financial aid budgets, status in the community, institutional longevity, college placement records, student ability and ethnic diversity. Hulse's study specifically wished to address the following questions:

- Do boys in single-sex and co-educational schools have similar or different levels of self-esteem?
- Do boys' attitudes towards women's and men's roles in society vary according to which type of school the boys attend?
- Do boys in the two settings show different or similar levels of motivation for school?

- Do boys in the two types of schools have different levels of self-confidence in their academic ability?
- Do the two groups differ in their levels of self-assertion?
- Does the strength of conscience development in the two groups differ?
- Does the strength of attachment to the parental home differ in the two groups?

Hulse chose four tests to administer to the experimental groups: the Coopersmith Self-Esteem Inventory (Coopersmith, 1989), the School Attitude Measure (Wick, 1989), the School Motivation Analysis Test (Krug, Cattell and Sweney, 1976), and the Sex-Role Egalitarianism Scale (King and King, 1993). The boys in both schools were contained within the Middle School of each school, comprising Grades 5, 6, 7 and 8. However, the groups were relatively small: in the boys' school there were 186 students in the Middle School, and in the co-educational school there were 239 Middle School students, approximately half of whom were boys. In each group, all boys in Grades 5, 6, 7 and 8 were given the Coopersmith Self Esteem Inventory, the School Attitude Measure and a Demographic Questionnaire. Additionally, boys in Grades 7 and 8, because of their higher reading level, were given the School Motivation Analysis Test and the Sex-Role Egalitarianism Scale. With respect to motivation, as measured by the School Motivation Analysis Test (Krug, Cattell and Sweney, 1976), Hulse found that boys from single-gender boys' schools were

> 'less conflicted about many aspects of their environment than are the boys who attend the coeducational school. Boys who attend the boys' school feel more comfortable about their relationship with girls. They feel that school protects them, that school allows them to express their aggression, that they are attractive to others, and that their actions and choices can be ethical, sound and moral. Boys who attend the coeducational school are more conflicted about their environment from these perspectives' (Hulse, 1997:11).

This brings us to the point that the context within which the child finds itself may well have a bearing on many aspects of the child's success in school, and the research described in this thesis looks at three aspects within varied contexts: namely, the motivation, self-concept, and coping strategies of boys in single-sex boys' schools compared with boys in co-educational schools. With the singular exception of Hulse's work, a contextual comparison of motivation in boys from boys' schools with boys from co-educational schools has not been carried out before.

Chapter 3: Self-Concept: The Literature

Along with factors such as attitudes to school, regularity of attendance at school, classroom behaviour and motivation, self-concept is regarded as an important construct in the success or otherwise of a child at school (Galloway *et al.*, 1998). Yet the term 'self-concept' is used loosely and in some cases is carelessly interchanged with the related term 'self-esteem'. Although definitions of self-esteem vary, the term is generally regarded as relating to feelings of personal worth and level of satisfaction with respect to an individual, and contains a cognitive element, which characterises the self in descriptive terms (such as power and confidence), an affective element, which relates to the degree of positiveness or negativeness present (as in high or low self-esteem), and an evaluative element which relates to some external ideal standard (such as what a graduate from a secondary school should be able to achieve) (Mecca, Smelser and Vasconcellos, 1989).

Attribution theorists such as Weiner (1986) regarded self-esteem as being associated with pride in accomplishment and self-worth. Thus self-esteem may be regarded as either positive or negative and Stipek (1983), and Weiner, Russell and Lerman (1978, 1979), all believe that pride and positive self-esteem result from attributing a positive outcome to the self, whereas conversely, negative self-esteem results when a negative outcome is ascribed to the self. Balsovich and Tomaka (1991:115) suggest that in common parlance, 'self-esteem is the extent to which one prizes, values, approves, or likes oneself'. It is argued here that there should be a distinction of definition between the two terms 'self-esteem' and 'self-concept'. Fromm (1956), for example, attempts a distinction by suggesting that if self-concept relates to the learned beliefs, attitudes and opinions that a person holds to be true about his or her own personal experience, then clearly self-concept is different from self-esteem and is (self-concept) described as 'life being aware of itself' (Fromm, 1956). However, this seems a fairly esoteric distinction, and the issue of differentiation is a complex one. In this thesis the term 'self-concept' will be used, largely because that is also the term used by Marsh (1992) in his Self Description Questionnaire-II which is one of the instruments used in the research described in this thesis, and it is with Marsh's constructs that the present thesis occupies itself.

Self-concept theory has long played an important role in the development of counselling and guidance practices. Rogers (1947) was influential in his theories concerning the importance of the self to procedures and practices used in the helping professions such as counselling. Rogers believed that the self is the central ingredient in human personality and personal adjustment. He sees the self as a social product, which has developed out of inter-personal relationships and which strives for consistency. Rogers' ideas that humans have a

fundamental need for positive self-regard, both from others and from themselves, is a significant part of his thinking. At about the same time as Rogers' work, Lecky (1945) proposed the idea that self-consistency was a primary motivating force in human behaviour, and Raimy (1948) began to construct instruments to measure self-concept in counselling interviews and suggested that psychotherapy was simply a process of altering how individuals see themselves.

However, as has been mentioned above, it has to be said that the literature suggests that the term 'self-concept' is poorly defined and reviewers such as Strein (1993) have found at least 15 different 'self' terms used by various authors. Self-concept, self-esteem, self-worth, self-acceptance and many other similar terms are frequently used inconsistently and interchangeably when, in fact, researchers mean them to define different ideas about how people view themselves. Therefore, a clear definition of self-concept is needed before a researcher can choose an instrument to measure this attribute. One very important distinction that provides a difference between the various conceptualisations of self-concept theory is whether to regard self-concept as a global, over-arching characteristic of a person, or rather whether to regard it as a set of self-evaluations which are specific to different domains of behaviour. We must decide, therefore, whether to regard self-concept in terms of a global model or whether to consider it in terms of a domain-specific model.

The original understanding of self-concept tended more towards the global model and is sometimes termed 'self-esteem' or 'general self-concept'. This view is also quite common amongst counsellors and therapists (Strein, 1993). Instruments devised to measure this type of all-round self-concept include the Rosenberg Self-Esteem Scale (Rosenberg, 1965), the Piers-Harris Children's Self-Concept Scale (Piers, 1984), and the Tennessee Self-Concept Scale (Fitts, 1965). These are all commonly used instruments and although they belong to the tradition of global over-arching scales, they also each measure some domain specific scales, as does the Coopersmith Self-Esteem Inventory (Coopersmith, 1989).

In contrast to these global models of self-concept, models which are domain-specific or multi-faceted attempt to measure self-evaluations of specific attributes possessed by the individuals, such as academic self-concept, physical self-concept, general school self-concept, verbal self-concept and in many cases all of these are combined to produce a general self-concept score. Those theoretical models which place global self-concept at the apex of a hierarchical series of levels of different domain-specific self-concepts attract some support, as do those models which stress the distinctiveness of the various self-concept facets. Strein

(1993) believes that the empirical research in developmental and educational psychology over the past 15 years has strongly supported the multi-faceted view of self-concept and suggests that most published self-concept measures now emphasise domain-specific self-concepts in order to remain consistent with research findings.

Perhaps the clearest example of measures based on this multi-faceted view is Marsh's (1992) set of scales (Self-Description Questionnaire–I, Self-Description Questionnaire–II, and Self-Description Questionnaire–III) which cover the ages from 7 to adult, although he has used them with younger children by utilizing a verbal interviewing technique (Marsh, Craven and Debus, 1991; Marsh, Parker and Barnes, 1985). Marsh's instruments and theories are based strongly on the work of Shavelson, Hubner, and Stanton (1976) who put forward a multi-faceted hierarchical model of self-concept. Shavelson *et al.* (1976) considered existing theoretical and empirical research relating to self-concept and then developed their own theoretical model. Shavelson *et al.* fall very much into the camp of those theorists who regard self-concept as multi-dimensional and this work was the preliminary basis for the construction of Marsh's SDQ Instruments, and the research that has subsequently come from that. Marsh and Shavelson (1985) believe that the idea of self-concept cannot be understood if its multi-dimensionality is ignored.

In his measurements of the construct validity of instruments designed to measure self-concept, Marsh (1992) indicates that construct validity studies are able to be classified either as within-network studies or between-network studies. Within-network studies use factor analysis and multi-trait-multi-method approaches to measure the multi-dimensionality of self-concept and they try to show that it has consistent, distinct components. Between-network studies consider the pattern of relations between measures of self-concept and other constructs and try to show that there is a theoretically consistent logic between these. These kinds of between-network studies link self-concept responses to other variables such as age and sex effects, measures of academic performance, the effects of experimental interventions designed to enhance self-concept, other related self-constructs, and a host of other variables (Marsh, 1992).

Marsh concedes that it is axiomatic in this type of research that there must be at the very least a partial resolution of within-network issues prior to the development of the between-network research. Unless the theoretical definition of the construct exists, Marsh argues, and unless the construct can be measured and these measurements offer empirical support for

the various facets of the multi-dimensionality of the proposed construct, then between-network studies will be pointless (Marsh, 1992:31).

It is the multi-dimensionality of the theory of self-concept that comprises the basic premise of the model by Shavelson *et al.* (1976); this model suggests that while a person may have a positive self-concept in one area, the same person may have a low self-concept in another. As has been pointed out, Marsh's Self Description Questionnaire-II (SDQ-II) (Marsh, 1992) is based very largely on the model by Shavelson *et al.* (1976) being described here. Shavelson and his colleagues (1976) proposed a possible representation of a hierarchical model which placed general self-concept or global self-concept at the apex and at the next level down divided into academic self-concept and non-academic self-concept. Academic self-concept is divided further into the self-concepts of particular subject areas and non-academic self-concept is sub-divided into social self-concept (in itself sub-divided into relations with peers and relations with significant others), emotional self-concept, and physical self-concept (which is also sub-divided into physical ability and physical appearance).

Shavelson *et al.* (1976) propose further levels of division for all of these specific self-concepts so that at the lowest level of the hierarchy the self-concepts are very specific and closely related to actual behaviour (Marsh, 1992:32). The model of self-concept proposed by Shavelson *et al.* had a certain 'face validity' and seemed plausible but was not empirically validated by them. It was this that led Marsh (1992) to develop his SDQ Instruments and Marsh *et al.* (1985) explore a theoretical justification for the SDQ-II factors and their relationship to the model proposed by Shavelson *et al.* (1976). The results of administering the SDQ-II to large populations of subjects of different ages and gender have been subjected to factor analysis and this has identified eleven hypothesised factors.

Marsh (1992) has reviewed the literature on the effects of sex and age on self-concept and has found that the literature suggests that self-concept declines during pre-adolescence and early adolescence, levels out in middle adolescence, and then increases in late adolescence and early adulthood. With respect to sex differences in self-concept, the literature appears to show small sex effects in favour of males for measures of total global self-concept. It was also found that sex differences may depend on age, because some differences appear to be greater in adolescence than in pre-adolescence, an example being Mathematics self-concept favouring boys (Marsh, 1992:45). Using the SDQ-II, Marsh found that from a relatively high

total self-concept score in Grade 7, there is a decline in Grades 8 and 9, and then an increase in Grades 10 and 11.

With respect to sex effects, using the SDQ-II Marsh found that sex effects are statistically significant with some scales favouring girls, but more scales favouring boys. From this, the Total Self-Concept Score favours boys, and further, across the 6 Scales - Physical Ability, Physical Appearance, Parent Relations, Mathematics, Verbal, and General School - Marsh (1992) found stereotypical sex differences in that boys had higher Physical Ability, Physical Appearance, and Mathematics self-concepts, but there are no sex differences for the Parent Relations scale. Marsh found girls had higher Verbal and General School self-concepts. Of great importance to educationists, is the correlation between self-concept and academic achievement. The research of Marsh using the SDQ-II generally supports a positive relationship between specific facets of academic self-concept and corresponding measures of academic achievement such as Test Scores and Grades. Thus, any differences found in the various facets of self-concepts measured by the SDQ-II Instrument between boys in single-sex boys' schools and boys in co-educational schools may have important ramifications for their academic success.

As far as the literature search has revealed, the research described in this thesis, comparing the self-concept of boys in single-sex boys' schools with that of boys in co-educational schools using the Self Description Questionnaire-II, has not been carried out before.

Chapter 4: Coping in Adolescence: The Literature

According to Frydenberg and Lewis (1993), adolescence is a phase in the life span of an individual during which he or she is confronted by a series of developmental hurdles and challenges. Frydenberg and Lewis describe the challenges as being both what they describe as normative tasks – in which the child develops his or her identity and achieves independence from his or her family, but maintains relationships, and exists within a peer group – and also challenges relating to transitions from childhood to adulthood which involve physiological changes related to maturation and also cognitive and emotional development. Frydenberg and Lewis suggest that it is at this time that an individual must fulfil social roles with peers and with members of the opposite sex, must complete the requirements of schooling, and finally must make decisions regarding a career. At each of these change-points, an individual must have an ability to cope, which Frydenberg and Lewis define as the cognitive and behavioural strategies for effective transition and adaptation (Frydenberg and Lewis, 1993:12). It should be noted that not all strategies for coping with stress are adaptive; this point is made by Compas (1995) who states that 'some attempts at coping and certain types of interpersonal relationships will serve to worsen the impact of stress and contribute to maladaptive development' (1995:247).

While studies have shown that there is a relationship between stressful life events and issues of family conflict, delinquency, self-destructive behaviour and social isolation (Gershen, Langer and Orsec, 1974), if one accepts the transactional model of life then stress must be regarded as a normal component of living, according to Lazarus (1980) and Lazarus and Launier (1978). The transactional model suggests that stress can be seen as an imbalance between an individual's perception of the demands placed upon him or her and his perception of the resources at his disposal to allow him to cope with those demands.

As has been indicated earlier, there are many indications that young people, and young males in particular, are showing - in increasing numbers - concerns which at best may be minor hindrances and upsets in their lives, but at worst may lead to feelings of disconnection and suicide. This phenomenon appears to be in evidence increasingly in western society in recent years. Norton (2000) suggests that young people are being forced into becoming responsible adults at a later age than at any other time during the past 100 years, mainly because their chances of getting a job (and therefore assuming a degree of financial independence before their early adulthood) are minimal. Norton believes that teenagers have turned to sex, drugs and alcohol as ways of marking their transition into adulthood and this is a major reason - along with the fact that the age of onset of puberty has fallen

significantly over the last century (see Rutter and Rutter, 1993:232) - as to why their sexual maturity is more advanced than at any other time this century. This latter is referred to in some literature as the 'secular trend' (Coleman and Hendry, 1999:30). Teenagers who cannot afford to leave home have to renegotiate their relationships with their parents and are, therefore, forced to look at different ways of expressing their autonomy, according to Norton (2000).

Transition to adulthood in many cases now occurs over a long period of time, and this leads to ultimate independence taking many years to achieve. Norton suggests that this causes frustration and resentment, and this may be linked to her claim that the mental health of young people has also deteriorated during the past 100 years. This view is also supported by Rutter (1995), who provides epidemiological evidence showing an increase in the incidence of psychosocial problems in children and young people in the last 15-20 years. Suicide rates for young men, particularly, have increased during the 1980s - as have criminal activities, alcohol and drug abuse, depression, and eating disorders (Rutter, 1995:ix) - and the figures for young people having sex have steadily increased. Norton's analysis indicates that in the early part of the century, only 5% of men and 0.8% of women reported having sex before they were 16 years old. The latest figures show that in the 1990s, 25% of boys and 18% of girls reported having had sex before they were 16. All of this seems to suggest that young people in the past 20 years or so have had to cope with an increasing array of challenges and stressful situations, and it is the way they cope with these that is of interest in this study.

Attempts have been made to measure ways in which individuals cope with the stresses in their lives, and Frydenberg (1989) examined adolescent coping mechanisms from an adult-centric orientation. A number of researchers in the past decade have developed instruments to measure adolescent coping behaviour. These include Dise-Lewis (1988), Compas, Malcarne and Fondacaro (1988), Patterson and McCubbin (1987) and Spirito, Stark and Williams (1989). Frydenberg and Lewis (1993) make the point that in view of the fact that adolescence is a life-stage marked by strong development in many aspects of an individual's character, and in view of the fact that as members of a community adolescents behave within a social context, then the development of young people will impact on the community in which they live. The converse is also true; the community will have an impact in many ways on the development of adolescents during their growth and development.

As discussed fully at the beginning of this thesis, there are world-wide concerns that young people – and young males in particular – are not faring well. It would seem that the ability or inability of a young person to cope effectively with his or her worries may well have a direct bearing on the ease and level of success that person has in growing through adolescence into early adulthood. As Frydenberg and Lewis (1993) point out, it may be necessary for adolescents to become more aware of their coping behaviour and to learn to modify their coping strategies if they are to develop into adults who are able to cope effectively with the stresses and concerns that are part and parcel of every adult's normal life. There is evidence that schools (and therefore possibly type of schooling) may be contributors to the psychosocial development of the children attending them (Nicol, 1994). Nicol believes that the type of school environment (such as peers in the classroom, gender of teacher) may have a very strong effect on behaviour and development of children. He regards the school as a 'specialized setting for child development' (1994:1042) because this is where a child spends a large proportion of his or her waking life, and where

> '...he or she has to learn to cope with many challenges, not only in the sphere of learning but also coping with relationship issues such as cooperation and sharing, competition and authority - all challenges and growth points for the child and opportunities for the perceptive teacher. The learning situation is full of problems: the management of pupils' anxiety, rebelliousness, discouragement and unhappiness is essential to good teaching' (Nicol 1994:1042).

This same point is also stressed by Galloway (1985).

Nicol amplifies this further by suggesting that 'From a common-sense point of view, it is likely that some schools are better able to support the learning and socialization process than others' (1994:1042). Research by Galloway, Martin and Wilcox (1985) and Mortimore, Sammons, Stoll, Lewis and Ecob (1989) on the effects of schools on the development of young people shows clearly that schools are different, and their milieux and atmospheres influence the outcomes for the adolescents who attend them. This point seems clearly supported by the seminal work of Rutter, Maughan, Mortimore and Ouston (1979) in their large-scale survey of children in twelve inner-London secondary schools. They found that the schools in their survey differed markedly in behaviour and attainments of pupils, that the variations were not wholly explained by differences in the students at entry level, that the variations between schools with respect to student outcomes were reasonably stable over at least four or five years, that the differences in outcomes between schools were not due to physical factors such as the size of the school, the age of the buildings or the space available, and that - most importantly for the argument being developed here - the

differences in outcomes between schools were systematically related to their characteristics as social institutions such as

> ...the degree of academic emphasis, teacher actions in lessons, the availability of incentives and rewards, good conditions for pupils, and the extent to which children were able to take responsibility...All of these factors were open to modification by the staff, rather than fixed by external constraints' (Rutter *et al.*, 1979:178).

Further support for the influence of teachers in schools on their students comes from the epidemiological work of Rutter, Graham, Chadwick and Yule (1976) who surveyed a large group of English adolescents and found that the vast majority felt that teachers were interested in them.

Attitudes of children towards themselves - their self-concept - were measured by Mortimore, Sammons, Stoll, Lewis and Ecob (1988). They used a specially designed measure of self-concept which revealed clear school differences:

> 'Some schools produced students who - regardless of their actual ability - felt reasonably positive about themselves; others produced students who were negative about themselves even when, in the judgement of the research team and according to their progress, they were performing well' (Mortimore, 1995).

The contention in this thesis is that the gender context of a school may create a particular milieu and atmosphere which could be associated with different, measurable outcomes from single-sex and mixed schools, and this is what is being tested.

Therefore an analysis of the coping styles used by young males in Australian schools may well shed some light on those factors which can assist adolescents in their development, and if there appear to be differences in coping strategies used by boys in single-sex boys' schools as compared with boys in co-educational schools, then this may lead to a better understanding of how best to deal with and assist young people in their development. Frydenberg and Lewis (1993) make the point very clearly that as schools are one of the major agencies for the socialisation of young people, they may possibly play an important part in improving the psychological well-being of adolescents. Hargreaves (1982) argues that schools can actually damage the psychological well-being of their students through what he calls their 'hidden curricula' (1982:17) although his work concentrated mainly but not exclusively on children from lower socio-economic backgrounds. However, even if this were so, it would seem perfectly possible that other 'hidden curricula' in certain types of schools could work positively for the well-being and sound psychosocial development of the children attending. Thus, it may be argued, the process of positive development will be

assisted if those who work in schools understand more about coping behaviour and the importance for young people to develop a repertoire of coping skills. Compas (1995) regards this as a major challenge, which requires those who work with adolescents to develop strategies for 'the prevention of maladaptive coping and promotion of effective coping in youth, regardless of the type of stress they encounter' (1995:248).

The challenges that beset young people in their development through adolescence do not bypass the highly intelligent, either. The strategies that gifted young people use to cope with challenges at school or in their lives in general have been studied by many people, including Buescher and Higham (1985). They found that gifted young people often reported many problems resulting from their inherent talents: perfectionism, competitiveness, unrealistic appraisal of their gifts, rejection from peers, confusion due to mixed messages about their talents, and parental and social pressures to achieve. There were often problems with school programmes that failed to challenge these students as well as problems coming from increased expectations also. Relevant to the research described in this thesis, Plucker (1997) has evaluated the Adolescent Coping Scale (Frydenberg and Lewis, 1993) using a sample (n=967) of academically gifted adolescent students attending summer enrichment programmes and participating in urban school districts' gifted programmes. His results suggest that in this context the Adolescent Coping Scale is both reliable and valid but he expresses some caution with respect to the subscales 'Not Coping' and 'Seek Relaxing Diversions'.

Buescher and Higham also report that some of these gifted children encounter difficulties in finding and choosing friends, in selecting a course of study, and in making career choices. If parents, teachers and school counsellors are aware of these problems, then they may well be able to better support and understand gifted adolescents. Buescher (1986) listed obstacles that gifted young people encounter during the early years of their adolescence either singly or in combination. These include ownership, dissonance, taking risks, competing expectations, impatience, and premature identity.

With respect to ownership, Buescher (1986) describes the characteristic of these children as simultaneously 'owning' the considerable abilities they possess and yet also questioning their validity and reality. This has also been described by Olszewski, Kulieke and Willis (1987) who have characterized the 'impostor syndrome' as being patterns of disbelief, doubt and lack of self-esteem amongst older students and adults. Sometimes these children end up denying their giftedness because of peer pressures towards conformity, coupled with their

wavering sense of being predictable or intact. Delisle and Galbraith (1987) and Galbraith (1983) also comment on the tendency for gifted individuals to have self-doubts about the accuracy of their identification and also the objectivity of parents or favourite teachers. Finally, part of the problem these students have with ownership of their giftedness is that they feel that they must give back of themselves in abundance, subtly implying that their abilities should actually be credited to parents, teachers or society.

With respect to dissonance, this trait is frequently experienced by gifted adolescents because they perceive a gap between how well they expect a task to be accomplished and how well it is actually done. In terms of taking risks, while risk taking behaviour has characterised younger gifted children, it appears to decrease with age so that a gifted mid-to-late adolescent is less inclined to take risks than his average ability peers. Buescher (1986) suggests that this may be because gifted adolescents are more aware of the consequences – both positive and negative – of activities undertaken and they therefore weigh up the alternatives. Buescher describes the problems gifted young people have with competing expectations as being the conflict between the eagerness of family members, friends and teachers to suggest expectations to the adolescent with the student's own intentions and goals. Sometimes, Buescher suggests, these children are pushed to the point of doubt and despair by insensitive teachers, peers and even parents. These children often suffer from impatience and the fact that the weight of competing expectations and the pressure of multiple potentials create a tendency to move towards an adult-like identity which Buescher (1986) calls premature identity. This stage is not normally achieved until the age of 21 and it can create serious problems for talented adolescents.

In their study, Buescher and Higham (1985) suggest eleven strategies used by gifted adolescents, ranked in order of acceptability for use (from least acceptable to most acceptable) as:

Pretend not to know as much as you do
Act like a 'brain' so peers leave you alone
Adjust language and behavior to disguise true abilities from your peers
Avoid programs designed for gifted students
Be more active in community groups where age is no object
Develop/excel in talent areas outside of the school setting
Achieve in areas at school outside academics
Build more relationships with adults
Select programs and classes designed for gifted students

Make friends with other students with exceptional talents
Accept and use abilities to help peers do better in classes.

Frydenberg and Lewis (1993), in their Adolescent Coping Scale, identify eighteen strategies used by adolescents in coping with life and developmental stressors. These are:
Seek Social Support
Focus on Solving the Problem
Work Hard and Achieve
Worry
Invest in Close Friends
Seek to Belong
Wishful Thinking
Not Coping
Tension Reduction
Social Action
Ignore the Problem
Self-Blame
Keep to Self
Seek Spiritual Support
Focus on the Positive
Seek Professional Help
Seek Relaxing Diversions
Physical Recreation.
These will be discussed in greater detail later in this thesis, but it will be noted that there is overlap with Buescher and Higham's list in several areas. For example, Buescher and Higham's 'Make friends with other students with exceptional talents' is similar to Frydenberg and Lewis's 'Seek Social Support' and 'Invest in Close Friends'.

To bring this chapter to a close, then, in summary - and as has already been stated - schools are recognized in the research literature as organizations which may significantly affect adolescent development and behaviour (Frydenberg and Lewis, 1993; Hargreaves, 1982; Reiss, 1995), teaching young people to cope adaptively with stress is an important task for those working with adolescents (Compas, 1995), and as schools organize differently for boys and girls (Reiss, 1995:309), it seems highly likely that the organization of single-sex boys' schools will differ from the organization of mixed schools. Whether these differences in organization are associated with differences in styles for coping has not yet been measured

elsewhere, and thus forms part of this research which also looks for differences in motivational behaviours and self-concept between boys in the two groups.

Chapter 5: Effects of School Type, Questions Arising from the Literature and the Methodology for Investigating Them

A review of the literature reveals many articles on the theme of differences related to school type, and particularly differences between single-sex and co-educational schools. A number of these articles suggest that the type of school (that is, single-sex or coeducational) either makes no difference to the variables being considered, or indicates that co-educational schools have a more desirable effect. The following sections review a number of these studies.

Feather (1974), in a fairly early research project, looked at two senior classes in eight co-educational and single-sex government secondary schools in South Australia. Four schools were co-educational, two were boys-only schools, and two were girls-only schools. The students were in their final two years of high school, and were given a modified version of the Rokeach Value Survey (Rokeach, 1973), and then a modified form of the Cornell Job Description Index (Smith, Kendall and Hulin, 1969), and a rating of happiness with school. Factor analysis was then applied, and indicated that there was no evidence for a factor which contrasted co-educational schools with single-sex schools on the basis of the students' values, or how they perceived the values held by the school. When satisfaction with school was considered, it seemed that boys from co-educational schools reported more satisfaction with their school work than boys from single-sex schools.

Some authors lament the fact that the gradual change over time from single-sex schools to co-educational ones, has come about without any real policy discussion. Sutherland (1985) suggests that while one of the major changes in education in England has been the changeover to co-educational schooling, this has happened without serious consideration at either local or national government level.

> 'Coeducation has come in mainly as a side-effect of other major changes. It continues to be involved with various major trends: and it has side-effects of its own. How and why did it happen? Now that it has happened, do we accept this situation that 'just growed'?' (Sutherland, 1985:155).

Sutherland's paper highlights the need for on-going research into these issues in an attempt to better understand the issues in different types of schools, and the effects that they may be having on the students in them.

Marsh has already been cited in this thesis with respect to his work on self-concept, but he, too, has entered the school type debate (Marsh, 1989) in a paper which compared the

effects of single-sex and co-educational high schools on achievements, attitudes and behaviours, and also looked at whether attendance at a single-sex school affected well-established sex differences in these variables (Marsh, 1989:70). Marsh used data available from the High School and Beyond project, a large United States study, and this gave him 2,332 subjects which were Catholic high school students in the United States attending one of 47 single-sex or 33 co-educational schools included in the survey. In his critique of other work in this area, Marsh specifically criticises Lee and Bryk's (1986) study on methodological grounds, which Marsh claims undermine their conclusions that '...single-sex schools deliver specific advantages to their students' (Lee and Bryk, 1986:381).

Marsh (1989) concluded

> 'There were many statistically significant differences between single-sex and coed students on the outcomes considered in the present investigation. In general, these tended to favor single-sex students, particularly single-sex boys. These differences, because they may reflect preexisting differences, cannot legitimately be interpreted as school-type effects' (Marsh, 1989:80).

Marsh goes on to state 'The major finding of the present investigation, at least in relation to school-type effects on growth during the last two years of high school, is a lack of significant effects' (Marsh. 1989:80). However, Marsh does make the point that his data and results refer '...only to Catholic single-sex and coed schools and not to public, other religious, or other private school comparisons. It may be reasonable to conjecture that the conclusions would generalize to these other situations, but the present investigation does not address this issue' (Marsh, 1989:81).

Needless to say, Marsh's (1989) criticisms of Lee and Bryk's (1986) study on methodological grounds bring a sharp response from Lee and Bryk (1989). Lee and Bryk suggest that Marsh erred in using what they refer to as an '...overly conservative "vote counting" strategy', which '...ignores the actual distribution of estimated effect sizes, which clearly favors a positive single-sex school effect' (Lee and Bryk, 1989:647). Lee and Bryk then criticise other aspects of Marsh's critique, before concluding

> 'In sum, Marsh's conclusions of no difference in the relative effectiveness of single-sex and coeducational Catholic schooling are highly suspect...From a purely practical point of view, the rigorous defense of coeducation mounted by Marsh seems a bit unnecessary, as coeducation is firmly established in American secondary education in the public sector...It is far from clear that secondary education in America is

> enriched by the gradual disappearance of the single-sex school option' (Lee and Bryk, 1989:649).

A scan through the literature reveals several articles detailing research into differences found in students from single-sex schools compared to those from co-educational schools. Levine (1964) made the point many years ago that as schools wrestle with the problems emerging in schools in the twentieth century, it is perhaps surprising that few re-examine factors such as co-education. 'Coeducation is so firmly established, and therefore seems so "natural" and proper, that few educators even consider the possibility of critically reevaluating it' (Levine, 1964:126). Levine particularly discusses inner-city schools and the problems surrounding disadvantaged black youths, but aspects of his arguments have a wider applicability. Levine concludes

> 'To summarize, a coeducational classroom in low-income communities simultaneously encourages boys to act out scholastically dysfunctional stereotypes and increases the likelihood that they will experience competitive lack of success which confuses their sexual identification and threatens their self-image', and also '...because coeducation in the inner city is no longer tenable on independent grounds related to the quality of education and the needs of the students, other benefits associated with its elimination should not be overlooked. Our schools group according to ability. Is sex a less influential variable? The first large city to abolish coeducation will gain rich dividends' (Levine, 1964:128).

As mentioned earlier in this thesis, McCracken (1973) found beneficial effects for primary aged boys in all male classes with respect to their association of the reading activity with 'maleness'. He concluded that boys attending a single-sex school are more likely to judge school-related reading as a male activity than boys attending co-educational classes, although the small size of this study raises questions about its validity.

A related issue to these is the question of the attitudes and orientations held by teachers in the various types of schools. Schneider and Coutts (1979) considered 296 teachers in co-educational, single-sex boys' and single-sex girls' schools in Canada. There were no significant differences in age or years of teaching experience between the teachers in co-educational schools and those from single-sex schools, nor were there any between male and female teachers. They found that both male and female teachers from the two types of schools perceived feminine traits in students as more acceptable than masculine traits, although male teachers, and those teachers from co-educational schools were more tolerant of masculine

characteristics than female teachers in girls' schools. Notwithstanding this preference, male students were preferred over female students by all except the female teachers in girls' schools. These and other findings were seen by Schneider and Coutts (1979:99) as being consistent with the concept that schools are a feminized environment.

Rosenthal and Chapman (1980) asked primary aged children in the two types of school (co-educational and single-sex boys) in Melbourne, Australia, to rate the competence of males and females in traditionally male occupations. The children were shown cards depicting ten traditionally male occupations, such as a carpenter, being carried out by both adult males and females. They were then asked to rate on a Likert scale how well they thought the person did the job. The study found that there were significant effects for older children (who found greater differences between males' and females' competence, in favour of males), and for children from single-sex schools, who also found favourably towards males (Rosenthal and Chapman, 1980:135). The authors suggest that the data can be interpreted as providing some support for the claim that co-education is associated with a reduction in stereotyped attitudes to sex-roles, but they do admit that in their study the school type may be confounded with family variables, which were not controlled. Interestingly, Hulse (1997:18) in a more recent study found quite the reverse; she showed that boys in single-sex schools had more egalitarian attitudes towards women's and men's roles in society, although her subjects were older than those in the study by Rosenthal and Chapman.

In an important study, Trickett, Trickett, Castro and Schaffner (1982) looked at the normative environments of 15 representative single-sex and co-educational independent boarding schools in the United States. Data was gathered from 456 students in these schools, using the Classroom Environment Scale (CES) (Trickett and Moos, 1973) and a purpose-designed questionnaire called the Student Experience Questionnaire. Their findings showed, perhaps unsurprisingly, that the classroom and school environments of independent boarding schools are different from those of public schools, and further that those of single-sex and co-educational schools are different from one another as perceived by the students. The environments of the classrooms in independent schools were rated as different from public schools on seven of the nine CES subscales, namely student involvement, student affiliation, teacher support, task orientation, and order and organization; in all these cases the independent schools were rated higher (Trickett, Trickett, Castro and Schaffner, 1982:379). Only on rule clarity and teacher control were they rated lower than public schools.

Within the independent sector, when single-sex schools were compared with co-educational ones, classroom environment scored higher for single-sex schools on all dimensions of the CES scale except teacher support, rule clarity, and innovation. The authors felt that '...single-sex school classrooms appear in general to be more organized and structured' (Trickett, Trickett, Castro and Schaffner, 1982:380). They go on to state

> 'That these differences between the classroom climates of these two types of schools is a reflection of a more general and pervasive difference in academic emphasis is suggested by the student questionnaire data. Here, single-sex students report spending more time each day doing homework, being more likely to spend weekend time on homework, spending less time on extracurricular activities, and having less free time in general' (Trickett, Trickett, Castro and Schaffner, 1982:380).

Thus, further evidence is provided for different types of schools developing different styles and mores, which affect a number of outcome variables seen in the students who attend them.

In a brief report involving the effects of single-sex or co-educational schools (or classes) on the attainment in Science, Harvey (1985) produced evidence to support the contention that single-sex classes (even if in co-educational schools) do not appear to improve the attainment of girls in Science in their first year in secondary school. Also, Harvey suggested that '...no difference was observed between boys in mixed schools and boys in all-boys schools' (Harvey, 1985:182). In this study, there was, however, evidence to suggest that in at least one area, Physics, boys in single-sex classes did better than boys in co-educational classes.

Lee and Bryk's (1986) study on the effects of single-sex schools on student achievement and attitudes has already been referred to in this thesis. It is an impressive and important work, as much for the statistical rigour with which the results are analyzed as for the subject matter. They carried out regression analyses on their data to predict attendance at a single-sex school as a function of several variables, including personal, family and academic background. They rightly suggest that failure to consider these confounding background variables '...is a major weakness of much of the past research on the effects of single-sex schooling' (Lee and Bryk, 1986:384). In the research which forms the body of this thesis, care was taken to include multiple regression analyses which were an important tool used to help understand and interpret the possible reasons for the differences found between the two types of schools.

Lee and Bryk (1986) conclude

> 'To be sure, the relevant policy consideration is not whether all secondary schools should be single-sex. Rather, if subsequent research supports the positive findings of our investigation and also concludes that the critical factors for this success are intrinsic to the single-sex organizational form, then the practical issue is to find ways to preserve existing single-sex schools and to encourage their development in contexts where the option does not currently exist' (Lee and Bryk, 1986:394).

Further analyses of differences between single-sex and co-educational secondary schools was researched by Bauch (1988). She suggests that in Catholic high schools in the United States, single-sex schools have a greater percentage of teachers with advanced degrees and greater teacher stability, which was measured by the percentage of teachers at the school for 10 years or longer. Bauch goes on to suggest that there are two major institutional differences between co-educational schools and single-sex schools. Not only '...do coeducational schools differ organizationally from single-sex schools, but all-boys' and all-girls' schools also differ from each other in at least two areas related to school performance: academic achievement and school social/psychological environments' (Bauch, 1988:56). In terms of academic achievement, Bauch claims that international evidence indicates that students in single-sex schools consistently outperform students in mixed-sex schools in Mathematics, Science and reading ability. In a number of studies cited in her article, Bauch demonstrates that on no achievement areas did co-educational school students surpass their single-sex school counterparts. However, she claims, the group that benefits least from single-sex schooling is white males. Black and Hispanic students do better in single-sex schools on all tests, '...scoring almost a year above their counterparts in mixed-sex schools' (Bauch, 1988:56).

Bauch claims important differences in the social/psychological environments of the two types of schools. She provides evidence that students in co-educational schools are more satisfied with the social environment in their schools, and perceive them as being less strict and controlled, that teachers hold differing attitudes about appropriate student behaviour depending on whether they are male or female, and that female teachers from both types of schools are more likely to engage in control-related strategies in class, such as orderliness, silence, obedience and cooperation. She also shows that male teachers are more tolerant of restlessness and aggression (Bauch, 1988:57).

Additionally, it is suggested that single-sex schools provide students with a greater number of '..successful role models of their own sex' (Bauch, 1988:57) and greater opportunities for leadership. Finally, Bauch recommends the importance of maintaining existing single-sex schools and looking for opportunities to create new ones. This was also Lee and Bryk's (1986) suggestion.

Foon (1988) conducted an interesting research project in Melbourne, Australia, in which she explored the relationship between the self-esteem, attribution styles and affiliation needs of adolescents in independent single-sex and co-educational schools. A sample of 896 males and 779 females was asked to complete three scales: the Piers Harris Children's Self Concept Scale (Piers, 1984), an affiliations pattern scale adapted from Richmond (1985), and the short version of Nowicki and Strickland's (1973) locus-of-control scale for children. Several demographic variables were also recorded. In terms of the male sample, those from single-sex schools had higher self-esteem but lower peer affiliation scores than those in co-educational schools.

Foon's results show that (as in the present study) the type of school attended seems to have differential consequences for students:

> '...those attending single-sex schools seem to be less rigidly attached to traditional views about the appropriateness of subject areas by sex. By contrast, attendance at co-educational schools appears to be associated with traditional subject preferences and related assessments of achievement in those subject areas' (Foon, 1988:52).

In terms of self-esteem, Foon found similar results to the present study, although the Piers-Harris scale measures a global self-esteem concept. The boys in single-sex schools had greater measures for self-esteem than the boys from the co-educational schools. However, peer dependence was greater for boys from co-educational schools when compared to the other boys.

These results gain further support from Cairns (1990), whose study involved 2295 students in Northern Ireland attending both academic and non-academic schools. Some students attended co-educational schools, and some attended single-sex schools. Cairns used a multi-dimensional measure of self-concept, the Perceived Competence Scale (Harter, 1982) and thereby overcame the already-described weaknesses in the global or unidimensional construct of self-concept. He found that boys at single-sex schools scored significantly higher levels of self-concept than the other boys, and he suggests that although it may seem unlikely that these (and other) results arose through a simple cause and effect relationship

between the type of school attended and the students' self-esteem, further testing and analysis showed that, in fact, when social status was considered, there were still no changes in the number of significant results in the study. He suggests that the selection hypothesis is an unlikely explanation for the results reported (Cairns, 1990).

Several other studies tell similar stories. Lee and Bryk (1990) extended their earlier work (Lee and Bryk, 1986) to investigate how well sustained were the attitudes, values and behaviours they measured in secondary school. Their 1990 study measured almost their entire private school sample 2 or 4 years after graduation from school. They found (page 584) that although there were several sustained effects for attitudes and values seen in the girls' school females, there were no significant effects seen in the young men from all-boys' schools. They conclude: 'Taken in concert with the findings of several other recent studies documenting the relative effectiveness of single-sex schooling, the findings of this study suggest that this educational option should continue to exist' (Lee and Bryk, 1990:589) although it must be said that their results show more effects favouring the development of girls in girls' schools than those favouring boys from boys' schools.

Stables (1990) has been cited earlier in this thesis; he showed that boys from co-educational schools had more strongly polarised attitudes concerning school subjects, and were less likely to take Drama, Music, Biology and Languages than boys from single-sex schools. He suggests that in mixed schools boys may be more strongly influenced by gender stereotypes when they choose their subjects than those in boys' schools. In mixed schools the boys seem more worried about choosing subjects which they think will make them look feminine; the boys' school boys, in the absence of females, do not appear to have the same concerns.

This work was carried further by Lawrie and Brown (1992) when they investigated subject choices at school as functions of type of school and whether there was an opposite sex sibling in the family. They surveyed 284 secondary school students aged 14 to 15 years attending either single-sex or co-educational schools in the south-east of England. The children were all from similar socio-economic backgrounds, and the results were similar to those reported above, in that boys from boys' schools chose Languages more frequently and Physics less frequently than those from mixed schools. Again, the boys' school boys held less stereotypical attitudes to academic subjects than the other boys.

More recent work in this area has been carried out by Colley, Comber and Hargreaves (1994). They considered subject preferences for pupils in two age groups, 11-12 years old,

and 15-16 years old, from co-educational and single-sex schools. They found evidence for the same gender stereotyping of subjects as that found by Stables (1990) and Lawrie and Brown(1992), in that boys from single-sex schools were much more likely to choose subjects such as Music, Art and Drama (the 'feminine' subjects) than those in co-educational schools, although this effect was only significant for the younger group of boys. The older group of boys did not show this effect, and a suggested hypothesis to explain this is that

> 'The younger group had just entered secondary school and many of these pupils would have encountered a timetable differentiated by subject for the first time. In the absence of peers of the opposite sex, pupils in single sex schools may not yet have developed a full awareness of gender stereotypes with respect to different subjects, while those in co-educational schools may have been exposed to such stereotypes to a greater extent. As far as the older pupils are concerned, there would presumably have been a substantial awareness of gender stereotypes of male and female preferences and abilities resulting from exposure to such stereotypes outside as well as inside school' (Colley, Comber and Hargreaves, 1994:384).

Young and Fraser (1992) carried out an important multilevel analysis of the relationship between the school, the home, and the student's performance in Physics for students attending mixed and single-sex schools. They used data from the Australian database of the Second International Science Study, a cross-country study of Science achievement, student attitudes, teacher characteristics and school environment. Their sample was 4,917 14-year-old students in Australian secondary schools, 2,565 girls and 2,352 boys. Students from government, Catholic and independent schools were involved, and the schools were of both types, mixed and single-sex.

Their analyses showed that although students from single-sex schools scored better than those from co-educational schools in Physics achievement, this may be due to factors such as home background, attitudes towards Science, and quantitative ability. Thus, the multilevel analyses indicated that the school effect, average socioeconomic level, appeared to contribute towards enhanced student achievement. This hardly seems surprising, and is consistent with the findings in this thesis, that SES level and school type were important predictors of a number of dependent variables in the study.

As parents are frequently the determiners for choice of school for their children, and particularly for children going to independent schools, their views on mixed and single-sex secondary schools are of some interest. West and Hunter (1993) examined parents' attitudes

towards single-sex and mixed secondary schooling for both boys and girls. Unsurprisingly, although the majority of parents agreed with positive statements about mixed schools, such as 'Mixed schools prepare children better for adult life', fewer than half the parents surveyed agreed that mixed schools are better for boys because of a 'civilising' effect brought about by the presence of girls. However, the great majority of parents felt that there were social advantages for boys being educated with girls, particularly at the secondary level.
Unfortunately, this report leaves many questions unanswered.

To conclude this section, the seminal work of Baker, Riordan and Schaub (1995) must be considered. They conducted a very large (N=15,122) cross-national project involving four countries: Belgium, New Zealand, Thailand and Japan. Achievement was measured on the basis of results for the Second International Mathematics Study, and other indicators considered included father's occupation, mother's highest educational attainment, the degree to which the language of school instruction matched the language spoken at home, for how many years the student expected to continue at school, as well as 16 indicators from the educational learning environment. These related to teacher, class, and curriculum characteristics in single-sex and co-educational schools.

The authors conclude that academic achievement is affected by factors related to the relative paucity of single-sex schools within the national context of the country being considered. In other words, single-sex groupings of students appear to have their greatest effect in countries where single-sex schools are relatively rare. To relate this finding to the work described in this thesis, although single-sex schools in Australia are certainly not in the majority, neither could they be considered rare. This would suggest that the selectivity effect due to the rarity of this group of schools as described in Baker, Riordan and Schaub (1995) is less likely to be a significant factor in interpreting the data described in this thesis.

From the research literature, then, the following broad themes and issues become apparent:
There are world-wide concerns about boys failing in both educational and developmental/psychosocial terms (Canada, 2000; Fletcher, 1996; Browne and Fletcher, 1995; Alloway and Gilbert, 1997; Pollack, 1998).
Schools are recognized as organizations which may significantly affect adolescent development and behaviour (Frydenberg and Lewis, 1993; Hargreaves, 1982; Reiss, 1995).
The behavioural characteristics of motivation, self-concept, and coping strategies are important to success in school and in life (Anderman and Maehr, 1994; Galloway *et al.*, 1998; Frydenberg and Lewis, 1993).

Schools differ in their effects on the adolescents who attend them (Galloway, Martin and Willcox, 1985; Mortimore, Sammons, Stoll, Lewis and Ecob, 1989).

Schools organize differently for boys and for girls (Reiss, 1995).

The context of learning may affect characteristics such as motivation, self-concept and coping strategies (Lee and Marks, 1992; Baker, Riordan and Schaub, 1995; Mortimore, 1995; Connell, 1996).

Research Questions

These issues thus allow one to frame research questions which are based thereon:

Do boys in single-sex boys' schools score significantly differently from boys in mixed schools on standardized tests for motivation, self-concept and coping strategies? Although there has been one study (Hulse, 1997) which considers this contextual question with respect to motivation and self-esteem, no researchers previously appear to have carried out this work with self-concept and coping strategies.

If differences are found, can these be related to the context of schooling, namely single-sex or coeducational?

Does the length of time a boy has spent in a single-sex boys' school have any bearing on the size of any measured differences?

Are there differences between Australian schoolboys and those from other countries?

What are the implications of the answers to these questions with respect to the education and development of boys?

Further, what are the implications of any findings with respect to the world-wide concerns about boys' development?

Methodology

The research described in this thesis is designed to consider these questions and to contribute to the debate relating to aspects of boys' development. The methodology adopted for investigation was carefully considered, and as this was to be an empirically based and statistically analysed study, it seemed to lend itself to data collection by using appropriately chosen survey instruments. The justification for this approach is that within the time constraints and the limits of data collection, entry and analysis, the use of standardized test instruments which have had extensive norming, reliabilty and validity data available seemed the most practical option. This method also allowed for further work in the future which could replicate, expand and build on to this study.

However, each of the instruments chosen implied self-report data, which provides the opportunity for obtaining data quickly and in a structured manner, but at the same time lends itself to the possibility that not all students will be giving valid responses. The strengths and weaknesses of self-report data must be kept in mind in interpreting results. Great care was taken in the data-collection process to maintain the confidentiality of the responses from each boy by means of a coding system, so that no names were required on any of the forms. This aspect of confidentiality was stressed to the boys taking the tests, which to an extent lessened the potential problem of invalid responses alluded to above.

In considering the analysis of the data, it was decided to use a range of inferential statistics including one-way analysis of variance, multivariate analysis, factor analysis and multiple regression analysis, splitting the file as appropriate. Clearly, the use of two-way analysis of variance (exploring the interaction of school type and pupil grade) and calculation of effect sizes (to judge substantive significance, not just statistical significance) would have provided a richer analysis of the data, but time and length limitations meant that this was not possible. However, future analyses will include these procedures.

Instruments

The choice of instruments was not easy, as there is a huge number available in print (Impara and Plake, 1998). However, Hulse's (1997) study was in some aspects similar to the thrusts of the research described in this thesis (although she considered some different behaviours, and used only two schools) so her instruments were carefully considered. Hulse's (1997) research findings are interesting and will be discussed in greater detail in following chapters. The current research described in this thesis sought to extend and enlarge the thrust of Hulse's work with the international perspective of using Australian schoolboys. However, in the end, the only test common to both studies was the School Motivation Analysis Test (Krug *et al.*, 1976). Hulse used the Coopersmith Self Esteem Inventory (Coopersmith, 1989), which is a well known research instrument but is now dated and so it was decided to use the Self-Description Questionnaire–II (Marsh, 1992) in its place. This relatively recent Australian-designed instrument has been used extensively in the research and is thoroughly validated. The School Attitude Measure (Wick, 1989) proved difficult to obtain and the Sex-Role Egalitarianism Scale (King and King, 1993) was considered to be too esoteric and thus less useful for the work being done here, and therefore a decision was made to use the Adolescent Coping Scale (Frydenberg and Lewis, !993) which is also an Australian instrument and has had significant use even though it is quite recent in its development. This Scale is not without its critics, as will be discussed later. Ultimately then, in this study it was

decided to use the Demographic Questionnaire, the School Motivation Analysis Test, the Self Description Questionnaire–II, and the Adolescent Coping Scale. Copies of these four instruments may be found in the Appendices.

Some mention must be made as to the reasons for the use of the School Motivation Analysis Test (Krug *et al.*, 1976). As has been mentioned, and will be developed further later, this test is based on earlier mechanistic, determinist drive theories of motivation (Hull, 1943, 1951; Heider, 1958) which have been largely replaced by attributionist ideas from Dweck (1975), Weiner (1986) and Nicholls (1989). Certainly, workers such as Boyle (2001) claim that the SMAT is a well-placed instrument to use in terms of the dynamic calculus model of motivation, wherein he postulates 'multiplicative, synergistic interactions between attitudes, biologically based drives such as sex and aggression, and culturally acquired/conditioned drives' (Boyle, 2001). Boyle (1988) describes this 'dynamic calculus' model in some detail, which will not form part of this thesis. However, and despite this, there are strong grounds for suggesting that this rather idiosyncratic and dated choice is not, on the face of it, the best instrument for a modern study into motivation. The justification in this work is that the use of the SMAT allows a more-or-less direct comparison with the work of Hulse (1997) and this was one of the objects of this research - to consider what differences there were, if any, between Australian schoolboys and those of other countries.

The Demographic Questionnaire was devised to include data which could possibly be used during the data analysis stage to eliminate - or, at least, to minimize - factors other than the gender-based nature of the school on the outcomes. Parental occupation, for both father and mother, was asked for. Other information obtained in the Demographic Questionnaire included the student's date of birth, whether the student was a Day Student or a Boarder, the number of brothers and the number of sisters the student had, the student's home postcode, the student's ethnic origin, the number of years the student had spent in either or both of co-educational schools or single-sex boys' schools, and in which year levels they were in either type of school.

Further, it was decided to test two school-year cohorts of boys, at Year 8 and Year 10 level. These two cohorts correspond to boys of age approximately 12 to 13 years, and 14 to 15 years respectively. Year 8 is also the first year of secondary school in the two Australian states from which the sample schools came. Some Australian states have year 7 as the first secondary year; to include schools from these states into the research would have introduced an additional, complicating factor relating to changes associated with the transfer

from primary to secondary school. To attempt to introduce more statistical validity and rigour into the research, it was decided to use samples of boys from two co-educational schools and two single-sex schools, four schools in total. This was an attempt to move beyond the single school comparison of Hulse (1997) in that if two schools of each type were used, and some intake variables could be controlled, then a more valid measure of differences between the two types of schools might be possible. In Goldstein's (1987) terms, it was recognised that within the multilevel hierarchies of the schools, two levels - student and school - were the focus of this research. Measurements were to be made on the students, and inferences were to be drawn, if possible, about the influence of school type on any significant differences found between the two groups of schools. However, there must be much caution about drawing causal inferences from analyses of this type. Goldstein (1997), in his work on school effectiveness research, makes this point very strongly, indicating that even if adjustments are made for intake and various other factors, it may well be that the statistical models being used fail to take into account all of the relevant factors. In the work described in this thesis, no attempt will be made to try to demonstrate that one system is any better or worse than another. Rather, if differences are found, then possible reasons for these differences will be explored in the hope that there will be a better understanding of issues relating to boys' education.

It was decided to test 50 boys at each Year level in each school, giving a total of up to 100 boys from each school or up to 400 boys in the study as a whole. Furthermore, the two boys' schools were both from one Australian State, but the two co-educational schools were from another State. The structure for the study is thus shown in Table 5.1 below.

TABLE 5.1

TESTING STRUCTURE FOR RESEARCH PROJECT

	SINGLE-SEX BOYS' SCHOOLS (N=2)	COEDUCATIONAL SCHOOLS (N=2)
YEAR 8 (N=160: 93 from single-sex boys' schools, 67 from co-educational schools)	Demographic Questionnaire School Motivation Analysis Test Self-Description Questionnaire-II Adolescent Coping Scale	Demographic Questionnaire School Motivation Analysis Test Self-Description Questionnaire-II Adolescent Coping Scale
YEAR 10 (N=170: 97 from single-sex boys' schools, 73 from co-educational schools)	Demographic Questionnaire School Motivation Analysis Test Self-Description Questionnaire-II Adolescent Coping Scale	Demographic Questionnaire School Motivation Analysis Test Self-Description Questionnaire-II Adolescent Coping Scale

The schools chosen were all independent, non-Catholic, Christian, day and boarding schools, accepting students from the year prior to grade 1 - called either Reception year or Preparatory year - through to grade 12 (i.e. the entire span of primary and secondary schooling in Australia). They were all well-established, prestigious schools comparable in terms of fees charged, reputation in the community, ethnic diversity and student destinations after graduation from the school. In all schools, the students came from a range of approximately similar socioeconomic backgrounds as determined by two main pieces of data. At the time of the statistical analyses, the different schools' Socioeconomic Status (SES) scores were used in a multiple regression analysis. This calculation has been made possible because of the fact that all non-Government schools in Australia moved at the end of the year 2000 to a new formula to determine Commonwealth Per Capita Grants to schools.

The Commonwealth Recurrent Funding for non-Government schools is based on measures of need, but whereas the old mechanism, the Educational Resources Index (ERI) assessed need based on a schools' own resource levels, the new measure of need was to be the measure of Socioeconomic Status (SES) of the school communities (Kemp, 1999). The SES approach relies on the following information to obtain a measure of the capacity of a school community to support its school:

- The latest (1996) Australian Bureau of Statistics National Census Data (on which the SES Index is based).
- The SES Index which comprises three dimensions – Occupation, Education and Income (half Household Income and half Family with Children Income).

- Australian Bureau of Statistics Census Collection Districts (which comprise between 200 to 250 households).
- Collection Districts' SES Scores (derived from the SES Index).
- Students' Residential Addresses (addresses only, not names).

As the four schools used in this survey have now all been indexed under the new Commonwealth Government SES system, this provided one form of measure of the Socioeconomic Status of each school. The SES categorisation has stood up to robust validation procedures as indicated in the Validation Report (1999) (Department of Education, 1999). The mean SES score for the two boys' schools was 112.5, and the mean for the two co-educational schools was 113.5 Additionally, as has been stated previously, all students were asked in the Demographic Questionnaire completed as part of the testing procedure, to indicate occupation of father and occupation of mother, and this data was coded to provide an additional indicator of the Socioeconomic Status of the students involved in each school. Occupations were categorized according to the eight groupings used by the Australian Bureau of Statistics (Statistics, 1996).

There was some variation in the size of the schools. The two co-educational schools had totals of 1520 and 1054 pupils, with secondary components (which included the two year-groups studied, Year 8 and Year 10) of 1040 and 668 respectively. The two boys' schools had 1435 and 1270 pupils, with 1101 and 800 respectively in the secondary section. The larger co-educational school was 51% boys, the other 55% boys. Full-time teaching staff numbered 142 and 84 respectively in the two co-educational schools, and 110 and 100 respectively in the boys' schools. Numbers of boarders varied from 120 and 87 in the co-educational schools respectively, to 130 and 300 respectively in the boys' schools.

In each of the four test schools, the four tests (Demographic Questionnaire, School Motivation Analysis Test, Self-Description Questionnaire-II and the Adolescent Coping Scale) were administered in a different (random) sequence in order to minimize any possible effect of one test always following another.

An informed consent form for every boy taking part in the survey was completed by his parents or guardians, thus complying with the requirements of the University of Durham's University Ethics Advisory Committee. A contact was established in each school (usually that school's Counsellor or Guidance Person) who oversaw the entire administration of the testing in each school. With the author's interest in this research area being reasonably well

known in Australia, it was important for him to remain some distance from the testing administration procedures in each school.

The boys who were the subjects of this testing were told by the person in charge of the testing process in each school that they were taking part in important research into aspects of boys' learning and development. Teachers in each of the schools had expressed an interest in the final data analysis in order to add to their professional understanding of aspects of boys' learning. As all parents had given written consent, it was considered not necessary for written consent to be obtained separately from each boy participating.

The testing in each of the four schools was completed within a three-month period, between November 2000 and February 2001. When the test papers were returned from each school, they were scored by hand (except for the Adolescent Coping Scale, which was optically scanned) and then the data was analysed. The next three chapters give a detailed description of the analysis of the results for each of the tests, together with discussion of the findings.

Chapter 6: Results: Motivation

Although the following three chapters are titled 'Results: Motivation', 'Results: Self-Concept' and 'Results: Coping Strategies' respectively, in fact they are each based around the test instruments used. Therefore this chapter considers the results from the School Motivation Analysis Test (SMAT) (Krug, Cattell and Sweney, 1976) which measures a range of characteristics related to motivation. Some of the characteristics measured by the SMAT, such as Self-Sentiment, overlap with aspects measured in other tests described in the following chapters.

The theory behind the SMAT is centred on Cattell's work on human motivation (Cattell and Child, 1975), which is based on drives. Cattell's early work in analysing human motivation confronted two problems: firstly, determining an appropriate unit of observation, and secondly, identifying the best methods of quantifying these observations (Krug *et al.*, 1976). The first problem was resolved by

> '...taking as his basic unit of observation the attitude which he defined in the following paradigm:
> "In these circumstances (behavioral situation) I want so much (energy investment) to do this with that (object)".
> Thus, "I want to spend time with friends of the opposite sex" constitutes one attitude while "I want to spend time working on extracurricular projects at school with friends" constitutes a different attitude. Both involve the investment of energy and an object toward which that energy is directed' (Krug *et al.*, 1976:6).

Cattell then constructed experimental scales designed to measure many relevant attitudes, and he found that they could be grouped into a much smaller number of broad factors he termed dynamic source traits. While some of these traits could be seen to be similar to well-known and well-accepted basic drives such as the need for friends, or shelter, or for self-assertion, others seemed to represent acquired interest patterns which 'develop from the interaction of primary drives with the environment' (Krug *et al.*, 1976:6). An example of these acquired interest patterns might be an individual's interest in school, which does not develop because of an intrinsic drive to education, but rather because of the opportunities an individual is afforded in meeting friends, playing sport, holding positions of responsibility and meeting other needs.

Cattell finally selected ten dynamic source traits for the SMAT and these are listed in Table 6.1, along with the principal attitudes involved with each dynamic trait.

TABLE 6.1

THE TEN DYNAMIC SOURCE TRAITS MEASURED BY SMAT

Dynamic Trait	Attitudes Involved
Assertiveness Primary Drive	I want to take part in adventures and read adventure stories I want to seek class office and positions of importance
Mating (Sex) Primary Drive	I want to spend time with friends of the opposite sex I want to go to dances and parties where we go in couples
Fear Primary Drive	I want to avoid painful injuries and frightful diseases I do not want my parents to reject me as a failure and disappointment
Narcism Primary Drive	I want to dress well and have people think how handsome I look I want to look after myself and give myself a good time
Pugnacity-Sadism Primary Drive	I want to smash people who have caused me trouble I want my country to beat its enemies
Protectiveness (Pity) Primary Drive	I want to protect and take care of my younger siblings I want to have pets to take care of
Self-Sentiment Acquired Interest Pattern	I want to be the kind of person most people like I want to have a good reputation for honesty and strength of character
Superego Acquired Interest Pattern	I want always to show self-control I want to show my parents I believe in the ideals they stand for
School Acquired Interest Pattern	I want to work for the reputation of my school, in scholarship and athletics I want to take part fully in classroom work, with my teacher and the other students
Home Acquired Interest Pattern	I want to preserve the ties to my home and parents I want more time to enjoy the things I can do at home with siblings and friends

(Krug *et al.*, 1976:7)

Having determined the dynamic source traits to be measured, Cattell focussed on how these traits might be best measured. He wished to improve factors such as reliability and objectivity which had been weak for existing projective tests of motives. His analysis of hundreds of different ways of measuring motives (Cattell and Warburton, 1967), revealed that the tests themselves tended to cluster in meaningful and replicable fashion around two

sets, one which measured deliberate, organised aspects of motivation (which Cattell and Warburton called the Integrated component) and the other which measured the unconscious aspects of motivation (which they called the Unintegrated component).
These ideas were developed further by Sweney (1969) who suggested that whilst the Unintegrated component represented the individual's unsatisfied drive or need level, the Integrated component reflected the level of satisfaction the individual has attained in the particular interest area. As Hulse (1997) puts it, the Unintegrated component is the subconscious level of the drive, the Integrated component is the realization of the drive, '...or the level of satisfaction the person has attained in that particular area' (Hulse, 1997:10).

Four measurement devices are used in SMAT, two representing the Unintegrated component and two representing the Integrated component. Table 6.2 shows how these are interpreted in the test (Krug *et al.*, 1976:7).

TABLE 6.2

MEASUREMENT DEVICES USED IN SMAT

Motivational Component	Technical Title	Interpretation
Unintegrated	Utilities	The person's first reaction about what various resources could be used for. This comes nearest to being a simple preference statement test, but actually asks what anyone would find to be the natural use of certain means to ends.
Integrated	Word Association	Of cue words (spontaneous associations are in the direction of interests).
Unintegrated	Autism	Distortion of the cognitive field by misperception and misbelief. This acts in the direction of favoring the realization of the individual's own interests and goals (the person desiring a certain end tends to believe what helps its attainment).
Integrated	Information	On matters which assist means-ends activities in reaching the goals of interest. (The person consistently interested in a field knows more about it).

Within the test itself, the individual is never asked directly to assess his or her own levels of motivation. The questions are indirect, and this was felt by Krug *et al.* (1976) to be a safeguard against faking or misrepresentation by the subject. As an example of this, in the Autism scale, the subject is presented with questions which appear to have an obviously true answer; for example:

17. The chances of getting sick because of eating in public cafeterias are:

a. slight b. moderate c. high d. very high

As can be seen, the responses are arranged along a continuum, and motivation level is assessed by the degree of distortion in the direction of the attitude. In the above example, the subject who chooses 'very high' as the answer is presumed to have a higher level of the

fear dynamic trait than the subject who chooses 'slight'. Item cross-checking for validity has shown that this presumption is justified.

Scoring the SMAT

These tests were hand-scored, which is a complicated exercise involving three different templates. After the usual visual scanning for obvious problems - which were dealt with according to the instructions in the Handbook (Krug *et al.*, 1976) - each sheet was scored, and totals for the ten traits entered on a worksheet. These raw scores were then transformed into what Krug *et al.* call sten scores.

> 'Stens are standard scores which range from 1 to 10 and have a mean of 5.5 and standard deviation of 2.0 in the norm population....Sten scores of 4 through 7 are normally thought to represent the average range, and about two-thirds of all scores tend to fall in this range. Scores below 4 reflect motivational levels definitely lower than average. Similarly, scores of 8, 9, or 10 represent highly elevated interest levels. Scores of 1 or 10 are so distinctive as to be found, on the average, only twice in a hundred times and play a correspondingly important role in the interpretation of the SMAT profile' (Krug *et al.*, 1976:15).

Finally, it is important to understand how the SMAT views the relationship between the Unintegrated (U) and the Integrated (I) Motivation components. They are essentially uncorrelated. It is perfectly possible for a subject to obtain scores indicating a high need for self-assertion, for example, (high Assertiveness-U) whilst simultaneously scoring low on being able to achieve the self-assertion goal (low Assertiveness-I). Thus for each of the 10 dynamic traits - Assertiveness, Mating (Sex), Fear, Narcism, Pugnacity-Sadism, Protectiveness (Pity), Self-Sentiment, Superego, School, Home - there is a U score and an I score, giving a total of 20 primary scores.

By combining these primary scores in certain ways, other useful scores can be generated (although it must be remembered that these are derivative scores, linearly dependent on the primary scores, thus adding no further statistical information over and above that gained from the primary scores). For example, if the U and I scores for a particular dynamic trait are added together, the score produced from this sum gives an index of how much overall energy the subject has invested in this particular area. This index is referred to as the total motivation score for that particular dynamic trait. Further research by Krug *et al.* (1976) has demonstrated that the difference between the U score and the I score (specifically U-I) gives

a useful index of dynamic conflict in that area since it represents the degree by which drive exceeds satisfaction. Thus a possible 20 total motivation and conflict scores may be generated. These are termed the secondary scores.

Five further scores are calculated from the SMAT, which collapse the SMAT across dynamic traits. These are called derivative scores and include Total Autism-Optimism, General Information-Intelligence, Total Integration, Total Personal Interest, and Total Conflict. Table 6.3 (from Krug *et al.*, 1976:8) summarizes the SMAT scores.

TABLE 6.3

SUMMARY OF SCORES OBTAINED FROM THE SMAT

Title	Description
Unintegrated (U) Motivation Primary Scores	Ten scores representing drive or need level in each of ten interest areas.
Integrated (I) Motivation Primary Scores	Reflect satisfaction level or the strength of conscious organized motive strength in each of ten areas.
Total Motivation Secondary Scores	Sum of U and I motivation scores for each of the ten dynamic traits.
Conflict Secondary Scores	Excess of drive over satisfaction (U-I) in each of the ten areas.
Total Autism-Optimism Derivative Scores	Sum of 10 scores on the autism device. Represents the subject's general tendency to distort reality
General Information-Intelligence Derivative Scores	Sum of 10 scores on the information device. Measures crystallized general ability.
Total Integration Derivative Scores	Summary index of the extent of disciplined expression of the individual's goals (satisfaction high relative to drive).
Total Personal Interest Derivative Scores	Summary index of the individual's overall drive or interest level.
Total Conflict Derivative Scores	Summary of the subject's general frustration level (satisfaction low relative to drive).

Psychometric Characteristics of the Test

The SMAT was standardized against a norm sample of 1188 males and 1241 females across geographic regions of the U.S., including cities and towns of varying size (Krug *et al.*, 1976:35). The sample included a range of socioeconomic levels and ethnic origins, in order to make the test norms appropriate for use with individuals of widely different backgrounds. As to the usefulness of the test with a group of Australian students, Boyle, Start

and Hall (1988) have shown that the SMAT norms are relatively valid for use in the Australian context.

The test comes with extensive test-retest reliability data, as well as a significant bank of data relating to its validity. Validation data for the SMAT has also been provided by Kline and Grindley (1974), Cattell and Child (1975), Birkett and Cattell (1978), Boyle (1983), Boyle (1984), Boyle (1985a), Boyle (1985b), Boyle and Cattell (1984), Cattell (1985), Boyle and Houndoulesi (1993), Boyle, Start and Hall (1989a), Boyle and Start (1989) and Boyle, Start and Hall (1989b).

Descriptive statistics

The analysis of the descriptive statistics for the whole sample by type of school (Single-sex boys' school or Co-educational school) is shown in Table 6.4.

TABLE 6.4

SMAT DESCRIPTIVE STATISTICS FOR WHOLE SAMPLE BY TYPE OF SCHOOL

Descriptive Statistics

	Type of school	Mean	Std. Dev.	N
Assertiveness conflict sten score	Single-sex boys' school	5.58	1.83	190
	Co-educational school	5.72	2.01	129
	Total	5.64	1.90	319
Assertiveness integrated sten score	Single-sex boys' school	4.26	1.83	190
	Co-educational school	4.22	1.88	129
	Total	4.24	1.85	319
Assertiveness unintegrated sten score	Single-sex boys' school	4.91	1.90	190
	Co-educational school	5.05	1.86	129
	Total	4.96	1.88	319
Assertiveness total motivation sten score	Single-sex boys' school	4.44	1.82	190
	Co-educational school	4.49	1.69	129
	Total	4.46	1.76	319
Fear conflict sten score	Single-sex boys' school	5.23	2.03	190
	Co-educational school	5.22	1.92	129
	Total	5.23	1.98	319
Fear integrated sten score	Single-sex boys' school	4.52	2.08	190
	Co-educational school	4.95	1.93	129
	Total	4.70	2.03	319
Fear total motivation sten score	Single-sex boys' school	4.51	1.94	190
	Co-educational school	5.01	1.88	129
	Total	4.71	1.93	319
Fear unintegrated sten score	Single-sex boys' school	4.68	1.94	190
	Co-educational school	5.09	1.88	129
	Total	4.84	1.92	319
Home conflict sten score	Single-sex boys' school	5.62	2.08	190
	Co-educational school	5.10	1.90	129
	Total	5.41	2.02	319
Home integrated sten score	Single-sex boys' school	4.50	2.11	190
	Co-educational school	5.13	2.02	129
	Total	4.76	2.10	319
Home total motivation sten score	Single-sex boys' school	4.83	1.91	190
	Co-educational school	5.11	1.95	129
	Total	4.94	1.93	319
Home unintegrated sten score	Single-sex boys' school	5.23	1.85	190
	Co-educational school	5.05	1.83	129
	Total	5.16	1.84	319
Mating conflict sten score	Single-sex boys' school	5.09	1.84	190
	Co-educational school	5.18	1.86	129
	Total	5.13	1.84	319
Mating integrated sten score	Single-sex boys' school	5.27	1.89	190
	Co-educational school	5.05	1.98	129
	Total	5.18	1.93	319
Mating total motivation sten score	Single-sex boys' school	5.39	1.98	190
	Co-educational school	5.13	2.08	129
	Total	5.29	2.02	319

TABLE 6.4 (Continued)

Mating unintegrated sten score	Single-sex boys' school	5.30	2.01	190
	Co-educational school	5.17	2.01	129
	Total	5.25	2.01	319
Narcism conflict sten score	Single-sex boys' school	5.53	1.80	190
	Co-educational school	5.30	1.64	129
	Total	5.44	1.74	319
Narcism integrated sten score	Single-sex boys' school	4.53	1.55	190
	Co-educational school	4.84	1.57	129
	Total	4.66	1.56	319
Narcism total motivation sten score	Single-sex boys' school	4.80	1.63	190
	Co-educational school	4.94	1.65	129
	Total	4.86	1.63	319
Narcism unintegrated sten score	Single-sex boys' school	5.14	1.83	190
	Co-educational school	5.05	1.71	129
	Total	5.10	1.78	319
Protectiveness conflict sten score	Single-sex boys' school	5.51	2.07	190
	Co-educational school	5.17	2.16	129
	Total	5.37	2.11	319
Protectiveness integrated sten score	Single-sex boys' school	4.03	2.21	190
	Co-educational school	4.59	2.23	129
	Total	4.26	2.23	319
Protectiveness total motivation sten score	Single-sex boys' school	4.08	1.97	190
	Co-educational school	4.60	1.99	129
	Total	4.29	1.99	319
Protectiveness unintegrated sten score	Single-sex boys' school	4.57	1.92	190
	Co-educational school	4.80	2.02	129
	Total	4.66	1.96	319
Pugnacity conflict sten score	Single-sex boys' school	5.69	1.88	190
	Co-educational school	5.84	1.87	129
	Total	5.75	1.87	319
Pugnacity integrated sten score	Single-sex boys' school	5.51	1.67	190
	Co-educational school	5.49	1.98	129
	Total	5.50	1.80	319
Pugnacity total motivation sten score	Single-sex boys' school	6.17	1.82	190
	Co-educational school	6.31	2.24	129
	Total	6.23	2.00	319
Pugnacity unintegrated sten score	Single-sex boys' school	6.28	2.05	190
	Co-educational school	6.46	2.29	129
	Total	6.35	2.15	319
School conflict sten scores	Single-sex boys' school	5.41	1.78	190
	Co-educational school	5.23	2.00	129
	Total	5.34	1.87	319
School integrated sten scores	Single-sex boys' school	4.96	2.12	190
	Co-educational school	4.98	2.36	129
	Total	4.97	2.22	319
School total motivation sten score	Single-sex boys' school	5.27	1.99	190
	Co-educational school	5.14	2.17	129
	Total	5.22	2.06	319
School unintegrated sten score	Single-sex boys' school	5.46	1.74	190
	Co-educational school	5.16	1.89	129
	Total	5.34	1.81	319

TABLE 6.4 (Continued)

Self-sentiment conflict sten score	Single-sex boys' school	5.87	1.90	190
	Co-educational school	5.60	1.91	129
	Total	5.76	1.90	319
Self-sentiment integrated sten score	Single-sex boys' school	4.73	1.69	190
	Co-educational school	4.85	1.82	129
	Total	4.78	1.74	319
Self-sentiment total motivation sten score	Single-sex boys' school	5.32	1.84	190
	Co-educational school	5.26	1.92	129
	Total	5.29	1.87	319
Self-sentiment unintegrated sten score	Single-sex boys' school	5.74	2.08	190
	Co-educational school	5.55	2.12	129
	Total	5.66	2.10	319
Superego conflict sten score	Single-sex boys' school	4.83	1.84	190
	Co-educational school	3.81	2.04	129
	Total	4.42	1.98	319
Superego integrated sten score	Single-sex boys' school	5.31	2.15	190
	Co-educational school	6.16	2.37	129
	Total	5.65	2.28	319
Superego total motivation sten score	Single-sex boys' school	5.12	2.05	190
	Co-educational school	5.27	2.30	129
	Total	5.18	2.15	319
Superego unintegrated sten score	Single-sex boys' school	4.89	1.80	190
	Co-educational school	4.26	2.04	129
	Total	4.64	1.92	319
Total autism-optimism sten score	Single-sex boys' school	4.78	1.99	190
	Co-educational school	4.76	1.90	129
	Total	4.77	1.95	319
Total conflict sten score	Single-sex boys' school	5.23	1.98	190
	Co-educational school	4.70	2.11	129
	Total	5.02	2.05	319
Total information-intelligence sten score	Single-sex boys' school	4.93	1.33	190
	Co-educational school	5.33	1.56	129
	Total	5.09	1.44	319
Total integration sten score	Single-sex boys' school	5.22	1.77	190
	Co-educational school	5.76	1.87	129
	Total	5.44	1.83	319
Total personal interest sten score	Single-sex boys' school	4.08	1.49	190
	Co-educational school	4.38	1.65	129
	Total	4.20	1.56	319

For this test, there was a total of 319 subjects: single-sex boys' schools N=190 (Year 8, N= 93; Year 10, N=97); co-educational schools N=129 (Year 8, N=57; Year 10, N=72). The sten score means were greater for single-sex boys' school boys in the following variables:

Mating unintegrated

Mating integrated

Mating total motivation

Fear conflict

Narcism unintegrated

Narcism conflict
Protectiveness conflict
Self-sentiment unintegrated
Self-sentiment total motivation
Self-sentiment conflict
Superego unintegrated
Superego conflict
School unintegrated
School total motivation
School conflict
Home unintegrated
Home conflict
Total autism-optimism
Total conflict

The co-educational school boys had greater means for the sten scores of the following variables:
Assertiveness unintegrated
Assertiveness integrated
Assertiveness total motivation
Assertiveness conflict
Mating conflict
Fear unintegrated
Fear integrated
Fear total motivation
Narcism integrated
Narcism total motivation
Pugnacity unintegrated
Pugnacity integrated
Pugnacity total motivation
Pugnacity conflict
Protectiveness unintegrated
Protectiveness integrated
Protectiveness total motivation
Self-sentiment integrated
Superego integrated

Superego total motivation

School integrated

Home integrated

Home total motivation

Total information-intelligence

Total integration

Total personal interest

These results can be summarised in the following diagrammatic way (Table 6.5).

TABLE 6.5

ANALYSIS OF SMAT STEN SCORE MEANS (DESCRIPTIVE)

DYNAMIC TRAIT		TOTAL MOTIVATION	CONFLICT
Assertiveness U	C	C	C
Assertiveness I	C		
Mating U	B	B	C
Mating I	B		
Fear U	C	C	B
Fear I	C		
Narcism U	B	C	B
Narcism I	C		
Pugnacity-Sadism U	C	C	C
Pugnacity-Sadism I	C		
Protectiveness U	C	C	B
Protectiveness I	C		
Self-Sentiment U	B	B	B
Self-Sentiment I	C		
Superego U	B	C	B
Superego I	C		
Sentiment to School U	B	B	B
Sentiment to School I	C		
Sentiment to Home U	B	C	B
Sentiment to Home I	C		

(Note: B=Boys' school boys' sten score means were greater; C=Co-educational school boys' sten score means were greater).

If we consider first the general overall patterns and trends in the data, without at this stage looking for statistically significant variances between the groups, we can see that for the ten dynamic traits measured, the co-educational boys score more strongly in both unintegrated and integrated assertiveness, and also in assertiveness total motivation, and assertiveness conflict scores. On the SMAT, this scale measures the striving for pre-eminence by the

individual. It relates to behaviours such as competitiveness, pride, envy and to a degree pleasure at the downfall of others. Not only social issues are involved here; this scale also relates to a '...mastery of nature and therefore in science, adventure, constructive achievement, and the pursuit of glory' (Krug *et al.*, 1976:9).

The boys' school boys score more strongly on mating unintegrated and integrated, and in mating total motivation. The co-educational boys score more strongly on the mating conflict scale. The mating scale is a sex drive scale, measuring mainly heterosexual drives, as distinct from narcisistic drives, which are considered below.

The fear scale measures fear as well as escape and security-seeking. It can represent the fear of physical harm or illness, as well as the fear of affective factors such as loss of parental affection. The co-educational boys scored higher on both unintegrated and integrated fear, and also fear total motivation but not fear conflict.

Whereas the boys' school boys score higher on narcism unintegrated and narcism conflict, their counterparts in co-educational schools score more strongly on narcism integrated and narcism total motivation. The narcism scale for teenagers measures the drive which relates to being attractive to the opposite sex and being well-groomed. However, it transforms in later adolescence and early adulthood into the areas of seeking comfort and ease, and liking sensual or even auto-erotic satisfaction. Narcism also measures self-centredness and egotism. It may be helpful to understand that the narcism scale is negatively correlated with superego strength.

The pugnacity-sadism scale, which measures the degree of frustration felt by the individual, also measures interest in sadistic themes, fighting, and quarrels. The goal is the defeat of enemies and those who are disliked. As Krug *et al.* put it, higher pugnacity-sadism scores would be '...obtained by boys who are failing school, (rather) than by those who are successful' (1976:10). These results show a clear separation between the co-educational school boys (higher means for unintegrated, integrated, total motivation and conflict) on the pugnacity-sadism scale and the boys' school boys.

On the protectiveness scale, boys' school boys measured higher on the conflict score, but lower on the unintegrated, integrated and total motivation scores. This scale measures the erg (primary drive) relating to care of the young by the father or mother, and extends to caring for others generally and for siblings and pets in adolescence.

Boys' school boys produced higher sten score means for unintegrated, total motivation, and conflict on the self-sentiment scale, but were lower than co-educational school boys on the integrated component of the scale. This scale measures the self-concept,

> '...the ergs which enter into this acquired structure appear(ing) to be principally fear for the security of the self, some narcism, and a good deal of self-assertion connected with maintaining the social status of the self. There is some subsidiation also toward satisfying the superego demands for a worthy self-concept. However, the self-sentiment needs to be clearly distinguished from the superego, which can be done partly by recognizing that the self-sentiment is more concerned with social reputation and security than with fundamental morals' (Krug *et al.*, 1976:10).

The superego is expressed differently in adolescents and adults. Adolescents tend to express superego in terms of parental attachment in general, and desire to please the father in particular. Adults express superego by striving toward moral goals and positive services. Krug *et al.* (1976) make the point that superego is by and large independent of self-sentiment, with only moderate correlation between integrated superego and self-sentiment. In our study, the boys' school boys' means were higher for unintegrated superego and conflict, whereas the means for the co-educational school boys were higher for integrated superego and total motivation.

The final two of the ten dynamic source traits measured by the SMAT are sentiment to school, and sentiment to home. Sentiment to school attempts to measure the adolescent's global interest in school activities, and samples classroom activities, sport, attachment to the teacher, interest in peers, and the reputation of the school in the community. In this area, boys' school boys scored more strongly for unintegrated sentiment to school, and for both total motivation and conflict. The co-educational school boys scored more strongly on the integrated component only.

With respect to the sentiment to home scale, boys' school boys scored higher on unintegrated sentiment to home and conflict, whereas co-educational school boys scored higher for integrated sentiment to home and total motivation. This scale measures not only attachment to parents, but also attachment to the values which come from home, the activities of those who visit the home for various reasons (including friends), and the attachment to the physical structure of the home.

For the five derivative scales, boys' school boys scored higher on the total autism-optimism scale and on the total conflict scale. On the other hand, co-educational school boys scored higher on the total information-intelligence scale, the total integration scale and the total personal interest scale.

Inferential statistics

In approaching the statistical analysis of all this data emanating from the SMAT, note is made of the arguments for and against preceding multiple analyses of variance (ANOVAs) with a multivariate analysis of variance (MANOVA) to control for Type I errors (Huberty and Morris, 1989). It has been argued that multiple ANOVAs may be conducted without the necessity of a preliminary MANOVA (Huberty and Morris, 1989). However, Boyle, Stankov and Cattell (1995) stress the need for multivariate rather than univariate measurement because of the wide range of personality traits and cognitive abilities within intrapersonal psychological structure. Boyle *et al.* (1995:418) suggest that experimental manipulation can have significant effects on a number of variables at the same time, and these effects would not be measured successfully using univariate measures alone. Therefore it was decided to precede the ANOVA analyses with a MANOVA and the MANOVA results are shown in Table 6.6.

TABLE 6.6

MULTIVARIATE TESTS ON SMAT BY SCHOOL TYPE

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1.000	24442.877	45	273	0.000
	Wilks' Lambda	0.000	24442.877	45	273	0.000
	Hotelling's Trace	4029.046	24442.877	45	273	0.000
	Roy's Largest Root	4029.046	24442.877	45	273	0.000
TYPESCHO	Pillai's Trace	0.213	1.638	45	273	0.009
	Wilks' Lambda	0.787	1.638	45	273	0.009
	Hotelling's Trace	0.270	1.638	45	273	0.009
	Roy's Largest Root	0.270	1.638	45	273	0.009

a Exact statistic

b Design: Intercept+TYPESCHO

As can be seen, the results are significant for both Intercept ($p<0.001$) and Type of School ($p<0.01$) for all of Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root. These are similar multivariate tests of the within subjects effect, that is, whether the two types of school are rated equally. The significant F means that there is a difference

somewhere in how the types of school are rated. Therefore we can consider with some confidence the results of significance using multiple ANOVAs, which are detailed in Table 6.7.

TABLE 6.7

ANOVAs ON SMAT BY SCHOOL TYPE

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Assertiveness conflict sten score	Between Groups	0.399	1	0.399	0.109	NS
	Within Groups	1199.577	327	3.668		
	Total	1199.976	328			
Assertiveness integrated sten score	Between Groups	0.072	1	0.072	0.021	NS
	Within Groups	1126.852	327	3.446		
	Total	1126.924	328			
Assertiveness unintegrated sten score	Between Groups	0.525	1	0.525	0.149	NS
	Within Groups	1162.266	329	3.533		
	Total	1162.792	330			
Assertiveness total motivation sten score	Between Groups	0.529	1	0.529	0.173	NS
	Within Groups	1001.447	327	3.063		
	Total	1001.976	328			
Fear conflict sten score	Between Groups	0.112	1	0.112	0.028	NS
	Within Groups	1293.566	327	3.956		
	Total	1293.678	328			
Fear integrated sten score	Between Groups	14.745	1	14.745	3.625	NS
	Within Groups	1330.063	327	4.067		
	Total	1344.809	328			
Fear total motivation sten score	Between Groups	17.037	1	17.037	4.676	0.031
	Within Groups	1191.364	327	3.643		
	Total	1208.401	328			
Fear unintegrated sten score	Between Groups	11.074	1	11.074	3.017	NS
	Within Groups	1200.063	327	3.670		
	Total	1211.137	328			
Home conflict sten score	Between Groups	20.798	1	20.798	5.157	0.024
	Within Groups	1278.406	317	4.033		
	Total	1299.204	318			
Home integrated sten score	Between Groups	31.464	1	31.464	7.319	0.007
	Within Groups	1367.008	318	4.299		
	Total	1398.472	319			
Home total motivation sten score	Between Groups	5.893	1	5.893	1.584	NS
	Within Groups	1179.091	317	3.720		
	Total	1184.984	318			
Home unintegrated sten score	Between Groups	2.274	1	2.274	0.67	NS
	Within Groups	1075.889	317	3.394		
	Total	1078.163	318			

TABLE 6.7 (Continued)

Mating conflict sten score	Between Groups	0.914	1	0.914	0.273	NS
	Within Groups	1094.654	327	3.348		
	Total	1095.568	328			
Mating integrated sten score	Between Groups	5.808	1	5.808	1.545	NS
	Within Groups	1233.311	328	3.760		
	Total	1239.118	329			
Mating total motivation sten score	Between Groups	7.635	1	7.635	1.841	NS
	Within Groups	1356.359	327	4.148		
	Total	1363.994	328			
Mating unintegrated sten score	Between Groups	1.612	1	1.612	0.405	NS
	Within Groups	1302.418	327	3.983		
	Total	1304.030	328			
Narcism conflict sten score	Between Groups	7.739	1	7.739	2.528	NS
	Within Groups	1000.894	327	3.061		
	Total	1008.632	328			
Narcism integrated sten score	Between Groups	8.084	1	8.084	3.35	NS
	Within Groups	789.138	327	2.413		
	Total	797.222	328			
Narcism total motivation sten score	Between Groups	0.485	1	0.485	0.183	NS
	Within Groups	867.321	327	2.652		
	Total	867.805	328			
Narcism unintegrated sten score	Between Groups	3.678	1	3.678	1.145	NS
	Within Groups	1050.444	327	3.212		
	Total	1054.122	328			
Protectiveness conflict sten score	Between Groups	7.936	1	7.936	1.788	NS
	Within Groups	1411.064	318	4.437		
	Total	1419.000	319			
Protectiveness integrated sten score	Between Groups	31.203	1	31.203	6.361	0.012
	Within Groups	1613.782	329	4.905		
	Total	1644.985	330			
Protectiveness total motivation sten score	Between Groups	21.778	1	21.778	5.597	0.019
	Within Groups	1237.422	318	3.891		
	Total	1259.200	319			
Protectiveness unintegrated sten score	Between Groups	4.509	1	4.509	1.171	NS
	Within Groups	1224.038	318	3.849		
	Total	1228.547	319			

TABLE 6.7 (Continued)

Pugnacity conflict sten score	Between Groups	0.349	1	0.349	0.098	NS
	Within Groups	1158.362	327	3.542		
	Total	1158.711	328			
Pugnacity integrated sten score	Between Groups	0.032	1	0.032	0.01	NS
	Within Groups	1048.157	327	3.205		
	Total	1048.188	328			
Pugnacity total motivation sten score	Between Groups	0.917	1	0.917	0.232	NS
	Within Groups	1293.326	327	3.955		
	Total	1294.243	328			
Pugnacity unintegrated sten score	Between Groups	0.841	1	0.841	0.181	NS
	Within Groups	1515.007	327	4.633		
	Total	1515.848	328			
School conflict sten scores	Between Groups	2.292	1	2.292	0.653	NS
	Within Groups	1112.818	317	3.510		
	Total	1115.110	318			
School integrated sten scores	Between Groups	0.191	1	0.191	0.039	NS
	Within Groups	1574.655	318	4.952		
	Total	1574.847	319			
School total motivation sten score	Between Groups	1.276	1	1.276	0.299	NS
	Within Groups	1352.799	317	4.268		
	Total	1354.075	318			
School unintegrated sten score	Between Groups	7.294	1	7.294	2.24	NS
	Within Groups	1032.141	317	3.256		
	Total	1039.436	318			
Self-sentiment conflict sten score	Between Groups	5.346	1	5.346	1.475	NS
	Within Groups	1148.548	317	3.623		
	Total	1153.893	318			
Self-sentiment integrated sten score	Between Groups	1.808	1	1.808	0.587	NS
	Within Groups	978.580	318	3.077		
	Total	980.388	319			
Self-sentiment total motivation sten score	Between Groups	0.276	1	0.276	0.079	NS
	Within Groups	1113.611	317	3.513		
	Total	1113.887	318			
Self-sentiment unintegrated sten score	Between Groups	2.824	1	2.824	0.642	NS
	Within Groups	1394.286	317	4.398		
	Total	1397.110	318			

TABLE 6.7 (Continued)

Superego conflict sten score	Between Groups	80.783	1	80.783	21.948	0.000
	Within Groups	1166.766	317	3.681		
	Total	1247.549	318			
Superego integrated sten score	Between Groups	55.901	1	55.901	11.136	0.001
	Within Groups	1596.287	318	5.020		
	Total	1652.187	319			
Superego total motivation sten score	Between Groups	1.859	1	1.859	0.4	NS
	Within Groups	1472.957	317	4.647		
	Total	1474.815	318			
Superego unintegrated sten score	Between Groups	30.100	1	30.100	8.328	0.004
	Within Groups	1145.718	317	3.614		
	Total	1175.818	318			
Total autism-optimism sten score	Between Groups	0.046	1	0.046	0.012	NS
	Within Groups	1209.703	317	3.816		
	Total	1209.749	318			
Total conflict sten score	Between Groups	21.902	1	21.902	5.304	0.022
	Within Groups	1309.020	317	4.129		
	Total	1330.922	318			
Total information-intelligence sten score	Between Groups	14.109	1	14.109	6.874	0.009
	Within Groups	652.691	318	2.052		
	Total	666.800	319			
Total integration sten score	Between Groups	22.730	1	22.730	6.93	0.009
	Within Groups	1039.703	317	3.280		
	Total	1062.433	318			
Total personal interest sten score	Between Groups	6.956	1	6.956	2.878	NS
	Within Groups	766.203	317	2.417		
	Total	773.160	318			

(Note: NS=Not Significant)

Specifically, significant differences between the types of schools were seen in the fear total motivation sten score means ($p<0.05$), the protectiveness integrated sten score means ($p<0.05$), the protectiveness total motivation sten score means ($p<0.05$), the superego unintegrated sten score means ($p<0.01$), the superego integrated sten score means ($p<0.001$), the superego conflict sten score means ($p<0.001$), the home integrated sten score means ($p<0.01$), the home conflict sten score means ($p<0.05$), the total information-intelligence sten score means ($p<0.01$), the total integration sten score means ($p<0.01$) and the total conflict sten score means ($p<0.05$).

The co-educational school boys had a greater mean for fear total motivation than the boys' school boys. The same result was found by Hulse (1997) although in her study the result was not statistically significant. This suggests that boys in co-educational schools have higher levels of fear. The fear could be fear of physical harm, fear of illness, or fear of personal danger, or it may be fear of loss of affection by a parent or loved one. It can also be fear of loss of security and therefore measures security-seeking drives. The co-educational school boys therefore seem to be more fearful of imagined or real threats to their safety, security and sense of being loved, and more alert to external dangers. Boyle *et al.* (1989) have shown that there is a negative (although not significant) correlation between fear total motivation and academic achievement in both Mathematics and English. It would seem not unreasonable to suggest that factors associated with co-educational schools may be bringing about higher levels of fear in the boys attending them; the boys may be fearful of academic failure in the presence of girls or they may be fearful of failing to favourably impress the girls.

In both the protectiveness integrated and protectiveness total motivation sten score means, the co-educational school boys scored significantly higher than the boys' school boys, which was the reverse of Hulse's (1997) findings, although hers were not statistically significant. This scale measures the strength of the erg for care of others, parents, siblings (younger and older) and even care of pets. The co-educational school boys appear to care more for others, and, as mentioned above, Hulse (1997) found no significant differences on this measure. Possibly the presence of girls in a co-educational school creates an atmosphere where there are more examples of the caring ethic, where there are more female teachers, and where boys are more strongly encouraged by the modelling around them to care for others than is the case in boys' schools.

On the superego scales, there were significant differences between the groups on the unintegrated, integrated, and conflict sten score means. Boys' school boys scored higher means for unintegrated and conflict stens, and co-educational school boys scored a higher mean for the superego integrated sten. Hulse's (1997) results gave a similar (but non-significant) result for the unintegrated score, but the reverse and a significant difference for the conflict score. This scale measures in adolescents the level of attachment to parents, and in particular the strength of desire to please the father. The boys' school boys appear to have a greater subconscious desire for parental attachment, but greater conflict about the subconscious level of the drive and the realisation of the drive. In other words, boys' school boys seem to desire parental attachment and specifically paternal approval more, but be less

satisfied with the outcome than co-educational school boys. The co-educational school boys have a higher superego integrated sten score mean, indicating higher satisfaction levels with the outward manifestation of this drive, albeit from a lower inward level of drive.

In Hulse's study the boys' school boys scored significantly higher on the superego integrated score. It seems that although the boys' school boys have stronger feelings about approval of father, parental attachment, and so on, they are less successful in their deliberate, organised ability to achieve these things, thus leading to conflict. How might this situation result from the type of school attended, or, rather, is it possible that type of school has some influence over these factors? Could it be that something in the culture of boys' schools leads to the boys having a higher need for parental approval but which leads to conflict because the needs are not actualised? It is possible that in the absence of females, boys from boys' schools have stronger competitive drives as a result of them being able to freely compete for the success which boys from co-educational schools find denied them as they observe female students becoming increasingly more successful in academics, prizewinning and leadership positions. This stronger competitive force may then cause these boys to rely more on their fathers for approval, support and inspiration. On the other hand, it could be argued that the boys from co-educational schools have a greater need for parental support because they are not succeeding in competing with girls.

The boys from co-educational schools score a significantly higher sten mean for the home integrated scale, and a lower mean for the home conflict scale. Again, Hulse's results were the reverse of these (Hulse, 1997:13). This result seems to suggest that co-educational school boys in Australia have stronger realised desires to preserve their ties to their home and their parents; they are more satisfied that they have attained attachment to the values coming from the home, and the physical structure of the home. Boys' school boys have a higher (though not significant) subconscious drive toward attachment to the home, and a higher (and significant) level of conflict stemming from their inability to satisfy this drive. From this it could be suggested that the boys' school boys are more independent with respect to need for home attachment, and are acting more autonomously, but are still conflicted about their ability to achieve this independence from home.

Finally, three of the derivative scores show significant differences between the two groups. For total information-intelligence, which is a measure of crystallized general ability, the co-educational school boys' mean is higher. As a group, the sample has higher intellectual ability than the boys in the boys' schools. This is most likely to derive from intake into the

various schools. At least one of the co-educational schools in this study is selective in entry, only taking students who score well in entry tests. The two boys' schools in this study are non-selective in terms of academic ability at entry, taking boys showing a range of academic ability. This difference, on the total information-intelligence scale, needs to be taken into account in interpreting the results.

With respect to the total integration sten score means, the boys' school boys have a mean significantly lower than the mean for boys from co-educational schools. The total integration scale is a '...summary index of the extent of disciplined expression of the individual's goals (satisfaction high relative to drive)' (Krug *et al.*, 1976:8). This would suggest that boys from co-educational schools achieve greater satisfaction in realizing and expressing their drives as measured on the SMAT than the boys from the boys' schools. Therefore it might be expected that the total conflict scores would be significantly higher for boys' school boys than co-educational school boys, and indeed they are. This scale measures a summary of the subject's general frustration level, in having lower satisfaction in realizing the drives being measured. There exists the possibility here that in the presence of girls in co-educational schools, the boys from these schools see the girls increasingly take their place amongst the prizewinners and leaders, have been socialised to accept this situation as a fait accompli, and are thus more prepared to accept things as they are. The boys' school boys, on the other hand, may have their ambitions unfettered by the context around them, and thus find that there is a greater gap between their ideals and where they currently sit, leading to greater frustration levels than the co-educational school boys.

In Hulse's study, the means for total personal interest were significantly different, with boys' school boys scoring higher than the co-educational school boys. This scale measures the individual's total overall drive or interest levels. In the current study, the means for this scale were not significantly different; the two groups of boys were similarly placed in terms of overall drive.

Interestingly, on the total autism-optimism scale, there was also no significant difference between the two groups of boys. In other words, boys' school boys tended to distort reality just as much as did co-educational school boys. Hulse (1997) found the same result.

In summary, then, co-educational school boys score significantly higher on the fear total motivation scale, the protectiveness integrated and protectiveness total motivation scales, the superego integrated scale, the home integrated scale, the total information-intelligence

scale and the total integration scale. The boys' school boys score significantly higher on the superego unintegrated and superego conflict scales, the home conflict and the total conflict scales. This is indicating that the coeducational boys have greater levels of fear and greater need for escape and security-seeking. They also exhibit greater protectiveness of others generally, including siblings and pets. They showed higher levels of desire to please their fathers and they were more strongly attached to home values and the physical structure of their homes. They were more intelligent as a group, and displayed more satisfaction with their goals and directions than did the boys' school boys. Boys from the boys' schools had stronger subconscious desires to show self-control and for parental attachment and approval, but they were in greater conflict about their ability to express those desires outwardly. These boys were also in more conflict about expressing their greater desire for home values and activities, and showed more frustration generally with the fact that their higher drive levels were in general not satisfied as well.

Factor Analysis, and Analysis Split by Grade

Attempts at data reduction using factor analysis proved unsuccessful after 25 iterations and various attempts. However, the ANOVAs were re-run using the split file technique and these produced results for the boys in Year8 and Year 10 separately. Some differences from the whole-file analysis emerged. For the Year 8 boys, significant differences in means were found for the protectiveness integrated scale, the superego unintegrated scale, the superego integrated scale, the superego conflict scale, the home conflict scale, the total information-intelligence scale, the total integration scale and the total conflict scale. This supports the contention that the Year 8 boys from single-sex schools are more conflicted about their attachment to their homes and associated activities, they are less inclined to exhibit demonstrations of protectiveness, either actually or idealistically, they are more inclined towards a subconscious desire to please their fathers, but less able to act out behaviours demonstrating this, leading to greater conflict in this area (superego), they are more conflicted in total on these scales, they score less strongly on the information-intelligence scale and they exhibit less integration overall than their counterparts in co-educational schools.

As far as the Year 10 boys are concerned, those from single-sex schools demonstrate less integrated sentiment to their homes and things associated with the home, they show less total motivation with respect to their homes, and they have lower narcicistic drives but appear more conflicted about them than the boys in Year 10 in co-educational schools.

Multiple Regression Analysis

Finally, a Multiple Linear Regression analysis was run for each of the scale factors which showed significant differences in means by school type. The Stepwise method was found to produce the most interpretable results. School type was a significant predictor of protectiveness integrated, protectiveness total motivation, superego unintegrated (with the addition of SES Category), superego conflict (with the addition of years in co-educational schools and years in single-sex boys' schools), home integrated (with the addition of SES Category) and home conflict (with the addition of SES Category and Mother's occupation). However, examination of SES Category and Mother's occupation for the two types of schools showed no significant differences between the means.

It would appear, therefore, that these factors are predicted significantly by school type using stepwise multiple regression. Further analysis, particularly between the two boys' schools, and between the two co-educational schools, may have raised interesting questions, particularly if significant differences were found, but the word length restriction for this thesis did not allow space for all the data.

Summary of Findings: SMAT

These data show that boys in single-sex schools have lower levels of fear, lower levels of sense of care for others, higher strength of desire of attachment to parents, and especially to fathers, higher levels of conflict about their attachment to home, lower ability to express their goals, and higher conflict resulting from their dissatisfaction in this. These boys were less academically able as a group compared with the boys in co-educational schools. This information is displayed in Table 6.8.

TABLE 6.8

SIGNIFICANT DIFFERENCES IN MEANS - SMAT

Scale	Means for boys' school boys	Means for co-educational school boys
Fear total motivation	Lower	Higher
Protectiveness integrated	Lower	Higher
Protectiveness total motivation	Lower	Higher
Superego integrated	Lower	Higher
Superego unintegrated	Higher	Lower
Superego conflict	Higher	Lower
Home integrated	Lower	Higher
Home total motivation (Year 10)	Lower	Higher
Home conflict	Higher	Lower
Narcism integrated (Year 10)	Lower	Higher
Narcism conflict (Year 10)	Higher	Lower
Information-intelligence	Lower	Higher
Total integration	Lower	Higher
Total conflict	Higher	Lower

Chapter 7: Results: Self-Concept

Marsh's (1992) Self Description Questionnaire-II (hereinafter referred to as the SDQ-II) is based on the theoretical self-concept models of Shavelson *et al.* as described in Shavelson, Hubner and Stanton (1976) and Shavelson and Bolus (1982). Indeed, it is clear that the explicit theoretical model of Shavelson *et al.* was used by Marsh as the starting point for his work on the construction of the SDQ instruments (Marsh, 1992:95). Over the years the theory has developed as has the development of the tests, so that the two are now 'inexorably intertwined, and...each will suffer if the two are separated' (Marsh, 1992:96).

The SDQ instruments grew out of a perceived paucity of good quality tests for measuring the developing body of theory in the self-concept area (Burns, 1979; Shavelson *et al.*, 1976; Wells and Marwell, 1976; Wylie, 1974, 1979). Shavelson's multifaceted, hierarchical model of self-concept was used as the basis for the three instruments which have been developed, the SDQ-I, the SDQ-II and the SDQ-III. These tests cover the age range from 7 years (or earlier) through to adult. The first instrument developed was the SDQ-I, which was designed for children in grades 4 to 6 in primary school. It measured three areas of academic self-concept (Reading, Mathematics and General School) and four areas of nonacademic self-concept (Physical Abilities, Physical Appearance, Peer Relations and Parent Relations). At a later revision, the SDQ-I had a General Self scale included. The General Self scale was conceptually based on the Rosenberg (1965) scale.

The SDQ-II is intended for use with younger adolescents (from years 7 through to 10 in school). Thus from an age point of view it is ideally placed for the research carried out in this thesis. It contains the original seven scales from the SDQ-I with the revision of the Peer scale into two new scales, Same-Sex Relations and Opposite-Sex Relations. Additionally it contains two further new scales - Emotional Stability and Honesty-Trustworthiness. The General Self scale from the SDQ-I is also included. Table 7.1 summarizes the areas of self-concept measured by the SDQ-II.

TABLE 7.1

SDQ-II SCALES

Academic	Non-Academic	Global
Mathematics	Physical Abilities	Total Academic
Verbal	Physical Appearance	
General - School	Same-Sex Peer Relations	General Self
	Opposite-Sex Peer Relations	
	Parent Relations	
	Emotional Stability	
	Honesty/Trustworthiness	

Finally, the SDQ-III, which is intended for use by subjects from age 16 to adult, includes all the scales from the SDQ-II, except that an Academic Problem-Solving scale is added in the academic area, the General-School academic scale is replaced by a General-Academic scale, and one further scale is added, a Spiritual Values/Religion scale.

The SDQ tests have been extensively reviewed (Boyle, 1994; Atlas, 1998; Gable, 1998; Isonio, 1998). Although Atlas (1998) has some criticisms of the test

> ('A basic problem in the SDQ model is that the test constructor's multidimensional factors correlate weakly with one another and poorly with the general self-concept. In fact, the measure's general self-concept scale draws heavily from the much-used Rosenberg Self-Esteem Scale, and practitioners less interested in academic self-concept per se might turn to the Rosenberg Scale (Rosenberg, 1965) with greater focus and less expense. Practitioners interested in academic self-concept will need to consider the degree to which the SDQ can marshal such knowledge in a valid way.' (Atlas, 1998:889))

he considers that it '...offers a reasonable definition of academic self-concept or self-perception' (1998:889).

Other reviewers are more favourable, with Gable (1998) concluding

> 'The series of SDQ measures of self-concept are clearly models for instrument development in the affective domain. The constructs assessed are thoroughly grounded in a theoretical model; the methodologies employed in the development, statistical analyses, reporting, and manuals are outstanding. Although more attention could have been given to the use of item-response theory techniques during instrument development and revision, this lack does not deter from the overall high quality of these measures' (Gable, 1998:891).

This last comment refers to the feature of the test construction where both positive and negative item statements are used, ostensibly to overcome the possibility of positive biases (Marsh, 1992:2). Gable draws attention to several studies which examine the problem of the cognitive demands of negative items and also the acknowledged existence of factors created by negatively stated items in self-concept research (Gable, 1998:890). However, despite this, the validity and reliability data for the test is robust. Gable reports that the content validity of the SDQ is highly and comprehensively supported as a result of the test's thorough grounding within the Shavelson self-concept construct. Additionally, construct validity is demonstrated by a number of exploratory and confirmatory factor analyses which are designed to provide a strong empirical foundation for the measures.

In terms of reliability, Gable gives the tests strong affirmation, and concludes

> 'These high levels of reliability lend support to the adequacy of item sampling within each scale and explain the low standard error of measurement indices' (Gable, 1998:890).

He also opines that

> 'Overall, the internal consistency and stability estimates presented for the three different age levels for self-concept assessment are commendable and suggest accurate data will result' (Gable, 1998:890-891).

Isonio (1998) also reviews the test favourably. Although raising a concern about cross-cultural validity (the norms for the test came from large Australian samples) this is irrelevant to the present research, as the instrument was used on Australian schoolboys. Isonio concludes

> '...the SDQ is a theoretically and empirically sound measure of self-concept' (Isonio, 1998:892).

Perhaps Boyle's (1994) critique is the most statistically rigorous, yet he, too, gives strong support for the use of the instrument.

> 'It is probably fair to say that the SDQ-II (and its companion scales - SDQ-I and SDQ-III) should be among the instruments of choice for researchers wanting to measure well-defined multiple dimensions of self-concept...
>
> Taken overall, the development of a multidimensional self-concept model has been supported empirically in both exploratory and confirmatory factor analytic research as well as in a number of experimental studies, and the resultant SDQ instruments have been shown generally to exhibit satisfactory reliability and validity, good

dimensionality, and sound psychometric scoring properties. Consequently, this reviewer highly recommends use of the SDQ instruments in future research and applied studies' (Boyle, 1994:641-642).

Scoring the Test

The SDQ-II is a 102-item test, with each statement requiring a response on a Likert-style 6-point scale, the responses being 'False', Mostly False', More False Than True', More True Than False', 'Mostly True' and 'True'. It was administered in each of the schools strictly according to the Administration Instructions in the Manual (Marsh, 1992). The test takes about 15 to 20 minutes to complete, and the very few blanks found after visually scrutinizing the completed tests were dealt with according to the instructions in the manual, namely by awarding a missing item the mean score for that scale so long as other conditions were not contravened (Marsh, 1992:13).

All the tests were hand-scored and the results for each subject were recorded onto the 'Scoring and Profile Booklet' provided with the test materials. Items were scored by writing the value for the item, from 1 to 6, onto the Scoring Booklet. In the case of negative items (discussed above), the item value was subtracted from 7 to give a raw score. Raw scores were then summed for each of the 11 scales to give a Raw Scale Score, and these Raw Scale Scores were added to produce a Raw Score for the 12th scale, Total Self-Concept.

The Raw Scale Scores were then converted to mid-interval percentile ranks and standard scores by referring to the conversion tables provided in the Administration Manual. The percentile-rank scores are the percentage of children in the normative sample who lie at or below the self-concept scores for a particular subject (or means of groups). The norms for this test came from 5,494 students (2,658 males and 2,836 females) from schools of several types in metropolitan Sydney. The standard scores used are nonnormalized T scores, which are standardized scores having a mean of 50 and a standard deviation of 10.

Raw scores, percentiles and T scores for every subject were then entered on to the computer and analysed. An interesting point is that although the manual advises against using Raw Scores as a basis for comparison ('...the comparison of raw scores is not recommended', Marsh, 1992:20), a personal communication indicates 'I have always done analyses based on raw scores...(and) I suggest that the T scores are probably more appropriate than %tile

scores, but it probably does not make a lot of difference' (Marsh, 2001). Following Marsh's advice, T scores are used in these calculations.

Descriptive statistics

A first look at the data was made using descriptive statistics for the whole sample by type of school. These are given below as Table 7.2

TABLE 7.2

SDQ-II DESCRIPTIVE STATISTICS FOR WHOLE SAMPLE BY TYPE OF SCHOOL

Descriptive Statistics

	Type of school	Mean	Std. Deviation	N
Emotional Stability T Score	Single-sex boys' school	51.72	9.49	190
	Co-educational school	52.16	9.56	140
	Total	51.91	9.5	330
General School T Score	Single-sex boys' school	52.85	9.74	190
	Co-educational school	51.14	10.67	140
	Total	52.12	10.17	330
General Self T Score	Single-sex boys' school	50.91	8.59	190
	Co-educational school	48.66	9.36	140
	Total	49.95	8.98	330
Honesty-Trustworthiness T Score	Single-sex boys' school	52.76	8.6	190
	Co-educational school	51.79	8.7	140
	Total	52.35	8.64	330
Math T score	Single-sex boys' school	50.93	9.66	190
	Co-educational school	51.76	9.78	140
	Total	51.28	9.7	330
Opposite-Sex T Score	Single-sex boys' school	53.01	8.4	190
	Co-educational school	50.71	9.95	140
	Total	52.03	9.15	330
Parent Relations T Score	Single-sex boys' school	50.79	9.66	190
	Co-educational school	48.14	10.67	140
	Total	49.66	10.17	330
Physical Abilities T Score	Single-sex boys' school	48.96	9.64	190
	Co-educational school	49.89	9.68	140
	Total	49.36	9.65	330
Physical Appearance T Score	Single-sex boys' school	52.24	8.4	190
	Co-educational school	48.09	9.89	140
	Total	50.48	9.28	330
Same-Sex T Score	Single-sex boys' school	55.67	9.25	190
	Co-educational school	54.7	9.32	140
	Total	55.26	9.28	330
Total Self-Concept T Score	Single-sex boys' school	52.85	9.7	190
	Co-educational school	51	9.68	140
	Total	52.06	9.72	330
Verbal T Score	Single-sex boys' school	50.68	9.5	190
	Co-educational school	50	10.65	140
	Total	50.39	9.99	330

This table indicates that from the descriptive statistics, and for the moment without consideration of significance, boys' school boys have greater mean scores on the following scales:

General School

General Self

Honesty-Trustworthiness

Opposite-Sex
Parent Relations
Physical Appearance
Same-Sex
Total Self-Concept
Verbal

The co-educational school boys had greater mean scores on the following scales:

Emotional Stability
Math
Physical Abilities

These results may be summarized as in Table 7.3.

In summary, and without considering significance, it would appear that the boys in boys schools have greater ability, enjoyment, and interest in school subjects (General School scale) and have greater sense of self-worth, self-confidence and self-satisfaction (General Self scale). These boys also have a greater sense of truthfulness and dependability (Honesty-Trustworthiness scale), they feel more positively about interactions with peers of the opposite sex (Opposite-Sex Relations scale) and their interactions with parents (Parents Relations scale) are reported more positively.

TABLE 7.3

SDQ-II DIFFERENCES IN MEANS

SCALE	GREATER MEAN
Emotional Stability	C
General School	B
General Self	B
Honesty-Trustworthiness	B
Math	C
Opposite-Sex	B
Parent Relations	B
Physical Abilities	C
Physical Appearance	B
Same-Sex	B
Total Self-Concept	B
Verbal	B

(Note: B=Boys' school boys' T score means were greater; C=Co-educational school boys' T score means were greater).

The boys' school boys believe that they are physically more attractive than the boys from co-educational schools (Physical Appearance scale), and they believe that their interactions with peers of the same sex (Same-Sex Relations scale) are superior. Finally, these boys from single-sex boys' schools report a greater ability, enjoyment, and interest in English and reading (Verbal scale) and hold a superior view with respect to their total self-concept (Total Self-Concept scale), which is the summation of the other 11 scales.

On the other hand, the boys from co-educational schools showed greater T score means in emotional well being and freedom from psychopathology (Emotional Stability scale), in ability, enjoyment, and interest in Mathematics and reasoning (Math scale) and in skills and interest in sports and physical activities (Physical Abilities scale).

Inferential statistics

Again, using the reasoning explained in Chapter 6, it was decided to precede multiple analyses of variance (ANOVAs) with a multivariate analysis of variance (MANOVA) to control for Type I errors (Boyle *et al.*, 1995). The MANOVA results are shown in Table 7.4 below.

TABLE 7.4

MULTIVARIATE TESTS ON SDQ-II BY SCHOOL TYPE

Multivariate Tests

EFFECT		VALUE	F	HYPOTHESIS DF	ERROR DF	SIG.
Intercept	Pillai's Trace	.996	6393.990	12.000	317.000	.000
	Wilks' Lambda	.004	6393.990	12.000	317.000	.000
	Hotelling's Trace	242.044	6393.990	12.000	317.000	.000
	Roy's Largest Root	242.044	6393.990	12.000	317.000	.000
TYPESCHO	Pillai's Trace	.110	3.275	12.000	317.000	.000
	Wilks' Lambda	.890	3.275	12.000	317.000	.000
	Hotelling's Trace	.124	3.275	12.000	317.000	.000
	Roy's Largest Root	.124	3.275	12.000	317.000	.000

a Exact statistic

b Design: Intercept+TYPESCHO

These results are shown to be significant ($p<0.001$) for both Intercept and Type of School for each of Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root. This would suggest that the results of significance from multiple ANOVAs (Table 7.5) can be considered with confidence.

TABLE 7.5

ANOVAs ON SDQ-II BY SCHOOL TYPE

ANOVA

		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Emotional Stability T Score	Between Groups	15.329	1	15.329	.169	NS
	Within Groups	29704.759	328	90.563		
	Total	29720.088	329			
General School T Score	Between Groups	237.611	1	237.611	2.309	NS
	Within Groups	33760.295	328	102.928		
	Total	33997.906	329			
General Self T Score	Between Groups	407.387	1	407.387	5.118	.024
	Within Groups	26109.838	328	79.603		
	Total	26517.224	329			
Honesty-Trustworthiness T Score	Between Groups	75.068	1	75.068	1.005	NS
	Within Groups	24495.856	328	74.682		
	Total	24570.924	329			
Math T score	Between Groups	55.892	1	55.892	.593	NS
	Within Groups	30923.332	328	94.278		
	Total	30979.224	329			
Opposite-Sex T Score	Between Groups	423.067	1	423.067	5.117	.024
	Within Groups	27117.566	328	82.676		
	Total	27540.633	329			
Parent Relations T Score	Between Groups	567.663	1	567.663	5.567	.019
	Within Groups	33446.000	328	101.970		
	Total	34013.664	329			
Physical Abilities T Score	Between Groups	69.671	1	69.671	.747	NS
	Within Groups	30590.135	328	93.263		
	Total	30659.806	329			
Physical Appearance T Score	Between Groups	1387.735	1	1387.735	16.898	.000
	Within Groups	26936.656	328	82.124		
	Total	28324.391	329			
Same-Sex T Score	Between Groups	75.596	1	75.596	.878	NS
	Within Groups	28239.511	328	86.096		
	Total	28315.106	329			
Total Self-Concept T Score	Between Groups	275.090	1	275.090	2.930	NS
	Within Groups	30790.574	328	93.874		
	Total	31065.664	329			
Verbal T Score	Between Groups	37.157	1	37.157	.371	NS
	Within Groups	32807.416	328	100.023		
	Total	32844.573	329			

(Note: NS=Not Significant)

The significant scores in this analysis were only those where the T score means for boys' school boys were greater. Specifically, these were General Self ($p<0.05$), Opposite-Sex ($p<0.05$), Parent Relations ($p<0.05$), and Physical Appearance ($p<0.01$). The boys from single-sex boys' school are reporting significantly greater sense of self-worth, self-confidence, and self-satisfaction, they feel more positive about their interactions with peers of the opposite sex, their interactions with their parents are felt to be more positive, and they feel more positive about their own physical attractiveness compared to boys from co-educational schools.

At this point it is worth exploring possible reasons for the above results. It has been suggested - for example, by Sommers (2000) - that successes by girls over the last 20 years, resulting from a plethora of programmes and government policies designed to address the position of girls and women in society, have helped create a situation where boys now feel under-valued and without direction, as they are constantly exposed to the successes of girls in their schools. In single-sex boys' schools, it is obvious that boys do not suffer the same constant comparisons; their self-concept (and in the SDQ-II, their self-worth, self-confidence, and self-satisfaction) is able to be expressed and developed in an educational environment where boys are seen to do well, and to take on leadership positions in the school. This latter is often not the case in modern co-educational schools.

The result with respect to greater confidence in interactions with members of the opposite sex seems, on first examination, to be counter-intuitive. Common sense would seem to dictate that where boys and girls are educated together, greater familiarity and understanding would result, leading to improved interactions. Conversely, it may be believed that in a single-sex boys' school boys become more sexist and that the schools perpetuate a culture that is discriminatory to females. However, these results suggest that this is not the case. Rather, it appears that in the absence of girls, boys at single-sex schools feel more comfortable about their relationships with girls. This has also been shown by Hulse (1997:11). Additionally, Hulse's (1997) work with the Sex Role Egalitarianism Scale (King and King, 1993) has demonstrated that again, seemingly counter-intuitively, boys from boys' schools hold more egalitarian attitudes towards men's and women's roles in society. Specifically, Hulse found that these boys hold stronger beliefs that men and women ought to share marital responsibilities equally, that men should do as much housework as women, that men and women ought to share decision-making with respect to finances and housing, that parenting should be shared equally, that women and men ought to have equal employment opportunities and that they should have access to equal opportunities in

colleges and universities, when compared with boys from co-educational schools (Hulse, 1997:15).

In terms of their interactions with their parents, the research being described in this thesis shows that boys from single-sex schools hold stronger sentiments than their counterparts in co-educational schools. In Chapter 6, it was shown that the superego scales of the SMAT gave boys' school boys significantly higher means for attachment to parents and strength of desire to please the father, in particular. The result from the SDQ-II seems to take this concept of parental attachment further, and in generally the same direction. Finally, the result for physical attractiveness is given support by Hulse (1997:11); one possibility to explain this is that in a co-educational school, boys are more frequently reminded of and are more concerned about their physical attractiveness, whereas in a boys' school the constant concern for 'looking good' is not there and thus these boys may feel more comfortable with and less critical of their own physical attractiveness.

Split Cases by Grade Analysis

A further analysis was then undertaken, splitting the cases by grade. The mean scores and standard deviations for each scale by type of school and grade, are given in Table 7.6 below.

TABLE 7.6

SDQ-II DESCRIPTIVES SPLIT BY GRADE

Descriptive Statistics

YEAR LEVEL		TYPE OF SCHOOL	MEAN	STD. DEVIATION	N
Year 8	Emotional Stability T Score	Single-sex boys' school	52.31	7.56	93
		Co-educational school	52.32	9.54	68
		Total	52.32	8.43	161
	General School T Score	Single-sex boys' school	53.39	8.49	93
		Co-educational school	51.76	10.82	68
		Total	52.70	9.54	161
	General Self T Score	Single-sex boys' school	51.52	7.16	93
		Co-educational school	48.21	10.12	68
		Total	50.12	8.66	161
	Honesty-Trustworthiness T Score	Single-sex boys' school	54.88	7.19	93
		Co-educational school	51.40	9.57	68
		Total	53.41	8.43	161
	Math T score	Single-sex boys' school	52.65	8.95	93
		Co-educational school	52.56	9.67	68
		Total	52.61	9.23	161
	Opposite-Sex T Score	Single-sex boys' school	52.30	7.92	93
		Co-educational school	49.54	10.49	68
		Total	51.14	9.17	161
	Parent Relations T Score	Single-sex boys' school	52.32	8.23	93
		Co-educational school	47.59	11.48	68
		Total	50.32	9.98	161
	Physical Abilities T Score	Single-sex boys' school	50.30	8.55	93
		Co-educational school	49.62	10.04	68
		Total	50.01	9.18	161
	Physical Appearance T Score	Single-sex boys' school	51.20	7.20	93
		Co-educational school	49.07	9.96	68
		Total	50.30	8.51	161

TABLE 7.6 (Continued)

	Same-Sex T Score	Single-sex school boys'	55.91	8.74	93
		Co-educational school	54.29	9.99	68
		Total	55.23	9.29	161
	Total Self-Concept T Score	Single-sex school boys'	54.00	8.11	93
		Co-educational school	50.99	10.44	68
		Total	52.73	9.25	161
	Verbal T Score	Single-sex school boys'	50.83	9.41	93
		Co-educational school	49.07	10.64	68
		Total	50.09	9.95	161
Year 10	Emotional Stability T Score	Single-sex school boys'	51.15	11.03	97
		Co-educational school	52.00	9.63	72
		Total	51.51	10.44	169
	General School T Score	Single-sex school boys'	52.34	10.83	97
		Co-educational school	50.54	10.57	72
		Total	51.57	10.72	169
	General Self T Score	Single-sex school boys'	50.32	9.76	97
		Co-educational school	49.08	8.63	72
		Total	49.79	9.29	169
	Honesty-Trustworthiness T Score	Single-sex school boys'	50.72	9.35	97
		Co-educational school	52.17	7.84	72
		Total	51.34	8.74	169
	Math T score	Single-sex school boys'	49.29	10.06	97
		Co-educational school	51.01	9.89	72
		Total	50.02	10.00	169
	Opposite-Sex T Score	Single-sex school boys'	53.68	8.83	97
		Co-educational school	51.82	9.36	72
		Total	52.89	9.08	169
	Parent Relations T Score	Single-sex school boys'	49.32	10.69	97
		Co-educational school	48.65	9.89	72
		Total	49.04	10.33	169

TABLE 7.6 (Continued)

	Physical Abilities T Score	Single-sex boys' school	47.68	10.47	97
		Co-educational school	50.15	9.39	72
		Total	48.73	10.07	169
	Physical Appearance T Score	Single-sex boys' school	53.24	9.34	97
		Co-educational school	47.17	9.80	72
		Total	50.65	9.98	169
	Same-Sex T Score	Single-sex boys' school	55.43	9.76	97
		Co-educational school	55.08	8.69	72
		Total	55.28	9.29	169
	Total Self-Concept T Score	Single-sex boys' school	51.74	10.93	97
		Co-educational school	51.01	8.98	72
		Total	51.43	10.13	169
	Verbal T Score	Single-sex boys' school	50.54	9.63	97
		Co-educational school	50.88	10.65	72
		Total	50.68	10.05	169

The results for a one-way ANOVA are given in Table 7.7 below.

TABLE 7.7

SDQ-II ANOVA SPLIT BY GRADE

ANOVA

YEAR LEVEL			SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Year 8	Emotional Stability T Score	Between Groups	5.378E-03	1	5.378E-03	.000	NS
		Within Groups	11362.839	159	71.464		
		Total	11362.845	160			
	General School T Score	Between Groups	103.390	1	103.390	1.136	NS
		Within Groups	14470.300	159	91.008		
		Total	14573.689	160			
	General Self T Score	Between Groups	430.414	1	430.414	5.911	.016
		Within Groups	11578.343	159	72.820		
		Total	12008.758	160			
	Honesty-Trustworthiness T Score	Between Groups	476.966	1	476.966	6.961	.009
		Within Groups	10893.978	159	68.516		
		Total	11370.944	160			
	Math T score	Between Groups	.293	1	.293	.003	NS
		Within Groups	13638.055	159	85.774		
		Total	13638.348	160			
	Opposite-Sex T Score	Between Groups	298.556	1	298.556	3.611	NS
		Within Groups	13146.438	159	82.682		
		Total	13444.994	160			
	Parent Relations T Score	Between Groups	880.412	1	880.412	9.293	.003
		Within Groups	15062.793	159	94.735		
		Total	15943.205	160			
	Physical Abilities T Score	Between Groups	18.346	1	18.346	.216	NS
		Within Groups	13479.629	159	84.778		
		Total	13497.975	160			

TABLE 7.7 (Continued)

	Physical Appearance T Score	Between Groups	178.336	1	178.336	2.485	NS
		Within Groups	11411.751	159	71.772		
		Total	11590.087	160			
	Same-Sex T Score	Between Groups	103.067	1	103.067	1.196	NS
		Within Groups	13703.429	159	86.185		
		Total	13806.497	160			
	Total Self-Concept T Score	Between Groups	356.990	1	356.990	4.253	.041
		Within Groups	13346.985	159	83.943		
		Total	13703.975	160			
	Verbal T Score	Between Groups	120.903	1	120.903	1.222	NS
		Within Groups	15731.880	159	98.943		
		Total	15852.783	160			
Year 10	Emotional Stability T Score	Between Groups	29.533	1	29.533	.270	NS
		Within Groups	18274.680	167	109.429		
		Total	18304.213	168			
	General School T Score	Between Groups	133.677	1	133.677	1.164	NS
		Within Groups	19185.648	167	114.884		
		Total	19319.325	168			
	General Self T Score	Between Groups	63.159	1	63.159	.731	NS
		Within Groups	14436.593	167	86.447		
		Total	14499.751	168			
	Honesty-Trustworthiness T Score	Between Groups	86.291	1	86.291	1.129	NS
		Within Groups	12759.485	167	76.404		
		Total	12845.775	168			
	Math T score	Between Groups	123.002	1	123.002	1.232	NS
		Within Groups	16666.904	167	99.802		
		Total	16789.905	168			

TABLE 7.7 (Continued)

	Opposite-Sex T Score	Between Groups	143.118	1	143.118	1.745	NS
		Within Groups	13699.746	167	82.034		
		Total	13842.864	168			
	Parent Relations T Score	Between Groups	18.375	1	18.375	.171	NS
		Within Groups	17915.412	167	107.278		
		Total	17933.787	168			
	Physical Abilities T Score	Between Groups	252.606	1	252.606	2.515	NS
		Within Groups	16774.412	167	100.446		
		Total	17027.018	168			
	Physical Appearance T Score	Between Groups	1522.856	1	1522.856	16.730	.000
		Within Groups	15201.546	167	91.027		
		Total	16724.402	168			
	Same-Sex T Score	Between Groups	5.052	1	5.052	.058	NS
		Within Groups	14503.314	167	86.846		
		Total	14508.367	168			
	Total Self-Concept T Score	Between Groups	21.925	1	21.925	.213	NS
		Within Groups	17201.543	167	103.003		
		Total	17223.467	168			
	Verbal T Score	Between Groups	4.747	1	4.747	.047	NS
		Within Groups	16957.999	167	101.545		
		Total	16962.746	168			

(Note: NS=Not Significant)

These results add a little more to those already discussed. For the Year 8 group, Physical Appearance drops off as a significant difference between the school types - as may possibly be expected for pre-adolescent or early adolescent boys - but Total Self-Concept now emerges as an area of significant difference ($p<0.05$), with the boys from single-sex schools having a greater mean. This means that for these boys, the overall self-concept measure is stronger. One other factor appears on the Year 8 analysis which was not present on the whole-sample analysis. This is Honesty-Trustworthiness, which according to Marsh (1992:2) measures truthfulness and dependability. The boys from single-sex schools were significantly

stronger on this scale ($p<0.01$) compared with their opposite numbers from co-educational schools.

With respect to the Year 10 boys, the only difference now emerging compared to the Year 8 results, is the Physical Appearance Scale, with the means for the single-sex school boys greater ($p<0.01$) than that for the boys from co-educational schools. Again, with boys around the 15 years of age level, which these Year 10 boys are, there is great importance on physical attractiveness, and the possibility that in the constant presence of girls, as the boys from co-educational schools find themselves, the boys are overly and negatively concerned with their own physical appearance. This is much less of an issue for the boys from single-sex schools, who seem from this data generally more happy with their physical appearance. Hence the split grades breakdown adds further support to the suggestions made above as to some possible reasons for the differences noted.

Factor Analysis

Although a confirmatory factor analysis could have indicated the congruence of these results with the original normative sample, this was not done and is therefore something which would be of interest in any future work in this area. However, an attempt was made to see if the Marsh scales could be reduced to a smaller number of subscales. If this were the case, comparisons of these subscale means could be made by type of school.

Item intercorrelations were analyzed using a principal components analysis followed by a varimax rotation, as suggested by Morgan and Griego (1998) and Foster (2001). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was satisfactory ($KMO>0.7$) and the Bartlett's Test of Sphericity was significant ($p<0.05$). Three components had eigenvalues greater than 1.0, and after trying several solutions, the rotated three-factor solution using varimax with Kaiser Normalization was the most interpretable, with high factor loadings on scales, and minimum overlap. The Rotated Component Matrix is shown as Table 7.8 below.

TABLE 7.8

ROTATED COMPONENT MATRIX FOR SDQ-II FACTOR ANALYSIS

Rotated Component Matrix

	COMPONENT 1	2	3
Opposite-Sex T Score	.845		
Physical Appearance T Score	.796		
Same-Sex T Score	.695		
Emotional Stability T Score	.607		.345
General Self T Score	.572	.452	.471
General School T Score		.881	
Math T score		.801	
Verbal T Score		.718	
Total Self-Concept T Score	.580	.597	.515
Parent Relations T Score			.782
Honesty-Trustworthiness T Score		.381	.732
Physical Abilities T Score	.407		.587

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

Factors which loaded at 0.7 or above were considered in the analysis, which may be regarded as an overly-stringent criterion, but this is recommended by Foster (2001) and it produced greater clarity in factor delineation. This process gave the first factor as containing Opposite-Sex T Score and Physical Appearance T Score, the second factor as General School T Score, Math T Score and Verbal T Score, and the third factor as Parent Relations T Score and Honesty-Trustworthiness T Score. Honesty-Trustworthiness also had a smaller loading on the second factor, but its loading weight on the third factor was great enough to include it. These three factors were labelled: 'Self- and Opposite-Sex Attractiveness', 'School Success', and 'Parent and Family Values', respectively.

Analysis of Factors by Type of School

One-way ANOVAs were used to see if the boys from the two types of schools differed significantly on any of these new factors. Table 7.9 shows the ANOVA result.

TABLE 7.9

ANOVA RESULTS FOR SDQ-II FACTORS BY SCHOOL TYPE

ANOVA

		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Self- and Opposite-Sex Attractiveness	Between Groups	5.600	1	5.600	5.680	.018
	Within Groups	323.400	328	.986		
	Total	329.000	329			
School Success	Between Groups	.648	1	.648	.647	NS
	Within Groups	328.352	328	1.001		
	Total	329.000	329			
Parent and Family Values	Between Groups	7.361E-04	1	7.361E-04	.001	NS
	Within Groups	328.999	328	1.003		
	Total	329.000	329			

(Note: NS=Not Significant)

Using this analysis, only one factor (Self- and Opposite-Sex Attractiveness) featured as significantly different ($p<0.05$) with the boys' school boys having the greater mean, as expected from previous data.

Multiple Regression Analysis

Finally, in this section, a Multiple Regression Analysis was run to determine which, if any, independent variables loaded significantly onto the dependent variables which had already been shown to have means which varied significantly with type of school. This analysis should show which of the independent variables are significant predictors of particular dependent variables in the SDQ-II.

The regression method used was Enter, and the following independent variables were tested:

Father's occupation

Mother's occupation

Number of brothers

Number of sisters

SES Category (see Chapter 5 for an explanation of this)

Years in co-educational schools

Years in single-sex boys' schools

Type of school (either single-sex boys or co-educational)

Ethnic origin

The dependent variables chosen had all shown significant differences in their means from previous ANOVAs. They were:
Opposite-Sex T Score
General Self T Score
Parent Relations T Score
Physical Appearance T Score
Self- and Opposite-Sex Attractiveness

All of these variables were predicted significantly by school type, and only school type, except for the additions of SES Category, which also predicted General Self T Score, and Years in single-sex boys' schools, which also predicted Parent Relations T Score. Additionally, the ANOVAs on the sum of the squares gave F statistics which were significant ($p<0.05$) for each of the above dependent variables except for Opposite-Sex T Score and Self- and Opposite-Sex Attractiveness. Thus General Self T Score, Parent Relations T Score, and Physical Appearance T Score were all predicted significantly by school type on the Multiple Regression Analysis. The boys from the single-sex schools have stronger feelings of self-worth, self-confidence and self-satisfaction, they have better interactions with their parents, and they feel they are more physically attractive than the boys from co-educational schools.

Summary of Findings: SDQ-II

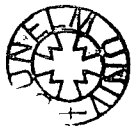
These data indicate that boys from single-sex schools score significantly more strongly with respect to their global general self-concept, their feelings of positive relationships with girls, their relationships with their parents, and their sense of their own physical attractiveness. Additionally, those boys in Year 8 in single-sex schools have a significantly stronger total self-concept and a stronger sense of truthfulness and dependability than their co-educational counterparts.

A further significantly different factor, labelled 'Self- and Opposite-Sex Attractiveness', was extracted, and finally, multiple regression analysis showed that the school type significantly predicted General Self, Parent Relations and Physical Appearance. Table 7.10 summarizes these results.

TABLE 7.10

SIGNIFICANT DIFFERENCES IN MEANS - SDQ-II

SCALE	MEANS FOR BOYS' SCHOOL BOYS	MEANS FOR CO-EDUCATIONAL SCHOOL BOYS
General Self	Higher	Lower
Opposite-Sex	Higher	Lower
Parent Relations	Higher	Lower
Physical Appearance	Higher	Lower
Self- and Opposite-Sex Attractiveness	Higher	Lower
Total Self-Concept (Year 8)	Higher	Lower
Honesty-Trustworthiness (Year 8)	Higher	Lower



Chapter 8: Results: Coping Strategies

The Adolescent Coping Scale (Frydenberg and Lewis, 1993), which will hereinafter be referred to as the ACS, is a relatively recent (1993) test developed in Australia. It is described by its authors as

> '...both a research instrument and a clinical tool which enables young people to examine their own coping behaviours. It can be administered by psychologists, counsellors, student welfare teachers, and other helping professionals to obtain information on how adolescents cope in different circumstances' (Frydenberg and Lewis, 1993:6).

The instrument is recommended for use over a wide age range, but particularly for young people from 12 to 18 years. It is, therefore, correctly placed within the parameters of this research. It is a self-report instrument which comes in four forms: a Long Form, containing 79 structured questions to be answered on a five-point Likert scale (doesn't apply or don't do it; used very little; used sometimes; used often; used a great deal) plus a free-response item; a Short Form, which contains 18 items from the Long Form; and two versions of each of these forms, General and Specific. The General Form version is designed to address how an individual copes with general concerns, whereas the Specific Form is used if responses are desired with respect to a particular concern. This researcher used the General Long Form, although the test authors claim that an individual's choice of coping strategies is largely consistent irrespective of the nature of the concern.

The ACS produces coping-strategy results in a framework of 18 strategy scales. These are (from Frydenberg and Lewis, 1993:8-9):

Seek Social Support - an inclination to share the problem with others.

Focus on Solving the Problem - a problem-focused strategy.

Work Hard and Achieve - focuses on commitment, ambition and hard work.

Worry - relates to concerns with happiness in the future.

Invest in Close Friends - refers to engaging in close relationships.

Seek to Belong - reflects a concern for relationships with others and particularly for what others may think.

Wishful Thinking - this aspect is concerned with hope and a desire for a positive outcome.

Not Coping - reflects an inability to deal with the problem.

Tension Reduction - means using tension-releasing mechanisms in order to feel better.

Social Action - involves active soliciting of help from others by organizing petitions or having meetings.

Ignore the Problem - reflects a conscious blocking out of the problem.

Self-Blame - is the act of blaming oneself for the problem.
Keep to Self - this is characterized by a withdrawal from others and a wish to keep the problem private.
Seek Spiritual Support - refers to praying and reflection aimed at a spiritual leader or God.
Focus on the Positive - this indicates a positive and cheerful outlook with respect to the problem.
Seek Professional Help - involves consulting a professional such as a teacher or counsellor.
Seek Relaxing Diversions - indicates resorting to relaxing pastimes.
Physical Recreation - refers to playing sport and keeping fit.

The authors of the test describe it as the most comprehensive of its kind. It was developed in Australia after a lengthy process which began by surveying 643 senior students from 7 post-primary schools in Melbourne, Australia. Five of the schools were co-educational, one was girls only, and one was boys only. The students provided responses to open-ended questions about their coping behaviours, and the 2041 strategies which were generated were reduced into conceptual categories and this process gave 156 distinct areas, from which 156 items were developed.

The 156 items were then administered to 30 students in Years 7 and 9 at post-primary schools in Melbourne. This small test satisfied the authors that the items were comprehensible to younger students.

Factor analyses based on a sample of 500 Year 7 and Year 11 students, and subsequently 712 students in Years 7 to 12, reduced the initial 156 items down to 13 scales. The authors then added 5 additional scales on the basis that

> 'Our knowledge of the range of coping styles and strategies described in the literature, and of a number of questionnaires that have been designed to measure these styles, suggests the existence of five additional but less prevalent strategies which have been reported for adolescents in different contexts' (Frydenberg and Lewis, 1993:17).

The final 18-scale (79-item) version of the instrument was then administered to 673 secondary school Australian students. This and other data was then used by the authors to test item reliability and validity (Frydenberg and Lewis, 1993:32-34). The authors claim that by their criteria, the items satisfy response stability and show construct validity.

Others are more critical. Leong (1998), whilst listing several strengths of the instrument, indicates a number of major problems. He firstly queries why the authors should claim the need for an Australian-based instrument, yet fail to explain what is different or unique about the Australian context that would require a different instrument from the many others currently available. He also states that the authors do not discuss the deficiencies in previous measures and fail to justify why a new scale is warranted, let alone why it is superior to existing scales. Leong is also critical of the 'unusual ways in which the statistical analyses were conducted for the reliability' (Leong, 1998:29). He draws attention to a problem with the factor-analytical process which led to the development of the 18 scales, and is critical of the paucity of evidence for the validity of the instrument.

Oehler-Stinnett's (1998) review, on the other hand, is a little more positive. It comments on the lack of normative information and problems with reliabilities and validities, but concludes

> 'Overall, this instrument represents a good start in delineating important coping functions of adolescents, and the authors state further work is needed...The studies that have been conducted set the ACS apart from other coping instruments, which have even less psychometric work to support them' (Oehler-Stinnett, 1998:31-32).

Administration and Scoring

This test is quite simple to administer, taking no more than 10 to 15 minutes, even with the Long Form. Differently from all the other tests described in this research, the ACS was not scored by hand. Time constraints, and the availability of an optical scanning facility allowed the luxury of having the results machine scored and returned by disc to be analysed.

The instrument itself is a self-report inventory of 79 items (plus one open-ended item) as previously described. In order to interpret the degree of usage of the different coping strategies, each scale score has to be adjusted to accommodate for the fact that scales have either three, four, or five items in it. The total scale scores therefore have to be multiplied by a factor of seven, five or four respectively. In this research, this was all carried out by the machine-scoring procedure. Means were then calculated for each of the 18 scales and various statistical analysis procedures were applied, similar to those used for the analyses of the data from the SMAT and the SDQ-II. The total scale scores are indicators of the

frequency of usage of each of the 18 coping strategies. As previously explained, this research looked for significant differences in usages between the two types of school.

Descriptive statistics

Descriptive statistics for the whole sample by type of school were firstly computed and they are displayed in Table 8.1 below.

TABLE 8.1

ACS DESCRIPTIVE STATISTICS FOR WHOLE SAMPLE BY TYPE OF SCHOOL

Descriptive Statistics

	TYPE OF SCHOOL	MEAN	STD. DEVIATION	N
Focus on Solving the Problem	Single-sex boys' school	69.03	13.61	190
	Co-educational school	65.20	14.44	140
	Total	67.41	14.08	330
Focus on the Positive	Single-sex boys' school	67.82	16.82	190
	Co-educational school	63.54	15.47	140
	Total	66.00	16.38	330
Ignore the Problem	Single-sex boys' school	52.05	16.28	190
	Co-educational school	49.43	15.26	140
	Total	50.94	15.88	330
Invest in Close Friends	Single-sex boys' school	71.22	17.98	190
	Co-educational school	65.49	18.13	140
	Total	68.79	18.24	330
Keep to Self	Single-sex boys' school	57.47	15.28	190
	Co-educational school	57.86	16.15	140
	Total	57.64	15.63	330
Not Coping	Single-sex boys' school	44.17	16.16	190
	Co-educational school	43.11	12.53	140
	Total	43.72	14.72	330
Physical Recreation	Single-sex boys' school	76.48	21.80	190
	Co-educational school	75.25	16.65	140
	Total	75.96	19.76	330
Seek Professional Help	Single-sex boys' school	44.89	19.31	190
	Co-educational school	35.00	16.14	140
	Total	40.70	18.66	330
Seek Relaxing Diversions	Single-sex boys' school	82.64	16.78	190
	Co-educational school	83.95	15.47	140
	Total	83.19	16.23	330
Seek Social Support	Single-sex boys' school	61.58	16.04	190
	Co-educational school	52.14	15.66	140
	Total	57.58	16.53	330
Seek Spiritual Support	Single-sex boys' school	53.63	18.15	190
	Co-educational school	47.71	16.96	140
	Total	51.12	17.87	330

TABLE 8.1 (Continued)

Seek to Belong	Single-sex boys' school	67.22	13.76	190
	Co-educational school	64.51	12.33	140
	Total	66.07	13.22	330
Self-Blame	Single-sex boys' school	53.71	17.16	190
	Co-educational school	52.57	17.22	140
	Total	53.23	17.17	330
Social Action	Single-sex boys' school	43.16	16.36	190
	Co-educational school	34.39	14.25	140
	Total	39.44	16.07	330
Tension Reduction	Single-sex boys' school	46.17	16.30	190
	Co-educational school	43.46	15.70	140
	Total	45.02	16.08	330
Wishful Thinking	Single-sex boys' school	63.92	16.67	190
	Co-educational school	59.26	16.49	140
	Total	61.94	16.73	330
Work Hard and Achieve	Single-sex boys' school	76.15	13.17	190
	Co-educational school	73.23	13.53	140
	Total	74.91	13.38	330
Worry	Single-sex boys' school	55.87	15.85	190
	Co-educational school	53.74	16.90	140
	Total	54.97	16.31	330

From this table it can be seen that boys from single-sex schools score higher means - for the moment without considering significance - on the following coping strategies:

Focus on Solving the Problem

Focus on the Positive

Ignore the Problem

Invest in Close Friends

Not Coping

Physical Recreation

Seek Professional Help

Seek Social Support

Seek Spiritual Support

Seek to Belong

Self-Blame

Social Action

Tension Reduction

Wishful Thinking

Work Hard and Achieve

Worry

The only two strategies where the co-educational school boys scored greater means were:

Keep to Self

Seek Relaxing Diversions

A summary of these results is given in Table 8.2.

TABLE 8.2

ACS DESCRIPTIVE MEANS - WHOLE SAMPLE

Coping Strategy	Greater Mean
Focus on Solving the Problem	B
Focus on the Positive	B
Ignore the Problem	B
Invest in Close Friends	B
Keep to Self	C
Not Coping	B
Physical Recreation	B
Seek Professional Help	B
Seek Relaxing Diversions	C
Seek Social Support	B
Seek Spiritual Support	B
Seek to Belong	B
Self-Blame	B
Social Action	B
Tension Reduction	B
Wishful Thinking	B
Work Hard and Achieve	B
Worry	B

(Note: B=Boys' school boys' means were greater; C=Co-educational school boys' means were greater).

These descriptive statistics suggest the possibility that boys from single-sex schools are more inclined to use coping strategies which involve tackling a problem systematically and considering alternative points of view (Focus on Solving the Problem), seeing the positive side to challenges and seeing themselves as fortunate (Focus on the Positive), tending to block out the problem (Ignore the Problem), engaging in close or even intimate relationships with friends (Invest in Close Friends), and at times feeling unable to deal with the problem (Not Coping). The same boys try to deal with concerns by keeping fit and healthy (Physical Recreation), by using professional help such as a teacher or counsellor (Seek Professional Help), by sharing the problem with others and getting their help in the management of the problem (Seek Social Support), by praying and believing that prayer will help (Seek Spiritual Support), by caring about their relationship with others (Seek to Belong), and by feeling personally responsible for their problem or concern (Self-Blame).

These boys' school boys are also more inclined to enlist the support of others by means of organizing a petition or rally (Social Action), they may be more inclined to resort to releasing tension (for example by using alcohol or drugs) in attempting to feel better (Tension Reduction), they hope for an improved outcome to the problem (Wishful Thinking), they tend to show commitment, ambition and industry (Work Hard and Achieve), and they exhibit a general concern about their happiness in the future (Worry).

The boys from co-educational schools tend to withdraw from others more (Keep to Self), and they are more inclined to indulge in relaxing leisure activities such as reading or watching television (Seek Relaxing Diversions).

Inferential statistics

Having broadly surveyed the descriptive statistics for the ACS, it is now important to look more closely at the inferential statistics. It has previously been explained (Boyle *et al.*, 1995) that Type I errors can be controlled by preceding multiple ANOVAs with a multivariate analysis of variance (MANOVA) and the results of the MANOVA analysis are shown in Table 8.3.

TABLE 8.3

MULTIVARIATE TESTS ON ACS BY SCHOOL TYPE

Multivariate Tests

EFFECT		VALUE	F	HYPOTHESIS DF	ERROR DF	SIG.
Intercept	Pillai's Trace	.990	1632.252	18.000	311.000	.000
	Wilks' Lambda	.010	1632.252	18.000	311.000	.000
	Hotelling's Trace	94.471	1632.252	18.000	311.000	.000
	Roy's Largest Root	94.471	1632.252	18.000	311.000	.000
TYPESCHO	Pillai's Trace	.155	3.157	18.000	311.000	.000
	Wilks' Lambda	.845	3.157	18.000	311.000	.000
	Hotelling's Trace	.183	3.157	18.000	311.000	.000
	Roy's Largest Root	.183	3.157	18.000	311.000	.000

a Exact statistic

b Design: Intercept+TYPESCHO

This Table indicates significant results ($p<0.001$) for both Intercept and Type of School for all of Pillai's Trace, Wilks' Lambda, Hotelling's Trace and Roy's Largest Root. This suggests

that we can confidently interpret the results from the multiple ANOVAs, which are given below in Table 8.4.

TABLE 8.4

ANOVAs ON ACS BY SCHOOL TYPE

ANOVA

		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Focus on Solving the Problem	Between Groups	1183.377	1	1183.377	6.065	.014
	Within Groups	63996.211	328	195.110		
	Total	65179.588	329			
Focus on the Positive	Between Groups	1476.626	1	1476.626	5.584	.019
	Within Groups	86743.374	328	264.462		
	Total	88220.000	329			
Ignore the Problem	Between Groups	555.028	1	555.028	2.208	NS
	Within Groups	82453.759	328	251.383		
	Total	83008.788	329			
Invest in Close Friends	Between Groups	2651.464	1	2651.464	8.146	.005
	Within Groups	106759.687	328	325.487		
	Total	109411.152	329			
Keep to Self	Between Groups	11.852	1	11.852	.048	NS
	Within Groups	80394.511	328	245.105		
	Total	80406.364	329			
Not Coping	Between Groups	89.570	1	89.570	.413	NS
	Within Groups	71164.782	328	216.966		
	Total	71254.352	329			
Physical Recreation	Between Groups	122.785	1	122.785	.314	NS
	Within Groups	128341.703	328	391.286		
	Total	128464.488	329			
Seek Professional Help	Between Groups	7891.802	1	7891.802	24.260	.000
	Within Groups	106697.895	328	325.298		
	Total	114589.697	329			
Seek Relaxing Diversions	Between Groups	138.996	1	138.996	.527	NS
	Within Groups	86474.592	328	263.642		
	Total	86613.588	329			

TABLE 8.4 (Continued)

Seek Social Support	Between Groups	7177.147	1	7177.147	28.458	.000
	Within Groups	82723.459	328	252.206		
	Total	89900.606	329			
Seek Spiritual Support	Between Groups	2822.370	1	2822.370	9.057	.003
	Within Groups	102212.782	328	311.624		
	Total	105035.152	329			
Seek to Belong	Between Groups	590.567	1	590.567	3.401	NS
	Within Groups	56951.687	328	173.633		
	Total	57542.255	329			
Self-Blame	Between Groups	104.590	1	104.590	.354	NS
	Within Groups	96883.365	328	295.376		
	Total	96987.955	329			
Social Action	Between Groups	6192.632	1	6192.632	25.783	.000
	Within Groups	78778.656	328	240.179		
	Total	84971.288	329			
Tension Reduction	Between Groups	592.538	1	592.538	2.302	NS
	Within Groups	84441.353	328	257.443		
	Total	85033.891	329			
Wishful Thinking	Between Groups	1749.392	1	1749.392	6.355	.012
	Within Groups	90289.395	328	275.273		
	Total	92038.788	329			
Work Hard and Achieve	Between Groups	686.713	1	686.713	3.869	.050
	Within Groups	58216.559	328	177.490		
	Total	58903.273	329			
Worry	Between Groups	365.986	1	365.986	1.377	NS
	Within Groups	87171.711	328	265.767		
	Total	87537.697	329			

(Note: NS=Not Significant)

All of the significant differences between school types have the greater means for boys from single-sex schools and all - with the possible exception of Wishful Thinking - are adaptive coping strategies rather than maladaptive. The boys' school boys scored significantly higher means for Focus on Solving the Problem ($p<0.05$), Focus on the Positive ($p<0.05$), Invest in Close Friends ($p<0.01$), Seek Professional Help ($p<0.001$), Seek Social Support ($p<0.001$), Seek Spiritual Support ($p<0.01$), Social Action ($p<0.001$), Wishful Thinking ($p<0.05$), and Work Hard and Achieve ($p<0.05$). Boys from co-educational schools did not score significantly higher means on any of the coping strategies.

It seems that the boys from single-sex schools are more inclined to deal with problems and concerns by tackling the problem systematically and taking into account different points of view or options, they have a positive and cheerful outlook on the concern, seeing the

'bright' side and seeing themselves as fortunate, and they are more inclined to use professional help, such as a teacher or counsellor (Frydenberg and Lewis, 1993:18-23).

These boys also are more inclined to share the problem with others, and to enlist the help of others in the management of the problem, and they tend more to engage in a particular intimate relationship with a friend or friends. They pray and turn for assistance to a spiritual leader or God more frequently, and they tend more frequently to let others know what is of concern, and to enlist support by organizing a petition or an activity such as a rally. They also show more commitment, ambition, and industry in attempts to alleviate the concern. The only maladaptive strategy these boys choose is that they do tend to hope for a positive outcome, and that the problem will sort itself out.

Compas (1995) makes clear the importance of using adaptive coping mechanisms, in dealing with stress. He states:

> 'Stressful events include seemingly minor occurrences that become truly problematic only through repeated exposure to them. Stress also includes events that are grave and severe in magnitude, such as a life threatening illness in a loved one. The coping responses reported by...adolescents also suggest the breadth of these concepts, including efforts to change a stressful situation directly and to manage one's emotions in response to the stressor. The high levels of depressive and anxious symptoms experienced by...young people suggest that their coping efforts may have been ineffective in managing the stressors they are facing.
>
> A major challenge for behavioral scientists and mental health professionals involves the prevention of maladaptive coping and promotion of effective coping in youth, regardless of the the type of stress they encounter' (Compas, 1995:248).

The data presented so far in this chapter provides interesting evidence that the coping styles used by boys attending single-sex schools differs from that used by boys from co-educational schools. Is it possible that something in the style, ethos or milieu of each type of school creates a framework which allows or encourages the development of particular types of coping strategies? Compas (1995) cites research which seems to show that coping skills related to managing negative emotions under stress develop positively during childhood and early adolescence, but for those involved with managing stressful situations by using problem-solving techniques, the evidence is less clear. Compas, Malcarne and Fondacaro (1988) have shown that coping strategies of both the types they call 'emotion-focused coping' and 'problem-focused coping' appear to develop during childhood and adolescence

but then stabilize, with a levelling-off in early adulthood. However, Compas (1995) acknowledges that 'Less is known...about the ways in which skills in problem-solving and emotion management may continue to develop during adolescence' (Compas, 1995:256).

Split Cases by Grade Analysis

The data was then analyzed splitting the cases by grade, and the mean scores and standard deviations for each coping strategy by school type, and by grade, are shown here in Table 8.5.

TABLE 8.5

ACS DESCRIPTIVES SPLIT BY GRADE

Descriptive Statistics

YEAR LEVEL		TYPE OF SCHOOL	MEAN	STD. DEVIATION	N
Year 8	Focus on Solving the Problem	Single-sex boys' school	66.32	12.63	93
		Co-educational school	62.88	14.03	68
		Total	64.87	13.30	161
	Focus on the Positive	Single-sex boys' school	68.66	14.51	93
		Co-educational school	62.94	15.89	68
		Total	66.24	15.32	161
	Ignore the Problem	Single-sex boys' school	55.27	15.02	93
		Co-educational school	49.19	15.78	68
		Total	52.70	15.59	161
	Invest in Close Friends	Single-sex boys' school	71.10	16.16	93
		Co-educational school	67.29	17.73	68
		Total	69.49	16.89	161
	Keep to Self	Single-sex boys' school	57.31	14.66	93
		Co-educational school	56.91	16.12	68
		Total	57.14	15.25	161
	Not Coping	Single-sex boys' school	44.04	13.77	93
		Co-educational school	43.71	12.58	68
		Total	43.90	13.24	161

TABLE 8.5 (Continued)

	Physical Recreation	Single-sex boys' school	77.68	17.61	93
		Co-educational school	73.29	15.88	68
		Total	75.83	16.99	161
	Seek Professional Help	Single-sex boys' school	45.86	19.37	93
		Co-educational school	34.93	15.10	68
		Total	41.24	18.46	161
	Seek Relaxing Diversions	Single-sex boys' school	84.30	14.70	93
		Co-educational school	82.15	16.57	68
		Total	83.39	15.50	161
	Seek Social Support	Single-sex boys' school	60.34	16.26	93
		Co-educational school	50.88	13.89	68
		Total	56.35	15.96	161
	Seek Spiritual Support	Single-sex boys' school	56.83	17.77	93
		Co-educational school	48.68	17.46	68
		Total	53.39	18.04	161
	Seek to Belong	Single-sex boys' school	66.11	13.06	93
		Co-educational school	64.35	12.43	68
		Total	65.37	12.79	161
	Self-Blame	Single-sex boys' school	49.68	15.96	93
		Co-educational school	53.46	18.61	68
		Total	51.27	17.18	161
	Social Action	Single-sex boys' school	42.20	16.88	93
		Co-educational school	35.15	14.14	68
		Total	39.22	16.12	161
	Tension Reduction	Single-sex boys' school	40.17	12.96	93
		Co-educational school	41.88	15.61	68
		Total	40.89	14.12	161
	Wishful Thinking	Single-sex boys' school	63.53	15.64	93
		Co-educational school	60.53	15.47	68
		Total	62.26	15.59	161

TABLE 8.5 (Continued)

	Work Hard and Achieve	Single-sex boys' school	78.41	11.05	93
		Co-educational school	72.53	13.66	68
		Total	75.93	12.53	161
	Worry	Single-sex boys' school	53.94	14.87	93
		Co-educational school	54.06	16.27	68
		Total	53.99	15.43	161
Year 10	Focus on Solving the Problem	Single-sex boys' school	71.63	14.07	97
		Co-educational school	67.39	14.58	72
		Total	69.82	14.40	169
	Focus on the Positive	Single-sex boys' school	67.01	18.81	97
		Co-educational school	64.10	15.16	72
		Total	65.77	17.36	169
	Ignore the Problem	Single-sex boys' school	48.97	16.91	97
		Co-educational school	49.65	14.85	72
		Total	49.26	16.02	169
	Invest in Close Friends	Single-sex boys' school	71.34	19.64	97
		Co-educational school	63.78	18.46	72
		Total	68.12	19.46	169
	Keep to Self	Single-sex boys' school	57.63	15.93	97
		Co-educational school	58.75	16.25	72
		Total	58.11	16.03	169
	Not Coping	Single-sex boys' school	44.29	18.22	97
		Co-educational school	42.56	12.55	72
		Total	43.55	16.03	169
	Physical Recreation	Single-sex boys' school	75.34	25.21	97
		Co-educational school	77.10	17.25	72
		Total	76.09	22.13	169
	Seek Professional Help	Single-sex boys' school	43.97	19.31	97
		Co-educational school	35.07	17.17	72
		Total	40.18	18.90	169

TABLE 8.5 (Continued)

	Seek Relaxing Diversions	Single-sex boys' school	81.04	18.49	97
		Co-educational school	85.65	14.27	72
		Total	83.01	16.93	169
	Seek Social Support	Single-sex boys' school	62.76	15.83	97
		Co-educational school	53.33	17.18	72
		Total	58.75	17.02	169
	Seek Spiritual Support	Single-sex boys' school	50.57	18.07	97
		Co-educational school	46.81	16.54	72
		Total	48.96	17.48	169
	Seek to Belong	Single-sex boys' school	68.29	14.39	97
		Co-educational school	64.67	12.32	72
		Total	66.75	13.63	169
	Self-Blame	Single-sex boys' school	57.58	17.46	97
		Co-educational school	51.74	15.88	72
		Total	55.09	17.00	169
	Social Action	Single-sex boys' school	44.07	15.87	97
		Co-educational school	33.68	14.41	72
		Total	39.64	16.07	169
	Tension Reduction	Single-sex boys' school	51.92	17.14	97
		Co-educational school	44.94	15.74	72
		Total	48.95	16.87	169
	Wishful Thinking	Single-sex boys' school	64.29	17.68	97
		Co-educational school	58.06	17.42	72
		Total	61.63	17.78	169
	Work Hard and Achieve	Single-sex boys' school	73.98	14.65	97
		Co-educational school	73.89	13.46	72
		Total	73.94	14.12	169
	Worry	Single-sex boys' school	57.73	16.60	97
		Co-educational school	53.44	17.57	72
		Total	55.91	17.10	169

A one-way ANOVA was then carried out on the split file. The results are given in Table 8.6.

TABLE 8.6

ACS ANOVA SPLIT BY GRADE

ANOVA

YEAR LEVEL			SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Year 8	Focus on Solving the Problem	Between Groups	464.879	1	464.879	2.655	NS
		Within Groups	27845.381	159	175.128		
		Total	28310.261	160			
	Focus on the Positive	Between Groups	1282.799	1	1282.799	5.624	.019
		Within Groups	36268.754	159	228.105		
		Total	37551.553	160			
	Ignore the Problem	Between Groups	1450.895	1	1450.895	6.160	.014
		Within Groups	37448.794	159	235.527		
		Total	38899.689	160			
	Invest in Close Friends	Between Groups	567.989	1	567.989	2.003	NS
		Within Groups	45090.247	159	283.586		
		Total	45658.236	160			
	Keep to Self	Between Groups	6.287	1	6.287	.027	NS
		Within Groups	37179.428	159	233.833		
		Total	37185.714	160			
	Not Coping	Between Groups	4.464	1	4.464	.025	NS
		Within Groups	28057.946	159	176.465		
		Total	28062.410	160			
	Physical Recreation	Between Groups	754.690	1	754.690	2.642	NS
		Within Groups	45426.440	159	285.701		
		Total	46181.130	160			
	Seek Professional Help	Between Groups	4695.738	1	4695.738	14.991	.000
		Within Groups	49805.815	159	313.244		
		Total	54501.553	160			

TABLE 8.6 (Continued)

	Seek Relaxing Diversions	Between Groups	182.249	1	182.249	.757	NS
		Within Groups	38272.099	159	240.705		
		Total	38454.348	160			
	Seek Social Support	Between Groups	3516.474	1	3516.474	15.017	.000
		Within Groups	37232.048	159	234.164		
		Total	40748.522	160			
	Seek Spiritual Support	Between Groups	2609.995	1	2609.995	8.389	.004
		Within Groups	49470.130	159	311.133		
		Total	52080.124	160			
	Seek to Belong	Between Groups	120.925	1	120.925	.738	NS
		Within Groups	26058.454	159	163.890		
		Total	26179.379	160			
	Self-Blame	Between Groups	560.785	1	560.785	1.911	NS
		Within Groups	46653.190	159	293.416		
		Total	47213.975	160			
	Social Action	Between Groups	1956.303	1	1956.303	7.851	.006
		Within Groups	39621.648	159	249.193		
		Total	41577.950	160			
	Tension Reduction	Between Groups	114.899	1	114.899	.575	NS
		Within Groups	31788.306	159	199.926		
		Total	31903.205	160			
	Wishful Thinking	Between Groups	352.920	1	352.920	1.457	NS
		Within Groups	38520.124	159	242.265		
		Total	38873.043	160			
	Work Hard and Achieve	Between Groups	1357.691	1	1357.691	9.091	.003
		Within Groups	23745.414	159	149.342		
		Total	25103.106	160			
	Worry	Between Groups	.598	1	.598	.002	NS
		Within Groups	38083.378	159	239.518		
		Total	38083.975	160			

TABLE 8.6 (Continued)

Year 10	Focus on Solving the Problem	Between Groups	742.924	1	742.924	3.638	NS
		Within Groups	34103.750	167	204.214		
		Total	34846.675	168			
	Focus on the Positive	Between Groups	350.691	1	350.691	1.164	NS
		Within Groups	50299.309	167	301.193		
		Total	50650.000	168			
	Ignore the Problem	Between Groups	19.318	1	19.318	.075	NS
		Within Groups	43113.227	167	258.163		
		Total	43132.544	168			
	Invest in Close Friends	Between Groups	2363.415	1	2363.415	6.446	.012
		Within Groups	61234.218	167	366.672		
		Total	63597.633	168			
	Keep to Self	Between Groups	51.944	1	51.944	.201	NS
		Within Groups	43092.139	167	258.037		
		Total	43144.083	168			
	Not Coping	Between Groups	124.127	1	124.127	.481	NS
		Within Groups	43057.695	167	257.831		
		Total	43181.822	168			
	Physical Recreation	Between Groups	127.576	1	127.576	.259	NS
		Within Groups	82150.093	167	491.917		
		Total	82277.669	168			
	Seek Professional Help	Between Groups	3273.115	1	3273.115	9.637	.002
		Within Groups	56721.560	167	339.650		
		Total	59994.675	168			
	Seek Relaxing Diversions	Between Groups	878.840	1	878.840	3.105	NS
		Within Groups	47268.154	167	283.043		
		Total	48146.994	168			

TABLE 8.6 (Continued)

	Seek Social Support	Between Groups	3674.513	1	3674.513	13.635	.000
		Within Groups	45003.546	167	269.482		
		Total	48678.059	168			
	Seek Spiritual Support	Between Groups	584.695	1	584.695	1.924	NS
		Within Groups	50759.092	167	303.947		
		Total	51343.787	168			
	Seek to Belong	Between Groups	542.142	1	542.142	2.953	NS
		Within Groups	30663.918	167	183.616		
		Total	31206.059	168			
	Self-Blame	Between Groups	1410.012	1	1410.012	4.993	.027
		Within Groups	47163.656	167	282.417		
		Total	48573.669	168			
	Social Action	Between Groups	4462.551	1	4462.551	19.150	.000
		Within Groups	38916.148	167	233.031		
		Total	43378.698	168			
	Tension Reduction	Between Groups	2009.403	1	2009.403	7.331	.007
		Within Groups	45775.118	167	274.103		
		Total	47784.521	168			
	Wishful Thinking	Between Groups	1605.559	1	1605.559	5.204	.024
		Within Groups	51527.695	167	308.549		
		Total	53133.254	168			
	Work Hard and Achieve	Between Groups	.338	1	.338	.002	NS
		Within Groups	33475.070	167	200.450		
		Total	33475.408	168			
	Worry	Between Groups	759.677	1	759.677	2.622	NS
		Within Groups	48390.809	167	289.765		
		Total	49150.485	168			

(Note: NS=Not Significant)

Several differences become apparent with this analysis. For the Year 8 results, Focus on the Positive ($p<0.05$), Seek Professional Help ($p<0.001$), Seek Social Support ($p<0.001$), Seek Spiritual Support ($p<0.01$), Social Action ($p<0.01$), and Work Hard and Achieve ($p<0.01$) all remain as significant differences, with the means for boys from single-sex schools higher

than those for boys from co-educational schools. In this Year 8 group, Focus on Solving the Problem no longer shows a significant difference between the means of the two school types, nor do Invest in Close Friends and Wishful Thinking. The only new strategy to emerge as significant in this Year 8 group is Ignore the Problem ($p<0.05$), a maladaptive strategy with the single-sex school boys having a higher mean.

When the results for the boys in Year 10 are considered, significant differences remaining unchanged from the whole group analysis include Invest in Close Friends ($p<0.05$), Seek Professional Help ($p<0.01$), Seek Social Support ($p<0.001$), Social Action ($p<0.001$), and Wishful Thinking ($p<0.05$). New strategies to emerge in this Year 10 group were Self-Blame ($p<0.05$) and Tension Reduction ($p<0.01$), and strategies which were significant on a whole-group analysis but no longer so in the split file analysis included Focus on Solving the Problem, Focus on the Positive, Seek Spiritual Support, and Work Hard and Achieve, all adaptive coping strategies.

It would appear from these results that for boys in single-sex schools, the strategies Focus on Solving the Problem, Invest in Close Friends, and Wishful Thinking, were less important in Year 8. Ignore the Problem appears as significant for these boys in Year 8, but not for those in Year 10, or, indeed, the whole sample of boys from single-sex schools. The Year 8 boys seem more prepared to engage in close relationships only as they grow through the school, compared with their co-educational counterparts. It may be that at this early adolescent stage, within the context of a single-sex school, they have not had the opportunity to meet members of the opposite sex to the degree where a relationship is readily developed; as they mature and become more social, this situation disappears.

For the Year 10 group of boys from single-sex schools, the new coping strategies emerging are Self-Blame and Tension Reduction. The maladaptive strategy here, Self-Blame, may arise because of greater self-knowledge and self-awareness of these boys, as shown by other strategies that they significantly use - Invest in Close Friends, Seek Professional Help, and Seek Social Support. It could be that these boys therefore appreciate better their limitations and abilities (as reflected to them by others) and are thus more inclined to realize that they are at fault, and to admit that fact.

Factor Analysis

As in Chapter 7, a confirmatory factor analysis was not carried out, but a conventional factor analysis was attempted. Future work in this area could include a confirmatory factor analysis to compare these data with the original normative sample. Item intercorrelations were analyzed using a principal components analysis followed by a varimax rotation. In the correlation matrix the Determinant was greater than 0.0001 (i.e., colinearity is not too high), the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was satisfactory (KMO<0.7) and the Bartlett's Test of Sphericity was significant (p<0.001). Five components had eigenvalues greater than 1.0, and a rotated five-factor solution using varimax with Kaiser normalization proved to be the most interpretable. The Rotated Component Matrix is given in Table 8.7.

TABLE 8.7

ROTATED COMPONENT MATRIX FOR ACS FACTOR ANALYSIS

Rotated Component Matrix

	COMPONENT				
	1	2	3	4	5
Invest in Close Friends	.807				
Seek Relaxing Diversions	.762				
Seek to Belong	.689		.302		
Focus on the Positive	.583				
Physical Recreation	.530				.484
Social Action		.799			
Seek Professional Help		.778			
Seek Social Support	.413	.704			
Keep to Self			.768		
Self-Blame			.678		
Worry		.338	.641		
Wishful Thinking	.469		.563		
Ignore the Problem			.535	.402	
Work Hard and Achieve	.333			-.711	
Tension Reduction				.705	
Not Coping			.498	.595	
Focus on Solving the Problem	.405	.420		-.551	
Seek Spiritual Support					.782

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 6 iterations.

Using the procedure described in the previous chapter, only those factors loading at 0.7 or more were considered, and this procedure gave the first factor as including Invest in Close

Friends and Seek Relaxing Diversions, the second factor as Social Action, Seek Professional Help and Seek Social Support (which also loaded with a lower weighting on to factor 1), the third factor as Keep to Self, the fourth factor as Work Hard and Achieve (which also loaded with a lower weighting on to factor 1) and Tension Reduction, and the final factor as Seek Spiritual Support. These factors were labelled 'Activities with Friends', 'Sharing with Others', Avoiding Others', 'Working to Relax', and 'Praying', respectively. The rather unusual single-item factors resulted from the stringent criterion of a 0.7 loading cut-off, discussed earlier.

Analysis of Factors by Type of School

These five new factors were then analyzed using one-way ANOVAs to test for any significant differences that may exist between them. The results of this analysis is shown in Table 8.8.

TABLE 8.8

ANOVA RESULTS FOR ACS FACTORS BY TYPE OF SCHOOL

ANOVA

		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.
Activities with Friends	Between Groups	2.149	1	2.149	2.156	NS
	Within Groups	326.851	328	.996		
	Total	329.000	329			
Avoiding Others	Between Groups	.290	1	.290	.290	NS
	Within Groups	328.710	328	1.002		
	Total	329.000	329			
Praying	Between Groups	2.945	1	2.945	2.963	NS
	Within Groups	326.055	328	.994		
	Total	329.000	329			
Sharing with Others	Between Groups	31.615	1	31.615	34.870	.000
	Within Groups	297.385	328	.907		
	Total	329.000	329			
Working to Relax	Between Groups	5.585E-02	1	5.585E-02	.056	NS
	Within Groups	328.944	328	1.003		
	Total	329.000	329			

(Note: NS=Not Significant)

As can be seen, only one of these new factors (Sharing with Others) appeared as significantly different between the groups ($p<0.001$), with the higher mean being for boys from single-sex schools. This is consistent with earlier analyses and indicates that these boys are more inclined to deal with problems by talking to friends and involving them in their concerns, by

speaking to professionals and seeking their help, and by actively organizing a petition or a rally to attempt to solve the problem. It seems possible that in co-educational schools boys are more inhibited towards acting in these ways, because they seem more 'girly' things to do, and they are concerned for their own developing gender identity which to them must remain strongly masculine in the constant presence of girls.

Multiple Regression Analysis

In keeping with the format of earlier chapters, a Multiple Regression Analysis was run in order to reveal which of the independent variables, if any, loaded significantly onto the dependent variables which had already shown up as having means which were significantly different on the basis of type of school. This analysis will indicate which of the independent variables are significant predictors of the chosen dependent variables from the ACS.

After various trials, the Stepwise regression method gave the most interpretable results. The following independent variables were tested:
Father's occupation
Mother's occupation
Number of brothers
Number of sisters
SES Category (see Chapter 5)
Years in co-educational schools
Years in single-sex boys' schools
Type of school (either single-sex boys or co-educational)
Ethnic origin

The dependent variables entered in this analysis had all shown significant differences in their means from previous ANOVAs. They are listed below:
Focus on Solving the Problem
Focus on the Positive
Invest in Close Friends
Seek Professional Help
Seek Social Support
Seek Spiritual Support
Sharing with Others
Social Action

Wishful Thinking
Work Hard and Achieve

With the exception of Focus on Solving the Problem (which was predicted by SES category only), and Seek Spiritual Support (which was predicted by Years in co-educational schools only), all the listed variables above were significantly predicted by school type. Seek Professional Help was also predicted by SES category and ethnic origin, Sharing with Others was also predicted by SES category, as were Social Action and Wishful Thinking. School type was the only significant predictor of Focus on the Positive, Invest in Close Friends, and Seek Social Support. Work Hard and Achieve was not predicted significantly by any of the independent variables. Clearly school type is seen as a an important predictor of many of these dependent variables.

Summary of Findings: ACS

In summary, then, the boys from single-sex schools scored significantly higher means on a range of coping strategies: Focus on Solving the Problem, Focus on the Positive, Invest in Close Friends, Seek Professional Help, Seek Social Support, Seek Spiritual Support, Social Action, Wishful Thinking, Work Hard and Achieve, and the new factor Sharing with Others.

A split file analysis by grade showed at Year 8 one new significant factor, Ignore the Problem, and three whole-sample factors dropping off, namely Focus on Solving the Problem, Invest in Close Friends, and Wishful Thinking. At Year 10, two new factors not present in the whole-sample analysis appeared, Self-Blame and Tension Reduction, and four of the whole-sample factors disappeared, namely Focus on Solving the Problem, Focus on the Positive, Seek Spiritual Support, and Work Hard and Achieve.

Multiple Regression Analysis gave strong evidence that school type loaded strongly onto these dependent variables as a significant predictor. Table 8.9 summarizes these results.

TABLE 8.9

SIGNIFICANT DIFFERENCES IN MEANS - ACS

Strategy	Means for boys' school boys	Means for co-educational school boys
Focus on Solving the Problem	Higher	Lower
Focus on the Positive	Higher	Lower
Invest in Close Friends	Higher	Lower
Seek Professional Help	Higher	Lower
Seek Social Support	Higher	Lower
Seek Spiritual Support	Higher	Lower
Social Action	Higher	Lower
Work Hard and Achieve	Higher	Lower
Sharing with Others	Higher	Lower
Wishful Thinking	Higher	Lower
Ignore the Problem (Year 8)	Higher	Lower
Self-Blame (Year 10)	Higher	Lower
Tension Reduction (Year 10)	Higher	Lower

Chapter 9: Discussion and Conclusions

This final chapter will commence with a review of the effects of school type on various outcome variables as revealed by the research which is the subject of this thesis, and in this context will then look at the possible ramifications of the research covered by this thesis, before considering future directions that could be taken.

If we consider the results from the research described in this thesis, it can be seen that the boys from single-sex schools are less fearful of potential dangers and loss of parental affection (SMAT: Fear), and have better relations with their parents (SDQ-II: Parent Relations). These same boys appear less inclined to demonstrate overt caring behaviours as expressed towards humans in general (SMAT: Protectiveness), although they relate better to opposite-sex peers (SDQ-II: Opposite-Sex) and they are more prepared to solve their problems by seeking the support and encouragement of others, by turning to professionals, by actively engaging in organizing activities or writing petitions (ACS: Sharing with Others, Social Action), and by spending more time with close friends (ACS: Invest in Close Friends).

The boys' school boys have stronger desires to please their fathers (SMAT: Superego unintegrated) but they are less comfortable with their ability to do this (SMAT: Superego integrated, Superego conflict). This seems at odds with the result for the SDQ-II, where boys' school boys clearly have better relations with their parents, and further investigation on this point seems warranted. These boys also hold more strongly positive views of their own physical attractiveness (SDQ-II: Physical Appearance) although they view as less important the seeking of comfort and ease, and the cultivation of self-centred egotism (SMAT: Narcism integrated, Narcism conflict). This latter result is consistent with the claim of Krug, Cattell and Sweney (1976:10) that Narcism and Superego are substantially negatively correlated. It seems congruent, too, that these single-sex school boys feel more strongly positive about their own attractiveness, and their attractiveness to girls (SDQ-II: Self- and Opposite-Sex Attractiveness).

The attachment to their physical home and associated factors is less strongly marked in boys from single-sex schools (SMAT: Home integrated, Home total motivation: Year 10) and there is some conflict in their feelings about this (SMAT: Home conflict); however, this may be due to an emerging strength of their own self-concept, which is present more strongly in these boys (SDQ-II: General Self, Total Self-Concept: Year 8).

It is of some interest that Hulse (1997), using the SMAT, found differences between the two groups in other areas. She used generally younger boys as subjects (Grade 5 through to Grade 8) and she discovered that the boys' school boys scored higher on Assertiveness unintegrated, School unintegrated, Assertiveness integrated, Mating integrated, Fear integrated, Narcism integrated, Pugnacity integrated, Self-sentiment integrated, Superego integrated, School integrated, and Home integrated. In the Total motivation area, Hulse found the boys' school scores higher for Assertiveness, Mating, Narcism, Pugnacity, and School. In the Conflict area, her results showed lower boys' school means for Mating, Fear, Narcism, Pugnacity, Self-sentiment, Superego, and Home. There was no discernable congruence between her results and those described in this thesis. Some possible reasons for these differences include the different ages of the boys in the two studies, and the possibility that there are some cultural differences between the two countries involved (the United States and Australia) which are having an effect on the results. This is an area for further work in the future.

However, the stronger SDQ-II results for General Self, Parent Relations, Physical Appearance, Self- and Opposite-Sex Attractiveness and Total Self-Concept for boys in single-sex schools are consistent with Hulse's (1997) results, even though she used different instruments. Additionally, her analysis failed to use more rigorous and sophisticated tests such as factor analysis and multiple regression analysis. As far as can be ascertained, this work, the analyses, and the work with the ACS, have not been carried out before.

Finally, reviewing the results described in this thesis, the single-sex boys have a stronger sense of truthfulness and dependability (SDQ-II: Honesty-Trustworthiness: Year 8) and they are more inclined to turn to prayer for help with their problems (ACS: Seek Spiritual Support). They face their challenges and problems by more frequently using a range of adaptive coping strategies, in particular by looking positively at challenges and working out ways of overcoming them (ACS: Focus on the Positive, Focus on Solving the Problem), and by working hard at doing the things necessary to deal with the concern (ACS: Work Hard and Achieve), The one maladaptive strategy used by these boys more frequently than the others was to hope in anticipation of a favourable outcome (ACS: Wishful Thinking), although this last factor was not used by the Year 8 boys' school boys.

Possible school factors contributing to these results

From the analyses described in this thesis, it appears that there are several measurable differences between the boys in boys' schools and those in co-educational schools. A key question is 'What, if any, school factors are contributing to these differences?' The analyses already carried out, and particularly the multiple regression analyses, show that when a range of independent variables is considered, including father's occupation, mother's occupation, number of brothers, number of sisters, socio-economic status of the school population, number of years in co-educational schools, number of years in single-sex boys' schools, ethnic origin and type of school (either co-educational or single-sex boys), that school type (and in many cases, only school type) is seen as an important predictor of many of the dependent variables. The remaining question, then, would seem to relate to the key factors, or 'critical attributes', as Lee and Bryk (1986:392) call them, which are the features intrinsic to all-boys' schools (or at least the schools which were part of this survey) that are not present in co-educational schools and which contribute to the differences observed as measured on the School Motivation Analysis Test, the Self-Description Questionnaire-II, and the Adolescent Coping Scale.

Possible areas for future work

Further research is needed in this area, and Lee and Bryk (1986) suggest a number of factors that could be considered. Perhaps the way the boys' school is structured in its day-to-day operation sets it apart from other, co-educational schools. Since all of the schools in the research sample were of approximately similar size, with similar student-teacher ratios, and similar curricular and co-curricular choices available to the students, these factors would seem not to be significant. As far as religious background of the schools is concerned, all of the schools were Christian non-Catholic schools, auspiced by either the Anglican or Uniting Churches. A further possible difference, which may be significant, would be the ratio of male to female teachers in the two types of schools. Anecdotal evidence would suggest that there are significantly higher proportions of female teachers in co-educational schools, and higher proportions of male teachers in boys' schools. This factor needs further research. Associated with this factor, it would also be important to look at the numbers of teachers with Masters' or higher degrees, and how long teachers remained with their schools (that is, staff stability levels) in each type of school. It could be valuable to discover the proportion of the annual expenditure budget which is spent on staff professional development in each type of school.

The gender composition of the teaching staff in a school could well be important; if the teachers in a co-educational school were mostly female, then ipso facto the number of adult male role models would be proportionately fewer, and this may have an effect on the development - and particularly the psychosexual development - of early adolescent boys. Lee and Bryk (1986) suggest that in single-sex schools, the phenomenon of the gender of teachers tending to parallel the student body may '...foster more serious student attitudes and behaviors toward schooling' (1986:392). A further possibility based on the results of the research described herein is that in boys' schools this phenomenon may foster the development of a stronger self-concept, among other things, as the boys in boys' schools have a wider range of adult male role models to observe and relate to. Mortimore (1995) reinforces this point that schools make a difference. 'Some schools produced students who - regardless of their actual ability - felt reasonably positive about themselves; others produced students who were negative about themselves even when, in the judgment of the research team and according to their progress, they were performing well' (Mortimore, 1995:348). The suggestion being presented in this thesis is that the empirical evidence is pointing towards a difference between boys' schools and co-educational schools where school type is a significant predictor.

Another possible reason for the differences between the two types of schools which needs further investigation is teaching style. It has been demonstrated that there are important differences between male and female brains (Gurian and Henley, 2001:20-26) and that these differences affect learning styles for boys and girls in the areas of deductive and intuitive reasoning, abstract and concrete reasoning, use of language, logic and evidence, likelihood of boredom, use of space, movement, sensitivity and group dynamics, use of symbolism and use of learning teams (Gurian and Henley, 2001). Taking these differences into account, it is obvious that to be effective in the classroom, a teacher in a co-educational school is required to rely on a much wider range of teaching strategies than a teacher in a boys' school. Or, to put it another way, a teacher of boys only is able to hone down the styles and strategies of teaching technique and classroom management to focus only on what works best for boys, without having to be concerned about girls' styles of learning and other needs.

Levine and Lezotte (1990) suggest that cohesion and consensus are particularly important to schools because in school, teachers are set a number of difficult and occasionally conflicting goals. Teachers have to respond to the individual needs of students whilst at the same time they must be constantly mindful of the needs of the whole class they are teaching. The

contention here is that it is easier for teachers to do this (and therefore for them to be more effective) if they are teaching a single-sex class, with a narrower range of individual differences in learning styles and needs associated with those. If this is, in fact, what is happening in single-sex schools, then it may be that this is one of the effects contributing to a difference between the two types of schools, which is producing different outcome measures for the students in the schools.

One further possibility exists - that the families and students themselves that are selecting single-sex rather than co-educational schools, have inherent social and cultural values and mores, which render them significantly different as a group. Lee and Marks (1992) have researched this point and found that in a sample of 3,183 senior students from 60 independent secondary schools (20 girls' schools, 20 boys' schools, and 20 co-educational schools), those who chose single-sex schools did so for three reasons: religiosity, educational history, and specific school characteristics. Insofar as religiosity is concerned, it is salient to reflect on the fact that the research described in this thesis showed that boys from single-sex schools used prayer ('Seek Spiritual Support') as a coping strategy significantly more than their co-educational school counterparts.

Lee and Marks (1992) found some evidence that parents who had attended single-sex schools themselves, tended to choose single-sex schooling for their children, and that first-time buyers of independent education tended to choose co-educational schools. Parental (and familial) educational history played a role here.

With respect to 'specific school characteristics', Lee and Marks' (1992) final category from the list of factors involved in choice of single-sex schools, they state

> 'The most important rationale in distinguishing the boys and girls who choose single-sex schools is gender grouping. We conclude that the choice of a single-sex school is not serendipitous; such students are more committed to the gender-grouping aspect of the school than to any other tested school characteristic' (Lee and Marks, 1992:244).

Thus the possibility exists, and further work needs to explore this point, that those students and parents who choose single-sex schooling are bringing with them into the school stable characteristics which themselves are influencing the outcomes as measured in this thesis.

Other avenues for future research could include further work on motivation, but using a better instrument than the SMAT, carrying out longitudinal studies to see if changes occur

over a period of time, using both younger (primary school age) and older (say Year 12) children as subjects, and doing further analysis to see if there are differences that can be measured between individual boys' schools and individual co-educational schools.

Conclusion

Evidence from this research suggests that boys in boys' schools exhibit different characteristics from those shown by boys in co-educational schools. Evidence produced here also suggests that these differences are not influenced by a range of independent variables relating to the students, their families, and some school factors. Rather, the differences have been shown to be influenced largely by school type (single-sex or co-educational), often solely but occasionally in tandem with some other variables. Further research is warranted, and some areas for this research have been identified. In consideration of the research questions posed in Chapter 5, it seems additionally that the length of time a boy spends in a single-sex school has little bearing on his scores on the tests used. This result seems counter-intuitive, and warrants further research. Also, the results from the SMAT seemed to show clear differences between Australian and American schoolboys.

This research seems to demonstrate some positive outcomes for boys in single-sex schools. Considering the world-wide concerns about boys and young men outlined in Chapter 1, it may be that some aspects of single-sex schooling (such as some classes conducted in same-sex groups in co-educational schools) could be used to positive effect. Many writers argue the case that co-educational schools have important and often negative effects on boys (Buckingham, 2000; Sommers, 2000; Gurian, 1998). Some differences which appear to favour boys in single-sex schools have been revealed in this thesis. Lee and Bryk (1986) state

> 'In an era in which single-sex secondary schools are often looked at as anachronistic and in which these same schools are often merged with opposite-sex schools to create co-educational institutions thought to be more viable economically and socially, it is striking that there has been so little empirical investigation of this form of school organization' (Lee and Bryk, 1986:394).

It is hoped that this empirical investigation has added a little to the understanding of this complex, yet crucial issue in the contemporary education of boys.

Bibliography

Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: critique and reformulation. *Journal of Abnormal Psychology, 87*, 49-74.

Alloway, N., & Gilbert, P. (1997). Everything is Dangerous: Working with the 'Boys and Literacy' Agenda. *English in Australia, 119*(12), 35-45.

Anderman, E. M., & Maehr, M. L. (1994). Motivation and Schooling in the Middle Grades. *Review of Educational Research, 64*, 287-309.

Atkinson, J. W. (1964). *An Introduction to Motivation.* Princeton, NJ: Van Nostrand.

Atlas, J. A. (1998). Review of the Self-Description Questionnaire - I, II, III. In J. C. Impara & B. S. Plake (Eds.), *The Thirteenth Mental Measurements Yearbook* (Vol. 13, pp. 888-889). Lincoln, Nebraska: The Buros Institute of Mental Measurements of the University of Nebraska.

Baker, D. P., Riordan, C., & Schaub, M. (1995). The Effects of Sex-Grouped Schooling on Achievement: The Role of National Context. *Comparative Education Review, 39*(4), 468-482.

Bakker, I. (Ed.). (1996). *Rethinking restructuring: Gender and change in Canada.* Toronto: University of Toronto Press.

Balsovich, J., & Tomaka, J. (1991). Measures of Self-esteem. In J. Robinson, P. Shaver, & L. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes: Measures of Self-Esteem* . San Diego, California: Academic Press.

Bauch, P. A. (1988). Differences among single-sex and coeducational high schools. *Momentum, April*, 56-58.

Birkett, H., & Cattell, R. B. (1978). Diagnosis of the dynamic roots of a clinical symptom by P-technique: a case of episodic alcoholism. *Multivariate Experimental Clinical Research, 3*, 173-194.

Boyle, G. J. (1983). Higher-order factor structure of Cattell's MAT and 8SQ. *Multivariate Experimental Clinical Research, 6*, 119-127.

Boyle, G. J. (1984). Effects of viewing a road trauma film on emotional and motivational factors. *Accident Analysis and Prevention, 16*, 383-386.

Boyle, G. J. (1985a). A reanalysis of the higher-order factor stucture of the Motivation Analysis Test and the Eight State Questionnaire. *Personality and Individual Differences, 6*, 367-374.

Boyle, G. J. (1985b). A reconsideration of the Cooper/Kline critique of the factor structure of the Motivation Analysis Test. *Multivariate Experimental Clinical Research, 7*, 89-94.

Boyle, G. J. (1988). Elucidation of Motivation Structure by Dynamic Calculus. In J. R. Nesselroade & R. B. Cattell (Eds.), *Handbook of multivariate experimental psychology* (Second ed., pp. 737-787). New York: Plenum.

Boyle, G. J. (1994). Self-Description Questionnaire II. In D. J. Keyser & R. C. Sweetland (Eds.), *Test Critiques* (Vol. 10, pp. 632-643). Austin, Texas: Pro-Ed, Inc.

Boyle, G. J. (2001). Personal Communication .

Boyle, G. J., & Cattell, R. B. (1984). Proof of situational sensitivity of mood states and dynamic traits - ergs and sentiments - to disturbing stimuli. *Personality and Individual Differences, 5*, 541-548.

Boyle, G. J., & Houndoulesi, V. (1993). Utility of the School Motivation Analysis Test in predicting second language acquisition. *British Journal of Educational Psychology, 63*, 500-512.

Boyle, G. J., Stankov, L., & Cattell, R. B. (1995). Measurement and Statistical Models in the Study of Personality and Intelligence. In D. H. Saklofske & M. Zeidner (Eds.), *International Handbook of Personality and Intelligence* (pp. 417-446). New York: Plenum Press.

Boyle, G. J., & Start, K. B. (1989). Sex Differences in the Prediction of Academic Achievement Using the Children's Motivation Analysis Test. *British Journal of Educational Psychology, 59*, 245-252.

Boyle, G. J., Start, K. B., & Hall, E. J. (1988). Comparisons of Australian and American normative data for the School Motivation Analysis Test. *Psychological Test Bulletin, 1*, 24-27.

Boyle, G. J., Start, K. B., & Hall, E. J. (1989a). Dimensions of Adolescent Motivation as Measured by Higher-Order Factors in the School Motivation Analysis Test. *Journal of School Psychology, 27*, 27-33.

Boyle, G. J., Start, K. B., & Hall, E. J. (1989b). Prediction of Academic Achievement Using the School Motivation Analysis Test. *British Journal of Educational Psychology, 59*, 92-99.

Browne, R., & Fletcher, R. (Eds.). (1995). *Boys in schools: addressing the real issues - behaviour, values and relationships.* Sydney: Finch Publishing.

Buckingham, J. (2000). *Boy Troubles: Understanding Rising Suicide, Rising Crime and Educational Failure.* Sydney: The Centre for Independent Studies (Australia).

Buescher, T. M. (1986). *Adolescents' Responses to Their Own Recognized Talent: Issues Affecting Counseling and Adjustment.* Paper presented at the 63rd Annual Meeting of the American Orthopsychiatric Association, Chicago.

Buescher, T. M., & Higham, S. (1985). *Young Adolescent Survey: Coping Skills among the Gifted/Talented* . Evanston, IL: Center for Talent Development, Northwestern University.

Burns, R. B. (1979). *The self-concept: Theory, measurement, development and behaviour.* London: Longman.

Cairns, E. (1990). The Relationship between Adolescent Perceived Self-Competence and Attendance at Single-Sex Secondary School. *British Journal of Educational Psychology, 60*, 207-211.

Canada, G. (2000). Raising Better Boys. *Educational Leadership, 57*(4), 14-17.

Cattell, R. B. (1985). *Human Motivation and the Dynamic Calculus.* New York: Praeger.

Cattell, R. B., & Child, D. (1975). *Motivation and Dynamic Structure.* New York: Wiley-Halsted.

Cattell, R. B., & Warburton, F. W. (1967). *Objective personality and motivation tests.* Urbana, Ill.: University of Illinois Press.

Coleman, J. C., & Hendry, L. B. (1999). *The Nature of Adolescence.* (3rd ed.). London: Routledge.

Colley, A., Comber, C., & Hargreaves, D. J. (1994). School Subject Preferences in Single Sex and Co-educational Secondary Schools. *Educational Studies, 20*(3), 379-385.

Compas, B. E. (1995). Promoting successful coping during adolescence. In M. Rutter (Ed.), *Psychosocial disturbances in young people: Challenges for prevention* (pp. 247-273). Cambridge: Cambridge University Press.

Compas, B. E., Malcarne, V. L., & Fondacaro, K. M. (1988). Coping with stressful events in older children and young adolescents. *Journal of Consulting and Clinical Psychology, 56*, 405-411.

Connell, R. W. (1996). Teaching the Boys: New Research on Masculinity, and Gender Strategies for Schools. *Teachers College Record, 98*(2), 206-235.

Coopersmith, S. (1989). *Self-Esteem Inventories.* Palo Alto, California: Consulting Psychologists Press, Inc.

Covington, M. V. (1984). The Motive for Self-Worth. In R. E. Ames & C. Ames (Eds.), *Research on Motivation in Education: Student Motivation* (Vol. 1,). Boston: Academic Press.

DeCharms, R. (1968). *Personal causation.* New York: Academic Press.

DeCharms, R. (1976). *Enhancing Motivation: Change in the Classroom.* New York: Irvington.

Deci, E. L. (1975). *Intrinsic Motivation.* New York: Plenum Press.

Delisle, J., & Galbraith, J. (1987). *The Gifted Kids' Survival Guide, II.* Minneapolis: Free Spirit.

Department of Education, T. a. Y. A. (1999). *SES Simulation Project: Validation Report* . Canberra: Commonwealth of Australia.

Dise-Lewis, J. E. (1988). The Life Events and Coping Inventory: An assessment of stress in children. *Psychosomatic Medicine, 50*(5), 484-499.

Dweck, C. S. (1975). The Role of Expectations and Attributions in the Alleviation of Learned Helplessness. *Journal of Personality and Social Psychology, 31*(iv), 674-685.

Dweck, C. S., & Bempechat, J. (1983). Children's Theories of Intelligence: Consequences for Learning. In S. G. Paris, G. Olsen, & H. Stevenson (Eds.), *Learning and Motivation in the Classroom* . Hillsdale, NJ: Erlbaum.

Employment, D. f. E. a. (1996). *Public Examinations: GCSE and GCE in England 1995* . London: HMSO.

Feather, N. T. (1974). Coeducation, Values, and Satisfaction with School. *Journal of Educational Psychology, 66*(1), 9-15.

Fitts, W. H. (1965). *Tennessee Self-Concept Scale: Manual.* Los Angeles, CA: Western Psychological Services.

Fletcher, R. (1996). Changing the lives of boys. *EQ Australia, 2*(Winter), 4-7.

Foon, A. E. (1988). The Relationship Between School Type and Adolescent Self Esteem, Attribution Styles, and Affiliation Needs: Implications for Educational Outcome. *British Journal of Educational Psychology, 58*, 44-54.

Foster, J. J. (2001). *Data Analysis Using SPSS for Windows Versions 8 to 10.* London: Sage Publications.

Fromm, E. (1956). *The art of loving.* New York: Harper and Row.

Frydenberg, E. (1989). *Concerns of youth and how they cope: A study of Australian adolescents.* Unpublished Doctoral dissertation, La Trobe University, Melbourne.

Frydenberg, E., & Lewis, R. (1993). *Adolescent Coping Scale: Administrator's Manual.* Melbourne: The Australian Council for Educational Research.

Gable, R. K. (1998). Review of the Self-Description Questionnaire - I, II, III. In J. C. Impara & B. S. Plake (Eds.), *The Thirteenth Mental Measurements Yearbook* (Vol. 13, pp. 889-891). Lincoln, Nebraska: The Buros Institute of Mental Measurements of the University of Nebraska.

Galbraith, J. (1983). *The Gifted Kids' Survival Guide*, Ages 11-18. Minneapolis: Free Spirit.

Galloway, D. (1985). Pastoral care and school effectiveness. In D. Reynolds (Ed.), *Studying School Effectiveness.* Lewes: Falmer Press.

Galloway, D., Leo, E. L., Rogers, C., & Armstrong, D. (1996). Maladaptive motivational style: the role of domain specific task demand in English and Mathematics. *British Journal of Educational Psychology, 66*, 197-207.

Galloway, D., Martin, R., & Wilcox, B. (1985). Persistent absence from school and exclusion from school: the predictive power of school and community variables. *British Journal of Educational Research, 11*, 51-61.

Galloway, D., Rogers, C., Armstrong, D., & Leo, E. (1998). *Motivating the Difficult to Teach.* London: Longman.

Gershen, J., Langer, T., & Orsec, L. (1974). Child behavior and life events: Undesirable change or change per se? In B. S. Dohrenwend & B. P. Dohrenwend (Eds.), *Stressful life events: Their nature and effects* (pp. 159-170). New York: John Wiley and Sons.

Goldstein, H. (1987). *Multilevel Models in Educational and Social Research.* London: Charles Griffin & Company Limited.

Goldstein, H. (1997). Methods in School Effectiveness Research. *School Effectiveness and School Improvement, 8*(4), 369-395.

Gurian, M. (1998). *A Fine Young Man: What Parents, Mentors and Educators Can Do to Shape Adolescent Boys into Exceptional Men.* New York: Jeremy P. Tarcher/Putnam.

Gurian, M., & Henley, P. (2001). *Boys and Girls Learn Differently: A Guide for Teachers and Parents.* San Francisco: Jossey-Bass.

Hargreaves, D. H. (1982). *The challenge for the comprehensive school.* London: Routledge & Kegan Paul.

Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development, 53*, 87-97.

Harvey, T. J. (1985). Science in single-sex and mixed teaching groups. *Educational Research, 27*(3), 179-182.

Heider, F. (1958). *The psychology of interpersonal relations.* New York: John Wiley.

Huberty, C. J., & Morris, J. D. (1989). Multivariate Analysis Versus Multiple Univariate Analyses. *Psychological Bulletin, 105*(2), 302-308.

Hull, C. L. (1943). *Principles of Behavior.* New York: Appleton-Century-Crofts.

Hull, C. L. (1951). *Essentials of Behavior.* New Haven, Connecticut: Yale University Press.

Hulse, D. J. (1997). *Brad and Cory: A Study of Middle School Boys.* Hunting Valley, Ohio: University School Press.

Impara, J. C., & Plake, B. S. (Eds.). (1998). *The Thirteenth Mental Measurements Yearbook.* Lincoln, Nebraska: The Buros Institute of Mental Measurements of the University of Nebraska.

Isonio, S. (1998). Review of the Self-Description Questionnaire - I, II, III. In J. C. Impara & B. S. Plake (Eds.), *The Thirteenth Mental Measurements Yearbook* (Vol. 13, pp. 891-892). Lincoln, Nebraska: The Buros Institute of Mental Measurements of the University of Nebraska.

Kefford, R. (2000, February/March). Year 12 Girls Roll Boys in Finals - Again! *Education Review, 4*, 8.

Kemp, D. (1999). *Choice and Equity: Funding Arrangements for Non-Government Schools 2001-2004.* Canberra: Commonwealth of Australia: Department of Education, Training and Youth Affairs.

Kenway, J., Watkins, P., & Tregenza, K. (1997). New Vocational Agendas in Schooling: Boys at Risk? *Curriculum Perspectives, 17*(1), 73-78.

King, L. A., & King, D. W. (1993). *Sex-Role Egalitarianism Scale: Manual.* Port Huron: Sigma Assessment Systems.

Kline, P., & Grindley, J. (1974). A 28-day case-study with the SMAT. *Journal of Multivariate Experimental Personality and Clinical Psychology, 1*, 13-32.

Kowaluk, A. (1999). Boys and Literacy: Challenging Orthodoxies. *English in Australia, 124*, 40-47.

Krug, S. E., Cattell, R. B., & Sweney, A. B. (1976). *Handbook for the School Motivation Analysis Test.* Champaign, Illinois: Institute for Personality and Ability Testing.

Lawrie, L., & Brown, R. (1992). Sex Stereotypes, School Subject Preferences and Career Aspirations as a Function of Single/Mixed-Sex Schooling and Presence/Absence of an Opposite-Sex Sibling. *British Journal of Educational Psychology, 62*, 132-138.

Lazarus, R. S. (1980). The stress and coping paradigm. In C. Eisendorfer, D. Cohen, A. Kleinman, & P. Maxim (Eds.), *Theoretical basis for psychopathology* (pp. 287-322). New York: Spectrum.

Lazarus, R. S., & Launier, R. (1978). Stress-related transactions between person and environment. In A. Pervin & M. Lewis (Eds.), *Perspectives in international psychology* (pp. 287-327). New York: Plenum.

Lecky, P. (1945). *Self-consistency: A theory of personality.* New York: Island Press.

Lee, V. E., & Bryk, A. S. (1986). Effects of Single-Sex Secondary Schools on Student Achievement and Attitudes. *Journal of Educational Psychology, 78*(5), 381-395.

Lee, V. E., & Bryk, A. S. (1989). Effects of Single-Sex Schools: Response to Marsh. *Journal of Educational Psychology, 81*(4), 647-650.

Lee, V. E., & Marks, H. M. (1990). Sustained Effects of the Single-Sex Secondary School Experience on Attitudes, Behaviors, and Values in College. *Journal of Educational Psychology, 82*(3), 578-592.

Lee, V. E., & Marks, H. M. (1992). Who Goes Where? Choice of Single-Sex and Coeducational Independent Secondary Schools. *Sociology of Education, 65*(July), 226-253.

Leo, E. L., & Galloway, D. (1996). Evaluating Research on Motivation: Generating More Heat than Light? *Evaluation and Research in Education, 10*(1), 35-47.

Leong, F. T. L. (1998). Review of the Adolescent Coping Scale. In J. C. Impara & B. S. Plake (Eds.), *The Thirteenth Mental Measurements Yearbook* (Vol. 13, pp. 29-30). Lincoln, Nebraska: The Buros Institute of mental Measurements of the University of Nebraska.

Levine, D. (1964). Coeducation - A Contributing Factor in Miseducation Of the Disadvantaged. *Phi Delta Kappan, November*, 126-128.

Levine, D., & Lezotte, L. (1990). *Unusually Effective Schools: A Review of Research and Practice.* Madison, Wisconsin: National Center for Effective Schools Research and Development.

Lewin, K. (1935). *A dynamic theory of personality.* New York: McGraw-Hill.

Lorenz, K. (1952). The past twelve years in the comparative study of behavior. In C. H. Chiller (Ed.), *Instinctive behavior: The development of a modern concept.* New York: International Universities Press.

Marsh, H. W. (1989). Effects of Attending Single-Sex and Coeducational High Schools on Achievement, Attitudes, Behaviors, and Sex Differences. *Journal of Educational Psychology, 81*(1), 70-85.

Marsh, H. W. (1992). *Self Description Questionnaire - II: Manual.* Campbelltown, New South Wales: University of Western Sydney.

Marsh, H. W. (2001). Personal Communication .

Marsh, H. W., Craven, R. G., & Debus, R. (1991). Self-Concepts of Young Children 5 to 8 Years of Age: Measurement and Multidimensional Structure. *Journal of Educational Psychology, 83*(3), 377-392.

Marsh, H. W., Parker, J. W., & Barnes, J. (1985). Multidimensional adolescent self-concepts: Their relationship to age, sex and academic measures. *American Educational Research Journal, 22*, 422-444.

Marsh, H. W., & Shavelson, R. J. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist, 20*, 107-125.

McCracken, J. H. (1973). Sex Typing of Reading by Boys Attending All Male Classes. *Developmental Psychology, 8*(1), 148.

Mecca, A. M., Smelser, N. J., & Vasconcellos, J. (Eds.). (1989). *The Social Importance of Self-Esteem.* Berkeley, California: University of California Press.

Morgan, G. A., & Griego, O. V. (1998). *Easy Use and Interpretation of SPSS for Windows: Answering Research Questions with Statistics.* Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Mortimore, P. (1995). The positive effects of schooling. In M. Rutter (Ed.), *Psychosocial Disturbances in young people: Challenges for prevention* (pp. 333-363). Cambridge: Cambridge University Press.

Mortimore, P., Sammons, P., Stoll, L., Lewis, D., & Ecob, R. (1988). *School Matters.* London: Paul Chapman Publishing.

Mortimore, P., Sammons, P., Stoll, L., Lewis, D., & Ecob, R. (1989). *School Matters. The Junior Years.* London: Open Books.

Mowrer, O. (1960). *Learning Theory and Behaviour.* New York: Wiley.

Nicholls, J. G. (1989). *The Competitive Ethos and Democratic Education.* Cambridge, Mass: Harvard University Press.

Nicol, A. R. (1994). Practice in Nonmedical Settings. In M. Rutter, E. Taylor, & L. Hersov (Eds.), *Child and Adolescent Psychiatry: Modern Approaches* (pp. 1040-1054). Oxford: Blackwell Scientific Publications.

Norton, C. (2000, February/March). Teenagers struggling to find ways to express adulthood. *Education Review, 4*, 24.

Nowicki, S., & Strickland, B. R. (1973). A locus-of-control scale for children. *Journal of Consulting and Clinical Psychology, 40*, 148-154.

Oehler-Stinnett, J. J. (1998). Review of the Adolescent Coping Scale. In J. C. Impara & B. S. Plake (Eds.), *The Thirteenth Mental Measurements Yearbook* (Vol. 13, pp. 30-32). Lincoln, Nebraska: The Buros Institute of Mental Measurements of the University of Nebraska.

Olszewski, P., Kulieke, M., & Willis, G. (1987). Changes in the self-concept of gifted students who participate in rigorous academic programs. *Journal for the Education of the Gifted, 10*(4), 287-304.

Patterson, J. M., & McCubbin, H. I. (1987). Adolescent coping style and behaviours: Conceptualisation and measurement. *Journal of Adolescence, 10*, 163-186.

Piers, E. V. (1984). *Piers-Harris Children's Self-Concept Scale: Revised Manual 1984.* Los Angeles, CA: Western Psychological Services.

Plucker, J. A. (1997). Psychometric Characteristics of the Adolescent Coping Scale with Academically Gifted Adolescents. *Journal of Secondary Gifted Education, 9*(1), 5-14.

Pollack, W. S. (1998). *Real Boys: Rescuing Our Sons from the Myths of Boyhood.* New York: Random House.

Raimy, V. C. (1948). Self-reference in counseling interviews. *Journal of Consulting Psychology, 12*, 153-163.

Reiss, A. J. (1995). Community influences on adolescent behavior. In M. Rutter (Ed.), *Psychosocial disturbances in young people: Challenges for prevention* (pp. 305-332). Cambridge: Cambridge University Press.

Richmond, P. G. (1985). The relationship of grade, sex, ability and socio-economic status to parent, peer and school affiliation. *British Journal of Educational Psychology, 55*, 233-239.

Rogers, C., Galloway, D., Armstrong, D., Jackson, C., & Leo, E. (1994). Changes in motivational style over the transfer from primary to secondary school: subject and dispositional effects. *Educational and Child Psychology, 11*(ii), 26-38.

Rogers, C. G., Galloway, D., Armstrong, D., & Leo, E. (1998). Gender differences in motivational style: a comparison of measures and curriculum area. *British Journal of Educational Psychology, 68*, 189-202.

Rogers, C. R. (1947). Some observations on the organization of personality. *American Psychologist, 2*, 358-368.

Rokeach, M. (1973). *The nature of human values.* Riverside, New Jersey: Free Press.

Rosenberg, M. (1965). *Society and the adolescent child.* Princeton, New Jersey: Princeton University Press.

Rosenthal, D. A., & Chapman, D. C. (1980). Sex-Role Stereotypes: Children's Perceptions of Occupational Competence. *Psychological Reports, 46*, 135-139.

Rutter, M. (Ed.). (1995). *Psychosocial Disturbances in Young People: Challenges for Prevention.* Cambridge: Cambridge University Press.

Rutter, M., Graham, P., Chadwick, O. F. D., & Yule, W. (1976). Adolescent Turmoil: Fact or Fiction? *Journal of Child Psychology and Psychiatry and Allied Disciplines, 17*, 35-56.

Rutter, M., Maughan, B., Mortimore, P., & Ouston, J. (1979). *Fifteen Thousand Hours: Secondary schools and their effects on children.* Cambridge, Massachusetts: Harvard University Press.

Rutter, M., & Rutter, M. (1993). *Developing Minds: Challenge and Continuity across the Life Span.* London: Penguin Books.

Schneider, F. W., & Coutts, L. M. (1979). Teacher orientations towards masculine and feminine: Role of sex of teacher and sex composition of school. *Canadian Journal of Behavioural Science, 11*(2), 99-111.

Seligman, M., & Maier, S. (1967). Failure to Escape Traumatic Shock. *Journal of Experimental Psychology, 74*, 1-9.

Shavelson, R. J., & Bolus, R. (1982). Self-concept: The interplay of theory and methods. *Journal of Educational Psychology, 74*, 3-17.

Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Validation of construct interpretations. *Review of Educational Research, 46*, 407-441.

Smith, P. C., Kendall, L. M., & Hulin, C. I. (1969). *The measurement of satisfaction in work and retirement.* Chicago: Rand McNally.

Sommers, C. H. (2000). *The War Against Boys: How Misguided Feminism Is Harming Our Young Men.* New York: Simon and Schuster.

Spirito, A., Stark, L. J., & Williams, C. A. (1989). Development of a brief coping scale for use with pediatric populations. *Journal of Pediatric Psychology, 13*(4), 555-574.

Stables, A. (1990). Differences between Pupils from Mixed and Single-sex Schools in Their Enjoyment of School Subjects and in Their Attitudes to Science and to School. *Educational Review, 42*(3), 221-230.

Statistics, A. B. o. (1996). ABS Catalogue No 6204.0 . Canberra: Australian Government Publishing Service.

Stipek, D. J. (1983). A developmental analysis of pride and shame. *Human Development, 26*, 42-54.

Strein, W. (1993). Advances in research on academic self-concept: Implications for school psychology. *School Psychology Review, 22*, 273-284.

Sutherland, M. B. (1985). Whatever Happened About Co-education? *British Journal of Educational Studies, 33*(2), 155-163.

Sweney, A. B. (1969). *A preliminary descriptive manual for individual assessment with the Motivation Analysis Test.* Champaign, Ill.: Institute for Personality and Ability Testing.

Teese, R., Davies, M., Charlton, M., & Polesel, J. (1995). *Who wins at school? Boys and girls in Australian secondary education.* Melbourne: University of Melbourne: Department of Education, Policy and Management.

Tinbergen, N. D. (1951). *The study of instinct.* Oxford: Oxford University Press.

Trickett, E. J., & Moos, R. H. (1973). Assessment of the psychosocial environment of the high school classroom. *Journal of Educational Psychology, 65*, 93-102.

Trickett, E. J., Trickett, P. K., Castro, J. J., & Schaffner, P. (1982). The Independent School Experience: Aspects of the Normative Environments of Single-Sex and Coed Secondary Schools. *Journal of Educational Psychology, 74*(3), 374-381.

Weiner, B. (1986). *An attributional theory of motivation and emotion.* New York: Springer-Verlag.

Weiner, B. (1992). *Human Motivation: Metaphors, Theories and Research.* Thousand Oaks, California: Sage Publications, Inc.

Weiner, B., Russell, D., & Lerman, D. (1978). Affective consequences of causal ascriptions. In J. H. Harvey, W. J. Ickes, & R. F. Kidd (Eds.), *New directions in attribution research* (Vol. 2, pp. 59-88). Hillsdale, NJ: Lawrence Erlbaum.

Weiner, B., Russell, D., & Lerman, D. (1979). The cognition-emotion process in achievement-related contexts. *Journal of Personality and Social Psychology, 37*, 1211-1220.

Wells, L. E., & Marwell, G. (1976). *Self-esteem: Its conceptualization and measurement.* Beverly Hills, California: Sage.

West, A., & Hunter, J. (1993). Parents' Views on Mixed and Single-sex Secondary Schools. *British Educational Research Journal, 19*(4), 369-380.

West, P. (1996). Why Many Boys Aren't Learning at School. *Classroom, 3*, 26-30.

West, P. (1998). Real Men Don't Read. *EQ Australia, 1*(Autumn), 24-26.

West, W. (1999). Lost boys: searching for answers. *Education Review, 3*(4), 10-11.

Wick, J. W. (1989). *School Attitude Measure: Manual.* Iowa City: American College Testing.

Wilson, E. O. (1975). *Sociobiology: The new synthesis.* Cambridge, MA: Harvard University Press.

Wylie, R. C. (1979). *The self-concept.* (Vol. 2). Lincoln: University of Nebraska Press.

Young, D. J., & Fraser, B. J. (1992, 20-24 April 1992). *Sex Differences in Science Achievement: A Multilevel Analysis.* Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA.

DEMOGRAPHIC QUESTIONNAIRE

APPENDIX A

(FOR OFFICE USE ONLY - ID NUMBER: .....)

1. Are you a Day Student or a Boarder? (Place X in appropriate box below):

Day Student	Boarder

2. Your Year level at school this year? (Place X in appropriate box below):

Year 8	Year 10

3. Your date of birth:

D	D	M	M	Y	Y

4. Your father's occupation: .....

5. Your mother's occupation: .....

6. **NOT** counting you: number of brothers you have: ..... number of sisters you have: .....

7. Please enter your home postcode:

8. Please indicate your ethnic origin by marking the appropriate box below with X:

White Australian	Asian	Aboriginal or Torres Strait Islander	Other

9. Length of time you have spent in either co-educational or single-sex boys' schools (fill in the tables below as appropriate):

Years in **co-educational schools**: (Mark any appropriate boxes with X)

Pre-Grade 1	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10

Years in **single-sex boys' schools**: (Mark any appropriate boxes with X)

Pre Grade 1	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10

APPENDIX B

SMAT

Form A

INSTRUCTIONS

In this booklet there are questions about what you think and the kinds of things you're interested in. This booklet has three different parts. For each part, the examiner will read the directions and go over the examples with you. You will also be told when to start and stop.

Please write *only* on the answer sheet, and *not* on the booklet. When you answer a question, make sure the number of the question and the number of the answer match.

Now fill in the top lines on the answer sheet with your name, today's date, and so on. After you have finished, wait for instructions before going on.

DO NOT TURN PAGE UNTIL TOLD TO DO SO

Prepared by

Arthur B. Sweney, Raymond B. Cattell, and Samuel E. Krug

USES

1. In a serious argument with another student, it's a better idea
   a. not to make him or her into a dangerous enemy
   b. to ask parents or teachers to settle it

2. A better use for money you receive as a present would be to
   a. entertain a boy or girl that you like a lot
   b. treat your important friends after school

3. Politicians can better use their political power
   a. to provide more government aid for education
   b. to show that they can really lead and make changes

4. If your friends wouldn't let your brother or sister join your club, you should
   a. leave unless they agree to let him or her in
   b. keep your own position in the club anyway

5. A useful book for persons going to another country should
   a. tell them when to defend themselves and make any attackers sorry
   b. help them act wisely in the country they are visiting

6. Having a famous person for a parent would be more likely to
   a. make you respected and popular
   b. put a lot of responsibility on you to be dependable and show a good, moral example

7. You get more from reading
   a. about the lives of famous men and women
   b. important textbooks

8. People who give money to charity can
   a. do a lot of good for unfortunate and unhappy people
   b. get the respect of their church and community

9. Being a person's good friend means that when that person gets into a fight or quarrel
   a. you try to stop the quarrel before anyone gets hurt by words or deeds
   b. you jump into the quarrel to give the person's enemy a bad time

10. Our angry feelings are given to us to
    a. be controlled and checked on most occasions
    b. help us enjoy a quarrel

11. Games and sports have the object of
    a. letting us "work off steam" by beating others
    b. teaching us the school spirit and making us proud of our school

25. A movie is a good way to enjoy
    a. an exciting battle
    b. an adventurous sea voyage

26. Going out with your family on holidays is good because
    a. it's wiser than going off alone or with strangers
    b. there is often not enough time to enjoy the company of the family

27. A Saturday afternoon is a good chance
    a. to lead a hiking party or organize a picnic
    b. to enjoy things around home with your family

28. Given money to buy some books, a person would buy more on
    a. politics
    b. romance

29. A counselor should talk with students who do poorly in school
    a. to cheer them up and make them feel better
    b. to help them improve their study habits and make them like school

30. Spare time after school could be better spent enjoying music
    a. with your family at home
    b. with a good-looking date at a friend's house

End of Row on Answer Sheet

31. Going out with a friend of the opposite sex is a chance
    a. to remember to show you can behave well and control yourself
    b. put on the clothes you look best in

32. A good date at a party says things that make you
    a. think of love
    b. feel good looking and well dressed

33. It's nice to have a lot of books around so that you can
    a. improve your school work
    b. go off to your room and read where no one bothers you

34. One of the nicest things about home is
    a. getting advice and help from the rest of your family
    b. having a place to call your own, with all the comforts you're used to

35. Keeping neatly dressed and well groomed
    a. makes you admired by others
    b. makes your enemies feel jealous

36. If all of us had more time, we could
    a. stay up later *and* stay in bed longer in the morning, too
    b. take care of more of the duties we never get done

Part 2

PAIRED CHOICES

Directions: In this part of the booklet, you will find a number of groups of words. Each numbered word in the center is a "key" word and is followed by two words which might match the key word. For each key word you should choose the word which seems to go most easily and naturally with it.

Examples:

A. SHORT

a. Stop b. Time

B. COLLECT

a. Stamps b. Money

The student answered by filling in the left-hand (a) box for A, because he thought "stop" went better with "short." He filled in the right-hand (b) box for B, because "money" seemed to go with "collect" more naturally for him.

Remember, there are no correct answers. Choose the word more natural for *you*. Give your *first* reaction. Make one choice on each key word and go quickly on to the next. Put all your marks on the answer sheet in the section marked Part 2 unless told otherwise by the examiner. When you have finished *all* the questions in this section, close your booklet and wait for further instructions.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

16. MANY

a. Luxuries b. Friends

17. DARK

a. Handsome b. Accident

18. HIGH SCHOOL

a. Football b. Dropout

19. GOOD

a. Parents b. Health

20. HAVE

a. Nightmare b. Fight

21. HIGH

a. Danger b. Values

22. TAKE

a. Sick b. Prize

23. FATHER'S

a. Anger b. Love

24. TAKING

a. Care b. Charge

25. WIN

a. Battle b. Office

26. SLIP

a. Up b. Cover

27. COMMUNITY

a. Leader b. Family

28. MAN

a. Astronaut b. Woman

29. SCHOOL

a. Nurse b. Marks

30. GET

a. Home b. Married

End of Row on Answer Sheet

Part 3

KNOWLEDGE

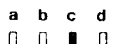
Directions: The purpose of this section of the booklet is to see what you know about different things. *Every question must be answered.* If you aren't sure of an answer, mark one anyway, even if you have to guess.

Mark your answer on the answer sheet by filling in the box marked a, b, c, or d, depending on which answer you choose. Make sure you write the answers to Part 3 of the booklet on Part 3 of the answer sheet.

Examples:

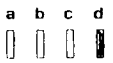
A. Who invented horse racing?

a. Edison **b.** Newton **c.** Arabs **d.** Romans



B. How many miles is it to London, England, from New York?

a. 500 **b.** 1000 **c.** 1500 **d.** 2000



Both these questions are hard to answer, but good guesses might be "c" for the first one, and "d" for the second. These would be marked by filling in the third box (c) on the answer sheet for question A, and the fourth box (d) for question B.

You should select *one* answer for *each* question. When you have finished *all* the questions, close your booklet and wait for further instructions.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO.

12. In the 18th century, children who terribly disappointed their parents were:
a. abandoned b. exiled c. tortured d. jailed

13. Which of the following *cannot* be used in setting the hair?
a. rollers b. clips c. hair pins d. rolling pins

14. A person who is cruel for no reason is:
a. brutal b. cold c. grasping d. unfair

15. The person who takes care of money matters in a club is called a:
a. secretary b. banker c. treasurer d. president

16. Spending 75% of one's free time with members of the opposite sex is true for:
a. most students b. many students c. some students d. practically no students

17. The chances of getting sick because of eating in public cafeterias are:
a. slight b. moderate c. high d. very high

18. Spending two hours getting dressed up to go out is:
a. often necessary b. seldom necessary c. rarely necessary d. unnecessary

19. What percentage of the great novels deal with jealous rivalry over love?
a. 20% b. 40% c. 60% d. 80%

End of Row on Answer Sheet

20. Valentine's Day is in:
a. January b. October c. February d. May

21. A person who shows too much interest in death and dying is said to be:
a. morbid b. mortal c. unhappy d. rotten

22. Which of the following is not a grooming aid?
a. cologne b. polcream c. bath salts d. talcum powder

23. In the home, the parents set the pattern for:
a. laughter b. holidays c. dress d. discipline

24. When you join a club, you pay:
a. duties b. allowances c. fines d. dues

37. How many boys and girls really want the shooting and fighting taken out of movies?

a. very few b. few c. some d. many

End of Row on Answer Sheet

38. Engagement rings are worn on the:

a. 4th finger b. 3rd finger c. 2nd finger d. 1st finger

39. The best way to be really popular with your friends is:

a. wear the same kind of clothes they do
b. make them afraid of you
c. give them candy and things
d. be kind and friendly to them

40. Most teen-agers would do better on school mornings to:

a. have parents wake them up
b. use an alarm clock
c. sleep an extra hour
d. keep the curtains open

41. Which of the following is an organization that helps young people to direct their aggressive impulses?

a. Pen Pal Clubs b. Pet Clubs c. Scouts d. Choir groups

42. A person who gets elected to office unexpectedly is called a:

a. dark horse b. sure thing c. minority leader d. conventioneer

43. How many times in a year does a teen-ager give a gift to a favorite friend of the opposite sex?

a. 6 or more times b. 4-5 c. 2-3 d. 1

44. How many children would prefer to read a story about "adventures in another world" than about "people being injured in gun accidents"?

a. 3 out of 10 b. 5 out of 10 c. 7 out of 10 d. 9 out of 10

45. What percentage of children copy from one another in class if they have the chance?

a. 5% b. 15% c. 40% d. 60%

46. If one chose the twenty best movies of the year what per cent would be gangster and crime movies?

a. 5% b. 10% c. 15% d. 30%

End of Row on Answer Sheet

59. "Blood is thicker than water" means:

a. family is the closest tie
b. blood is heavier than water
c. blood makes more mess
d. some people are related

60. What proportion of teen-agers make good baby sitters?

a. 90% b. 70% c. 50% d. 30%

61. What percentage of people who say it is a duty to vote do so?

a. 10% b. 30% c. 60% d. 80%

62. Children listen to adults:

a. always b. often c. sometimes d. never

63. A good student in high school spends_____ each day on homework through the year.

a. ½ hour b. 1 hour c. 2 hours d. 3 hours or more

64. How many times a year do mothers and fathers visit their own parents?

a. more than 6 b. 5-6 c. 3-4 d. 1-2

End of Row on Answer Sheet

65. Which is *not* a term used in law-making?

a. stalemate b. lobbying c. bill d. constitution

66. A person who always tries to do what is honest and right is said to be:

a. eminent b. respectable c. moral d. kind

67. Which of the following is out of place?

a. centimeter b. deciliter c. kilometer d. decimeter

68. Being given "the key to the door" means a person has reached:

a. old age b. 21 c. home d. marriage

69. In the next few years, the number of charities to help unfortunate people will increase by:

a. 5% b. 15% c. 30% d. 80%

70. "When people get into fights it is generally because their feelings are hurt." This statement is true:

a. never b. rarely c. sometimes d. most of the time

83. Which of the following is *not* a dance?

a. ballet b. rock 'n roll c. fox trot d. rum baba

84. People who refuse to fight or kill in a war because it is against their beliefs are best described as:

a. cowards
b. conscientious objectors
c. liberals
d. spies

85. A college preparatory course in high school would probably include all but which one of the following studies?

a. business administration
b. foreign language
c. algebra
d. English literature

86. Which of the following is most helped by parents' advice?

a. gambling success
b. job success
c. school success
d. success when you become a parent

87. At what age can children first be counted upon to help protect their younger brothers and sisters from dangerous people?

a. 8 years b. 10 years c. 12 years d. 14 years

88. How important is it to belong to a club?

a. not important b. slightly important c. quite important d. highly important

89. In how many years after reaching adolescence can people expect to get an adult level of control of their emotions?

a. 2 years b. 3-4 years c. 5-6 years d. more than 6 years

90. How many teachers are doing their jobs because, above everything else, they really want to see children learn?

a. 9 out of 10 b. 7 out of 10 c. 5 out of 10 d. 3 out of 10

91. How many holidays in the year are occasions when the whole family gets together?

a. 2 b. 4 c. 6 d. 8

End of Row on Answer Sheet

SELF-DESCRIPTION QUESTIONNAIRE-II

HERBERT W. MARSH

r Name: _____ Circle one: Male Female

ool: _____ Grade: _____ Age: _____ Date: _____

ıs a chance to look at yourself. It is not a test. There are no right answers, and everyone will have different answers. Be that your answers show how you feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANY-E ELSE. We will keep your answers private and not show them to anyone.

n you are ready to begin, please read each sentence and choose an answer. There are six possible answers for each stion: "True," "False," and four answers in between. There are six blanks next to each sentence, one for each of the vers. The answers are written at the top of each column. Choose your answer to a sentence and make a check mark in lank for the answer you choose. **DO NOT** say your answer aloud or talk about it with anyone else.

re you start, there are three examples below. A student, Bob, has already answered two of these sentences to show you o do it. In the third example you must choose your own answer and put in your own check mark.

MPLES	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
like to read comic books 1	☐	☐	☐	☐	☐	☑	1

Bob checked the blank under the answer "TRUE." This means that he really likes to read comic books. If Bob did not like read comic books very much, he would have answered "FALSE" or "MOSTLY FALSE."

n general, I am neat and tidy 2	☐	☐	☑	☐	☐	☐	2

ob answered "MORE FALSE THAN TRUE" because he is definitely not very neat, but he is not really messy either.

ike to watch T.V. 3	☐	☐	☐	☐	☐	☐	3

or this sentence you have to choose the answer that is best for you. First you must decide if the sentence is "TRUE" or FALSE" for you, or somewhere in between. If you really like to watch T.V. a lot you would answer "TRUE" by putting a heck mark in the last blank. If you hate watching T.V. you would answer "FALSE" by putting a check mark in the first ank. If you do not like T.V. very much, but you watch it sometimes, you might decide to put a check mark in the blank that ys "MOSTLY FALSE" or the blank for "MORE FALSE THAN TRUE."

vant to change an answer you have marked you should cross out the check mark and put a new check mark in another on the same line.

he sentences be sure that your check mark is on the same line as the sentence you are answering. You should have swer and only one answer for each sentence. Do not leave out any of the sentences. Once you have started, **PLEASE T TALK.** Turn over the page and begin.

	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
1. I make friends easily with boys 21	☐	☐	☐	☐	☐	☐	21
2. I make friends easily with girls 22	☐	☐	☐	☐	☐	☐	22
3. I look forward to mathematics classes 23	☐	☐	☐	☐	☐	☐	23
4. Most of my friends are better looking than I am 24	☐	☐	☐	☐	☐	☐	24
5. Most things I do, I do well 25	☐	☐	☐	☐	☐	☐	25
6. I sometimes tell lies to stay out of trouble 26	☐	☐	☐	☐	☐	☐	26
7. I'm good at things like sports, gym, and dance 27	☐	☐	☐	☐	☐	☐	27
I do badly on tests that need a lot of reading ability 28	☐	☐	☐	☐	☐	☐	28
I don't get upset very easily 29	☐	☐	☐	☐	☐	☐	29
It is difficult for me to talk to my parents 30	☐	☐	☐	☐	☐	☐	30
If I work really hard I could be one of the best students in my school year 31	☐	☐	☐	☐	☐	☐	31
Not many people of my own sex like me 32	☐	☐	☐	☐	☐	☐	32
I'm not very popular with members of the opposite sex 33	☐	☐	☐	☐	☐	☐	33
I have trouble understanding anything with mathematics in it 34	☐	☐	☐	☐	☐	☐	34
I am good looking 35	☐	☐	☐	☐	☐	☐	35
Nothing I do ever seems to turn out right 36	☐	☐	☐	☐	☐	☐	36
I always tell the truth 37	☐	☐	☐	☐	☐	☐	37
I am awkward at things like sports, gym, and dance 38	☐	☐	☐	☐	☐	☐	38
Work in English classes is easy for me 39	☐	☐	☐	☐	☐	☐	39
I am often depressed and down in the dumps 40	☐	☐	☐	☐	☐	☐	40

	False	Mostly False	More False Than True	More True Than False	Mostly True	True	
1. English is one of my best subjects 61	☐	☐	☐	☐	☐	☐	61
2. I am a nervous person 62	☐	☐	☐	☐	☐	☐	62
3. My parents understand me 63	☐	☐	☐	☐	☐	☐	63
4. I am stupid at most school subjects 64	☐	☐	☐	☐	☐	☐	64
5. I have good friends who are members of my own sex 65	☐	☐	☐	☐	☐	☐	65
6. I have lots of friends of the opposite sex 66	☐	☐	☐	☐	☐	☐	66
7. I get good marks in mathematics 67	☐	☐	☐	☐	☐	☐	67
8. I am ugly 68	☐	☐	☐	☐	☐	☐	68
9. I can do things as well as most people 69	☐	☐	☐	☐	☐	☐	69
10. I sometimes cheat 70	☐	☐	☐	☐	☐	☐	70
11. I can run a long way without stopping 71	☐	☐	☐	☐	☐	☐	71
12. I hate reading 72	☐	☐	☐	☐	☐	☐	72
13. I often feel confused and mixed up 73	☐	☐	☐	☐	☐	☐	73
14. I do not like my parents very much 74	☐	☐	☐	☐	☐	☐	74
15. I do well in tests in most school subjects 75	☐	☐	☐	☐	☐	☐	75
16. Most boys try to avoid me 76	☐	☐	☐	☐	☐	☐	76
17. Most girls try to avoid me 77	☐	☐	☐	☐	☐	☐	77
18. I never want to take another mathematics course 78	☐	☐	☐	☐	☐	☐	78
19. I have a good looking body 79	☐	☐	☐	☐	☐	☐	79
20. I feel that my life is not very useful 80	☐	☐	☐	☐	☐	☐	80
21. When I make a promise I keep it 81	☐	☐	☐	☐	☐	☐	81

GENERAL

LONG FORM

CONFIDENTIAL

Adolescent Coping Scale

Name: _____ **APPENDIX D** _____ **School/Organisation:** _____

Teacher/Supervisor: _____ **Date:** ___/___/___ (Day / Month / Year)

INSTRUCTIONS

Print in boxes, then mark oval corresponding to the letter in each column.

Completely fill the oval.
Use a soft pencil, preferably 2B.
See Example. Erase mistakes fully

EXAMPLE:

YEAR LEVEL

7 8 9 10 11 12

TEST FORM

- ○ General
- ○ Specific

SEX

- ○ Male
- ○ Female

DATE OF BIRTH

Day Month Year

ID

SURNAME OR FAMILY NAME

INITS.

WAIT FOR INSTRUCTIONS

Students have a number of concerns or worries about things such as school, work, family, friends, the world and the like. Below is a list of ways in which people of your age cope with a wide variety of concerns or problems. Please indicate by marking the appropriate box, the things you do to deal with your concerns or worries. Work down the page and mark 1, 2, 3, 4 or 5 as you come to each statement. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which best describes how you feel.

For example if you **sometimes** cope with your concern by 'Talk to others to see what they would do if they had the problem' you would mark 3 as shown below:

	Doesn't apply or don't do it	Used very little	Used some-times	Used often	Used a great deal
1. Talk to others to see what they would do if they had the problem	1	2	■	4	5

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ID
0 0 0 0 0 0
1 1 1 1 1 1
2 2 2 2 2 2
3 3 3 3 3 3
4 4 4 4 4 4
5 5 5 5 5 5
6 6 6 6 6 6
7 7 7 7 7 7
8 8 8 8 8 8
9 9 9 9 9 9

CONFIDENTIAL

Adolescent Coping Scale

Name / ID: _____

1	2	3	4	5
Doesn't apply or don't do it	**Used very little**	**Used sometimes**	**Used often**	**Used a great deal**

47. Try to have a cheerful outlook on life ① ② ③ ④ ⑤

48. Pray for God to look after me ① ② ③ ④ ⑤

49. Organise a group to deal with the concern ① ② ③ ④ ⑤

50. Improve my relationship with others ① ② ③ ④ ⑤

51. Realise that I make things difficult for myself ① ② ③ ④ ⑤

52. Go to meetings which look at the problem ① ② ③ ④ ⑤

53. Try to make close friends with a guy or girl ① ② ③ ④ ⑤

54. Daydream about how things will turn out well ① ② ③ ④ ⑤

55. I have no way of dealing with the situation ① ② ③ ④ ⑤

56. Blame myself ① ② ③ ④ ⑤

57. Don't let others know how I am feeling ① ② ③ ④ ⑤

58. Consciously 'block out' the problem ① ② ③ ④ ⑤

59. Talk to other people about my concern to help me sort it out ① ② ③ ④ ⑤

60. Work instead of going out ① ② ③ ④ ⑤

61. Ask a professional person for help ① ② ③ ④ ⑤

62. Be happy with the way things are ① ② ③ ④ ⑤

63. I suffer head aches or stomach aches ① ② ③ ④ ⑤

64. Worry about what will happen to me ① ② ③ ④ ⑤

65. Put the problem out of my mind ① ② ③ ④ ⑤

66. Do as my friends want ① ② ③ ④ ⑤

67. Join with people who have the same concern ① ② ③ ④ ⑤

68. Take my frustrations out on others ① ② ③ ④ ⑤

69. Imagine that things will work out well ① ② ③ ④ ⑤

70. See myself as being at fault ① ② ③ ④ ⑤

71. Get support from others such as parents or friends ① ② ③ ④ ⑤

72. Discuss the problem with qualified people ① ② ③ ④ ⑤

73. Worry about the future of the world ① ② ③ ④ ⑤

74. Make time for leisure activities ① ② ③ ④ ⑤

75. Change the amount I eat, drink or sleep ① ② ③ ④ ⑤

76. Shut myself off from the problem so that I can avoid it ① ② ③ ④ ⑤

77. Spend more time with boy/girl friend ① ② ③ ④ ⑤

78. Think of different ways of dealing with the problem ① ② ③ ④ ⑤

79. Find a way to let off steam; for example cry, scream, drink, take drugs ① ② ③ ④ ⑤

80. List any *other* things you do to cope with your main concern.

CONFIDENTIAL

ID

Adolescent Coping Scale

Name / ID: _____

1	2	3	4	5
Doesn't apply or don't do it	Used very little	Used sometimes	Used often	Used a great deal

1. Talk to others to see what they would do if they had the problem
2. Work at solving what's causing the problem
3. Keep up with work as required
4. Play sport
5. Let God take care of my worries
6. Ask for advice from a qualified person
7. Worry about my future
8. Make a good impression on others who matter to me
9. There is nothing I can do about the problem so I don't do anything
10. I just give up
11. Meet with friends
12. Cry or scream
13. Hope for the best
14. Ring up a close friend
15. Keep my feelings to myself
16. Ignore the problem
17. Talk to others and give each other support
18. Work at solving the problem to the best of my ability
19. Attend school regularly
20. Keep fit and healthy
21. Remember those who are worse off so my troubles don't seem so bad
22. Pray for help and guidance so that everything will be alright
23. Get professional help or counselling
24. Worry about my happiness
25. Work hard
26. Find a way to relax; for example listen to music, read a book, play a musical instrument, watch television
27. Make myself feel better by taking alcohol, cigarettes or other drugs (not medication)
28. I get sick
29. Wish a miracle would happen
30. Avoid being with people
31. Seek encouragement from others
32. Consider other points of view and try to take them into account
33. Worry about my relationship with others
34. Go for a work-out at the gym
35. Look on the bright side of things and think of all that is good
36. Read a holy book
37. Worry about what is happening
38. Try to 'fit in' with my friends
39. Organise an action or petition regarding my concern
40. Get into a steady relationship
41. Hope that the problem will sort itself out
42. Criticise myself
43. Keep others from knowing what's worrying me
44. Think about what I am doing and why
45. Achieve well in what I'm doing
46. Go out and have a good time and forget about my troubles

CONTINUE ON NEXT PAGE ...