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THE AFFECTIVE CHARACTERISTICS OF  
UNDERACHIEVING INTELLECTUALLY GIFTED  
CHILDREN

A Thesis Presented in Partial Fulfilment  
of the Requirements for the  
Degree of Master of Education  
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Roselyn May Dixon

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## ABSTRACT

The overall aim of this research was to investigate the affective characteristics of achieving and underachieving gifted children. In particular, this project examined the academic self-concept, self-expectations for future achievement and academic locus of control of achieving gifted, underachieving gifted and average achieving children.

Subjects were chosen from a total nonreferred Form 1 population of 1,220 children from Palmerston North and Feilding intermediate schools. The group intelligence test, the Test of Scholastic Abilities (Intermediate B)(TOSCA) was used as an initial screening device and those students who had a predicted Weschler Intelligence Scale for Children (Revised)(WISC-R) IQ score of 118 or more were administered the Full WISC-R test. Forty one students had a WISC-R Full Score (FS) IQ > 125 and were classified as gifted. Seven of these students were classified into an underachieving gifted group as their actual Performance Achievement Test (PAT) measures were one standard error of estimate or more below their predicted scores as determined by the regression equation method, whereas the remaining 34 were placed into an achieving gifted group. A third group, classified as average achievers, was composed of children who had WISC-R FS IQs ranging between 90 to 110 and whose achievement on the PAT was within one standard error of estimate of prediction.

Of the gifted groups, 26 of 34 of the achieving and five of seven of the underachievers were males. Most of the gifted population came from the professional and managerial socio-economic classes. In the average achieving group there were more females (22 of 39) and the full range of socio-economic groups were represented.

The Student's Perception of Ability Scale (SPAS) was administered to all three groups to test the hypotheses that significant differences in academic self-concept would be found between all three groups and that over time there would be a perceptible decrease in this self-concept. There was a significant difference in academic self-concept between the achieving gifted and average achieving groups ( $p < 0.05$ ), but no significant differences between underachieving gifted and either achieving groups was found. No significant decline in academic self-concept occurred over time.

The self-expectations for future achievement were assessed using the Projected Academic Performance Scale (PAPS) and the hypothesis that there would be significant differences between achieving gifted and underachieving gifted, between achieving gifted and average achievers but not between underachieving gifted and the average group was confirmed ( $p < 0.01$ ). The self-expectations also declined as predicted over time for all three groups with the greatest difference noted for the achieving gifted children.

The final construct, the academic locus of control, was

measured using the Intellectual Achievement Responsibility Questionnaire (IAR). No significant differences were found between the three groups. All subjects ascribed responsibility for success to internal causes and were more external for failure outcomes. This result was contrary to the hypotheses that achieving gifted children would be more internal for both success and failure outcomes and that the underachieving gifted would be more external on failure outcomes than either achieving group.

Discriminant function analysis showed that 71.9 percent of cases were correctly identified (hits) and this appeared to justify at least the use of the self-expectations for future achievement construct in discriminating achieving gifted from underachieving gifted children.

On the basis of the above findings it was concluded that achieving and underachieving gifted children did not differ greatly in their school-related affective characteristics. Academic self-concept and locus of control did not discriminate between these two groups. In fact, the locus of control results suggested the need for the use of an alternative instrument. Self-expectations for future achievement were, however, significantly different for these two groups and this variable was considered to be the most useful for further investigation and the most likely target for the remediation of underachievement.

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## INTRODUCTION

Underachievement has long been acknowledged as a problem for some gifted children. In such cases, the potential of these children maybe a loss to society. Indeed, it has been argued that these individuals not only turn out to be relatively nonproductive members of adult society but they also have potential personal problems (Purkey, 1969). In spite of its importance, there has been little research into underachieving gifted children for over 20 years, and none within the New Zealand context.

Whilst controversy and uncertainty exists as to the definition of underachievement and concomitantly, the identification of underachievers (Thorndike, 1963), the literature does suggest a number of purported explanations specifically for underachievement amongst gifted children (Raph et al., 1966; Purkey, 1969; Zilli, 1971; Krouse and Krouse, 1981). These can be summarised as follows:

1. Inadequate motivation; lack of challenge leading to poor study habits and eventually skill deficits; inability to persevere (Terman and Oden, 1947; Raph et al., 1966; O'Shea, 1970; Newman et al., 1973; Krouse and Krouse, 1981).

2. Social pressure or maladjustment, resulting in rejection by peers unless they conform to group standards (Zilli, 1971; Gallagher, 1975).

3. Inadequate school curriculum content and poor teaching; a school atmosphere low in intellectual content and challenge; the school may fail to recognise the child as being gifted

(Zilli, 1971; Otop, 1977; Whitmore, 1980).

4. Home climate and parental rejection; parental attitude towards education; unrealistic pressures to achieve (Gowan, 1955; O'Shea, 1970; Otop, 1977; Thiel and Thiel, 1977).

5. Personality characteristics, specifically lowered self-concept, negative outlook on life; strong ego defences; perfectionism and unrealistic expectations for achievement (Terman and Oden, 1947; Purkey, 1970; Gallagher, 1975; Whitmore, 1980).

Each individual case of underachievement has its own particular combination of causal factors. However, the main thrust of research to date has looked within the individual to basic personality inadequacies which are adjudged to be associated with lowered academic achievement.

Affective characteristics are now being recognised for the significant interaction they have with achievement. Bloom (1976) has asserted that the affective variables can enhance or inhibit an individual's academic potential because they predetermine whether a person will be sufficiently motivated to persevere. In this regard, recent prominence has been given to three affective characteristics which are purported to have a significant relationship to achievement. These are academic self-concept, self-expectations for future achievement and academic locus of control. Despite their importance these characteristics have been given scant attention in the area of underachievement amongst the gifted.

Although numerous studies have found that nongifted underachievers have lowered self-concepts, this same result has

not been achieved with underachieving gifted. Studies such as those by Kanoy et al. (1980), Saurenman and Michael (1980) and Winne et al. (1982) have only been able to discriminate between achieving gifted and underachieving gifted using the academic subscales of the global self-concept instruments. These results, coupled with the theoretical shortcomings of using global self-concept subscale scores, suggest that academic self-concept may be a more fruitful area for investigation. Yet surprisingly, no study has actually employed an instrument developed specifically to measure this construct in elementary aged underachieving gifted children.

The second characteristic mentioned above, namely self-expectations for future achievement, has yet to be studied with achieving and underachieving gifted children using an instrument specifically designed to measure this construct. While there is evidence to show that negative expectations are positively correlated with depressed academic achievement, and that over time self-expectations have a direct influence on motivation (Brophy and Good, 1974; Jones, 1977; Entwistle and Hayduk, 1978; Chapman and Boersma, 1980), these factors should be investigated to discover if gifted underachievers have lower expectations than their achieving counterparts.

Finally, academic locus of control, or the attribution of responsibility for outcomes to internal or external influences, has also been considered as a factor which can restrict achievement (Lefcourt, 1976). However, in relation to this factor, little research has been reported with underachieving gifted children. General underachievers have traditionally been characterised as having an external locus of control with a

tendency to attribute success and failure to external control, believing that they have no personal ability to achieve success in the classroom setting (Coleman et al., 1966; McGhee and Crandall, 1968; Buriel, 1982). Gallagher (1975) and others have claimed that underachievers who are gifted are also characterised by these same feelings of helplessness. The limited research which has investigated locus of control with gifted children who underachieve (for example, Kanoy et al., 1980) suggests that they may not be external for all outcomes but instead adopt a defence stance to maintain their ego integrity. In other words, they accept responsibility for success outcomes but refute it for failure. However, there is considerable evidence that this particular pattern of attribution is typical of the normal population (Marsh et al., 1984). Obviously, the locus of control warrants more research involving underachieving gifted children, to supplement the dearth of information presently available.

In the light of the above, the overall aim of this present study was to redress some of the inadequacies in the data concerning the affective characteristics of underachieving gifted children, and in particular to focus on academic self-concept, self-expectations for future achievement and academic locus of control using a sample of 11 year old achieving and underachieving gifted children from a nonreferred population not involved in any gifted programme. This age group was considered appropriate as it has been acknowledged that the characteristics that distinguish underachievers from achievers are present probably before adolescence and if remedial efforts are to be successful they must counteract these trends as soon as possible

(Gallagher, 1975; Pirozzo, 1982). Moreover, it does seem that most children begin their schooling with exceptionally high expectations and self-evaluations but by 11 the majority have developed affective characteristics which are a more realistic reflection of their achievement levels (Stipek, 1981). In addition, the majority of New Zealand children enter the intermediate school system at this age. The change to a larger, more competitive environment could have an appreciable effect particularly on the affective characteristics of gifted children (Richer, 1968). This study therefore was carried out over a school year, not only to identify crucial periods during which affective development takes place and hence pinpoint where effective remedial intervention may be most beneficial, but also to indicate which variables are still malleable.

On a more general level, it was hoped that an examination of the affective characteristics of underachieving gifted children could indicate if their school failure is associated with the development of negative school-related affective attitudes. In turn, this information may suggest which of these affective variables would be the most appropriate to include in remedial programmes, so that these children could be encouraged to achieve at levels commensurate with their high ability.

In line with the concerns of the present study, the next two chapters will extensively review the literature concerning the affective characteristics of underachieving gifted children and present the hypotheses for this study. Following this, the methods employed in this research will be outlined and Chapter 4 will then detail the results obtained with particular emphasis on the affective characteristics. Finally, Chapter 5 will provide a

synthesis and discussion as well as the implications for future research.

## CHAPTER 1

### LITERATURE REVIEW: THE AFFECTIVE CHARACTERISTICS OF UNDERACHIEVING INTELLECTUALLY GIFTED CHILDREN

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## CHAPTER 1

### LITERATURE REVIEW: THE AFFECTIVE CHARACTERISTICS OF UNDERACHIEVING INTELLECTUALLY GIFTED CHILDREN

#### INTRODUCTION

Although it has been assumed by most researchers that underachievement amongst gifted children does occur, research on this problem is patently lacking. Several reviews and studies address underachievement (Gallagher and Rogge, 1966; Raph et al., 1966; Pringle, 1970) but these are not recent and hence provide little current information about incidence or explore the newer directions in the social psychology area. This review aims to draw attention to this lack of research in a number of areas. Specifically, the joint problems of the definition of underachievement and the identification of underachievers will be addressed and the previous findings of the relationship between sociological, educational and psychological factors to underachievement will be discussed. Finally the review will focus on the major affective variables of this study, namely, academic self-concept, locus of control and self-expectations for future achievement, examining the research in these areas as it relates to both achieving and underachieving academically gifted children.

#### UNDERACHIEVEMENT AND GIFTED CHILDREN

The underachieving gifted are a ubiquitous problem, identifiable in all schools and at all academic levels (Raph, et al., 1966; Krouse and Krouse, 1981). Simply defined, an

underachiever is someone who is not using their intellectual potential to the full (Zilli, 1971; Gallagher, 1975). Whilst most individuals fall into this category from time to time, gifted underachievers not only fail to reach the academic levels that their outstanding abilities suggest they should, but also they lag behind or manage to equal only the attainment of students of average ability. Because of this loss of potential, underachievement amongst gifted children has been seen as a serious psychological and social problem.

However, the whole area of underachievement is marked by considerable disagreement and confusion over the legitimacy of the concept, and by definitional and identification problems. Some researchers dismiss the whole concept of discrepant performance on the basis that it is not possible to adequately discriminate performance and potential. They argue that the two concepts are very closely entwined and that, as yet, measurement techniques are not accurate (Thorndike, 1963).

#### Underachievement - A Definitional and Identification Problem

Even among those who accept the validity of a discrepancy between performance and potential, there is still argument as to the the optimal way to operationalise the concept. Unfortunately, methods which produce errors of measurement and statistical artifacts are still in common use and have led to the body of research in this area to be critically evaluated by Farquhar and Payne (1964) and Cone and Wilson (1981). The review of Farquhar and Payne outlined four general approaches that have been used to identify underachieving children. These were:-

i) Central tendency splits - under- and overachievers are identified by dichotomising a distribution of combined aptitude and achievement scores.

ii) Arbitrary partitions - discrepancies are determined by contrasting extreme groups in achievement aptitude distributions and by eliminating a middle group.

iii) Relative discrepancy splits - grade point averages and aptitude predictors are ranked independently and under- and overachievement are determined by the discrepancy between the ranks.

iv) Regression equation method - a regression equation is used to predict achievement from aptitude measures. Under- and overachievement is then determined on the basis of the discrepancy between predicted and actual achievement.

After comparing the various techniques, Farquhar and Payne concluded that there was an extreme range in the number of individuals identified as under- or overachievers depending on the particular technique used. Different methods also identified widely different numbers of males and females. These conclusions were supported by the results of Pippert and Archer (1963) who used two different methods to identify the underachievers in one ninth grade class. Only two individuals were selected by both methods with the remaining subjects being unique to their respective samples. In addition, Annesley et al. (1970) found significant differences in the numbers of over- and underachievers using four different methods of identification.

Apart from the sampling anomalies, Thorndike (1963), Behrens and Vernon (1978), Cone and Wilson (1981) as well as Farquhar and Payne (1964) have outlined some serious psychometric problems inherent in most of these approaches. The inability to control for the regression effect was perhaps Thorndike's most serious criticism and led him to question the value of all previous research in this field. Behrens and Vernon in complete agreement with Thorndike, outlined a further two major problem areas related to the regression effect. First, owing to the regression effect it was inevitable that many more underachievers were found among children of above average than below average intelligence. Secondly, the measurement of the criterion variables used for prediction and for assessment are naturally less than perfect. The significant error that these predictors introduce in the identification process has not been controlled for.

These problems led Thorndike with Farquhar and Payne to suggest that the only rational technique of identifying underachievement should be based on the discrepancy "between actual achievement scores and scores predicted on the basis of the regression of intelligence on achievement" (Thorndike, 1963), in other words, the regression equation method. Cone and Wilson (1981), although acknowledging the practical difficulties that teachers and practitioners have in employing this method, also supported its statistical superiority. This technique has been employed by O'Shea (1970), Banretí-Fuchs (1972, 1975), Jackson et al. (1975) and Kanoy et al. (1980). Even though there is general agreement that the regression equation method is the most statistically and methodologically sound, there is still some

variation in the choice of the standard error of estimate. The majority of investigations have chosen the 1.0 standard error of estimate above and below the achievement predicted by the regression equation be used.

#### The Identification of Underachieving Gifted

In spite of some definitive efforts to standardise the definition of underachievement, most techniques outlined by Farquhar and Payne are prevalent in the gifted literature.

##### i) Central Tendency Splits

This is still a common way of identifying bright and gifted underachievers. In a replication of the classic study of Shaw and McCuen (1960), Fitzpatrick (1978) identified as bright underachieving females those who achieved an IQ of 110 or greater but whose grades were at or below the class mean. Pentecoste and Nelson (1975) used exactly the same technique. Otop (1977) identified 100 underachieving gifted using the Wechsler Intelligence Scale for Children (Wechsler, 1949)(WISC) IQ of 120 or greater and overall grades not above the mean for the previous two years. The occasional high grade earned by these students was discounted for identification purposes.

##### ii) Arbitrary Partitions

Only one study in the gifted literature has used this technique. Ziv et al. (1977) investigated the self-concept and parental evaluations of children's self-concept with both gifted and average achievers and underachievers. From intelligence test results they identified a gifted group and an average group. Both samples were divided into thirds on the basis of school

grades. The children in the upper third were considered achievers and those in the lower third were classified as underachievers.

### iii) Relative Discrepancy Splits.

This is the most popular technique for identifying underachieving gifted. In this context it was first proposed by Gowan (1955) who defined underachievement as performance which "places the individual 30 percentiles or more below his ability standing in the same group" (p.247). Thiel and Thiel (1977) followed Gowan's suggestions in their small study (n=3) of family interaction patterns for underachieving boys. Whitmore (1980) also used Gowan's method of identifying underachievers for her psychodynamic remediation project with elementary underachieving gifted.

In an investigation of a basic skills remediation programme, Fearn (1982) defined underachievers as those having a performance less than 1.5 grade placements above the test publishers' norms.

Using a cutoff point of 132 on the Stanford-Binet Intelligence Scale to define giftedness, Saurenman and Michael (1980) dichotomised 16 high-achieving children and 16 low-achieving children as determined by percentile standards on the total test score of the California Test of Basic Skills. The high achieving children all received percentile rankings of 90 or above, whereas 75 or below was used as the cutoff for the low achieving group. Bush and Mattson (1973) converted their subjects scores on the Wide Range Achievement Test (WRAT) and WISC Full Score (FS) to T scores. The criteria for underachievement was a discrepancy of 14 points on the WRAT

reading and spelling scores and 12 points on the arithmetic score.

This continuing lack of a uniform definition of what constitutes underachievement hampers the comparisons of results and brings some doubt into the acceptance of the findings of many studies. Very few studies have utilised the preferred regression equation method for the identification of underachievers. This may be related to the need to weigh its statistical advantages against the practical problems involved, particularly for the individual teacher or counsellor dealing with the single student. The testing of a large random sample which is needed to generate the parameters of the relevant regression equation may be too costly, time-consuming and impractical. Nevertheless, the regression equation method, because of its ability to adjust for the well known phenomenon of regression toward a mean, for errors in measurement, as well as other crucial variables involved in quantifying a discrepancy (Cone and Wilson, 1981), make it superior in defining underachievement.

#### The Incidence of Underachievement Amongst Gifted Children

This area has yielded widely varying results, a probable reflection of both the nature and the different procedures used in identification of underachievers. Whilst it is reasonable to assume that all gifted children underachieve from time to time, there does seem to be a disproportionately high number of gifted individuals who have been classified as underachievers. Estimates range from 15 to 50 percent (Gowan, 1955; Shaw and McCuen, 1960; Pringle, 1970; Gallagher, 1975; Whitmore, 1980).

However, as previously discussed, these numbers could have been inflated by the inability of the identification techniques to control for the regression effect. A further problem in many of the previous studies is that a number have relied on the referral of cases and this could introduce a significant bias into their estimations of incidence.

There is therefore, a need to determine objectively the incidence of underachievement in the gifted population. This could be achieved by using the regression equation method for identification and by avoiding referral as an initial mode of contact, using instead the screening of a specific total school population not involved in withdrawal or remediation programmes for the gifted.

#### Underachievement Appears to be a Male Problem

One characteristic of underachievement which appears to be well documented is that it seems to affect males predominantly (Shaw and McCuen, 1960; Tieglund et al., 1966; Pringle, 1970; Zilli, 1971; Gallagher, 1975; Ziv et al., 1977; Whitmore, 1980). This male dominance is generally first noted at the beginning of high school and its severity and prevalence increases throughout the high school years. Nevertheless, there are some indications that male underachievement is a chronic problem at the elementary school level. For example, Shaw and McCuen (1960) in their retrospective study selected two comparable groups of Grade 9 to 11 male and female achievers and underachievers of above average intelligence. A significant difference in the two groups of boys was noted from the beginning of Grade 3 with close to significant differences being found from first grade. For girls

the significant differences extended back to the ninth grade, with nonsignificant differences occurring at the Grade 6. They also found that the discrepancy increased with each grade up to the tenth when it decreased not because the underachievers improved but because the achievers' scores began to decline.

In her replication of Shaw and McCuen's study, Fitzpatrick (1978) examining bright females found significant differences beginning at the sixth grade level, with the discrepancy increasing at each grade level. Both researchers suggested that for girls the severity is considerably less, and the age of onset of underachievement is later than it is for boys.

These results suggest that male and female underachievement might be the same behavioural manifestation of two differing developmental patterns. Sampling techniques may account for some of the differences as has already been discussed. Another explanation for the overproportion of males identified as gifted who are underachievers is provided by Whitmore (1980). In her study all but six of the 27 pupils referred to her project for gifted underachievers were boys. Strenuous efforts had been made to find female underachievers. All of the pupils presented with behavioural and emotional problems which she categorised into two basic patterns - either aggressive or withdrawn. As perhaps would be expected given societal expectations and sex role pressures, the girls were withdrawn and the great majority of boys were aggressive. Whitmore found that teachers were more willing to refer the aggressive boy, possibly because of his nuisance value in the classroom, whereas the quieter, subdued female was not singled out for investigation. In Britain,

Pringle (1970) also drawing conclusions from a referred population, found that there was a marked sex difference in the emotional problems exhibited by her "able misfits". Among the whole group of gifted children, anxious and withdrawn behaviour predominated. This was accounted for by over half the girls showing symptoms of anxiety and timidity, whereas there were many more instances of aggression among the males.

All of the reviewed studies suggest the chronicity of underachievement and the need to look for its predisposing factors much earlier than high school or college. Importantly, remediation efforts at the high school level have been found to be relatively ineffective (Pirozzo, 1982) perhaps because the affective patterns are too powerful to be effectively dealt with at this late stage.

#### Some Sociological Aspects Affecting Underachieving Gifted Children - Home Backgrounds and Family Relationships

In spite of the difficulties of the definition and identification of underachievement, investigators have suspected that unfavourable family factors and attitudes to school are, in part, responsible for discrepant achievement (Pirozzo, 1982).

The parents of underachieving gifted have been found to be considerably higher in socio-economic status than would be expected in a normal population. McGillivray (1964) found no differences between the actual physical or demographic characteristics of the homes of achievers and underachievers, but significant differences in the psychological environment of achieving and underachieving gifted were observed. The parents of the high achievers appeared to spend more time with their

children and showed more interest in their education.

Pringle (1970) found that despite the high economic status of the homes of their underachieving gifted, only a third were judged to provide an above average level of cultural stimulation. Otop (1977) also found unfavourable home environments for the underachieving gifted, finding that the parents only attended to their children's physical well-being.

The fathers of underachieving gifted tended to have a more negative attitude towards school and education and have had school difficulties themselves (Newman et al., 1973; Ziv et al., 1977). Perversely they were found to be overly demanding in relation to school performance particularly by their sons. In fact some studies show a disturbance in the bonding relationships of the father and son, especially with respect to a lack of affection, to identification and to excessive authoritarianism (Raph et al., 1966; Newman et al., 1973; Gallagher, 1975; Thiel and Thiel, 1977). Generally underachievers have been found to perceive their parents as being less supportive and helpful (Sontakey, 1975; Su, 1976).

There have been results to the contrary. Ziv et al. (1977) using an Israeli sample found that their underachieving gifted students highly valued their family situations and were strongly bonded to their fathers. Whitmore (1980) after assessing two years of close contact with her subjects could find no evidence of family problems.

#### Attitudes to School and Study Practices of Underachieving Gifted Children

School attitudes and study practices have been investigated

less widely than other achievement-related factors. The direction appears to be consistent, however, in that underachievers hold negative views towards school-oriented activities (Behrens and Vernon, 1978) and their efforts to study are minimal and disorganised. To what extent these characteristics represent a cause of poor school achievement or a corollary is difficult to determine.

Otop (1977) found that some of her underachievers did achieve high grades but only in subjects they liked. Even in these areas if achievement required perseverance the pupil failed to make the effort. Newman et al. (1973) and Whitmore (1980) also describe the underachieving gifted student who is the so-called "expert" in one special subject. However, Newman et al. found that even this interest was abandoned if it demanded too much effort. Their knowledge in their special interest was highly technical and their verbalisation was also at a high level. Nevertheless, their genuine grasp of concepts was not beyond their age-appropriate level. Newman et al. also reported that underachievers used their excessive verbal skills to protect their "empty intellectualising" and to hide their paucity of knowledge. The distinction between the quality of oral and written work was also described by Whitmore (1980).

This inability to persevere (Purkey, 1969; O'Shea, 1970) and their negative attitudes towards school are reflected in poor study habits. Underachieving students have been found to neglect basic school duties such as taking notes regularly, completing written work or projects which require sustained activity towards a goal and doing homework. These are all decisive factors in

depressing grades (Newman et al., 1973; Sontakey, 1975; Otop, 1977; Whitmore, 1980) and arousing teacher antagonism so that these students begin to be labelled as "able but lazy etc" and so lead to feelings of teacher alienation by the underachieving gifted (Sontakey, 1975).

Therefore, the underachieving gifted student has been seen as some type of intellectual delinquent who neglects basic school-related activities and feels alienated from the educational environment and teachers. Their home situation is adequate as far as physical circumstances are concerned but for children with such high IQs most homes would appear to be culturally and intellectually deficient. Even though their parents (particularly fathers) expect their children (sons) to achieve they have not provided the necessary psychological, intellectual and cultural environment that would assure them of success. The child's lack of achievement might be a source of friction that interferes with the development of a father-son bond, or a lack of achievement might be the child's reaction against excessive authoritarianism and parental pressure.

The possibility that underachievement might be the result of poor teaching, lack of challenge in the elementary grades, disgust with rote and boredom with endless repetitions has not been investigated fully. Perhaps poor study habits and a lack of perseverance have developed as a result of gifted children never having to put much effort into achieving success at the beginning of their school careers. Later, when the level of difficulty rises, these children have not developed sufficient study skills to cope with the increased level and hence they begin to experience an ever increasing incidence of failure (Whitmore, 1980).

### The Underachieving Gifted Child - A Summary

Underachieving gifted students are more likely to be boys than girls, will have poorer study habits and skills than their achieving counterparts, and are more likely to have family problems. They are also likely to be impulsive and to lack initiative in relation to school work.

Research has shown that these characteristics are present, particularly for males, at the preadolescent stage and that efforts for successful remediation must begin before the child reaches high school (Pringle, 1970). Even if remediation is not available or is philosophically unacceptable to a school system, the simple identification of such children might halt the lowering of teacher and perhaps pupil expectations.

### THE AFFECTIVE CHARACTERISTICS OF GIFTED CHILDREN

The problem of underachievement among gifted children can be dichotomised into two areas: those that are changeable within the school system and those that are not. The changeable characteristics would include school attitudes, study skills and school-related personality traits.

Support for programmes that aim only to remediate academic skills has not been found (Pringle, 1970; Krouse and Krouse, 1981). It has long been recognised that attention to personality and emotional factors is also necessary in remediation programmes making these more effective than those that concentrate directly but narrowly on educational issues (Pringle, 1970).

Whilst acknowledging that home situations and study habits are important, the bulk of the research on underachievement has

looked within the individual for an explanation for the problem. Workers have generally compared groups of achievers and underachievers using many different research techniques and inventories. Given this diversity of experimental design and widely differing identification criteria, conclusions are difficult to draw and there is as yet no indication as to whether these problems are causal or concomitant. However, there are a number of themes which reoccur repeatedly in the literature.

The most consistent finding is that underachievers have very poor self-concepts. Indeed most researchers feel that poor self concept is at the crux of the problem (Shaw and McCuen, 1960; Purkey, 1970; Zilli, 1971; Gallagher, 1975; Jackson et al., 1975; Sontakey, 1975; Behrens and Vernon, 1978; Whitmore, 1980). However, there has been little recent work, particularly in the relatively new area of academic self-concept (Kanoy et al., 1980; Whitmore, 1980). Secondly, in spite of their high ability, underachievers' expectations of academic success are thought not to be high. They are known to perceive the environment, especially the academic one as intimidating and threatening and make strenuous efforts to avoid failure (Raph et al., 1966; Newman et al., 1973). However, little research has been directed to the question of their expectations. Thirdly, underachieving gifted children also resist assuming responsibility for their own behaviour. Gallagher (1975) and others (Schiff et al., 1981) discuss how underachievers believe in fate or luck and ignore the notion that their own efforts could improve their situation. This would suggest that they are exhibiting an external locus of control, but little has been done in this area to confirm this assumption.

The following part of the review will examine academic self-concept, self-expectations for future achievement and locus of control for both achieving and underachieving gifted children. These three affective characteristics represent the scope of this study.

#### THE SELF-CONCEPT OF THE GIFTED CHILD

Self-concept has been a most viable area for research into underachievement (Shaw, 1961; Raph et al., 1966; Purkey, 1970; Lowenstein, 1979). Some workers (Shaw, 1961; Purkey, 1970; Bailey, 1971; Whitmore, 1980) view a depressed self-concept to be at the core of personality problems displayed by underachievers.

Self-concept has been defined in different ways and from different theoretical positions (Wylie, 1974). The majority of research in this area has defined self-concept from an interactionist perspective. Self-concept according to Shavelson et al. (1976) is a person's perception of themselves. These perceptions result from experience with, and interpretations of both their environment and their interactions with that environment.

#### The Global Self-Concept of Gifted Children

In spite of its recognised importance and its extensive use in research, global self-concept has been coming under increasing criticism (Wylie, 1974; Marsh and Shavelson, 1983). Nevertheless, the general literature still uses this construct almost exclusively and this is reflected in studies of the gifted where global self-concept has received also the most attention. However, the literature is sparse.

(i) Studies on young gifted children

From the research reported in the last 10 years, there has been only one study that examines the self-concepts of very young gifted children. Klein and Cantor (1976) in their survey of 92 kindergarten to fourth grade children, found that not all gifted children (WISC or Stanford-Binet IQ>130) had high self-concepts. They used combined scores on the Piers-Harris Self-Concept Scale (PHSCS) and the Coopersmith Self-Esteem Inventory (SEI) to identify a high esteem and a low esteem group. They found that 41.4 percent of the gifted children fell within the low esteem group compared with 37.6 percent of the nongifted children. When only the kindergarten children's scores were examined, 22 percent of the gifted children and 33 percent of the nongifted kindergarten children were in the high esteem group. As this survey was conducted in only one small school the findings could have limited generalisability. The major flaw in their work is that no statistical data are presented for either instrument or for both combined, and hence the possibility can not be ruled out that the self-concept data may have been confounded by the pooling of the subject's scores on these two very different instruments.

(ii) Studies on elementary aged children

In contrast, most studies of gifted elementary age children have found them to have significantly higher self-concepts than the norming samples, but this has depended on the instrument used. Ketcham and Snyder (1977) examined the relationship between intelligence, achievement and self-concept for a group of

academically and culturally advantaged gifted children. Of the 143 children that they investigated, 83 percent gained scores that exceeded the mean of the PHSCS normative sample. Using the same instrument, Karnes and Wherry (1981) replicated these findings with a group of 153 Grade 4 to 7 gifted children (Otis IQ>120). Tidwell (1980) administered the PHSCS and the SEI to approximately 1600 tenth grade students who had all been placed in the Californian Mentally Gifted Minor Programme. Her sample included students from across all socio-economic levels and from four ethnic groups. Although there were significant differences among the four racial groups on the Piers-Harris instrument, all of the means and standard deviations were higher than those of the normative sample. On the SEI, three of the four groups obtained mean scores within the typical range and one mean score was slightly lower. Another study (Dean, 1977) which also used the SEI with a group of preadolescent gifted children found that the subjects' scores did not exceed the mean of the norming group.

More recently, Maddux et al. (1982) investigated the self-concept of students from Grades 5 and 6 who were involved in completely segregated and partial withdrawal programmes for the gifted. On the PHSCS only the sixth graders had higher self-concepts than the means given within the manual. This inconsistency with the previous studies that also used the PHSCS can be explained by the fact that Maddux et al. (1982) used different norming tables. Ketcham and Snyder (1977), Karnes and Wherry (1981) and Tidwell (1980) all used the total norming sample means for comparison purposes whereas Maddux et al. used the Grade 5 and Grade 6 norms separately. If they had used the

same norms as the other studies, the differences would have approached significance significant for all their subjects. Coleman and Fults (1982) using a group of 10 year old gifted children ( $IQ > 126$ ) found that their subjects' scores far exceeded the norming means on the PHSCS.

In summary, only one of the studies reviewed did not support the contention that gifted children enjoy at least average if not above average self-concepts. The PHSCS instrument was used in the majority of instances and except for one study where different norms were used it has produced consistent results across different age groups. For the SEI, there have been consistently no significant differences to the published norms and hence this instrument has failed to corroborate the findings of the PHSCS. On the latter scale gifted children were found to have significantly higher self-concepts than the norming sample but on the SEI the gifted populations had similar means to the published norms.

#### Studies of Global Self-Concept Using Gifted and Control Groups

Although studies using the PHSCS appear to suggest higher self-concept in gifted children a major inadequacy of this research has been that none of the aforementioned reports have used control groups of average children. In research where this has been done the results have been less clearly uniform.

Bracken (1980) using their own instrument, found no difference in the self-concept of 78 gifted children ( $IQ > 120$ ) when compared with 363 nongifted children. Nor did Winne *et al.* (1982) find significant differences between the gifted and normal

groups of Grade 4 to 7 on either the overall or subscale scores of the SEI and revised Sears Self-Concept Scale. Significant differences were found favouring the gifted/normal group over the learning disabled group in the self-concept scales of both instruments which Winne claimed were the academic areas of these instruments. Gifted children had diminished self-concept in areas of physical abilities, social virtues and social relations vis-a-vis the learning disabled group.

In Israel, Milgram and Milgram (1976) used the Israeli version of the Tennessee Self-Concept Scale (TSCS) to compare gifted and nongifted from Grades 4 to 8. The younger children (Grades 4 to 6) reported greater feelings of personal adequacy, were less guarded and defensive and gave fewer indications of psychological disturbance. At the younger age they demonstrated a higher degree of personal worth and self-confidence. In comparison, the nongifted older age group (Grades 7 to 8) described themselves in more positive terms and reported a greater sense of personal worth and self-confidence. As the Milgrams note, all of the means and standard deviations are within the normal range and there is no suggestion of any real pathology in either group. They attributed the change in self-concept scores to a shift in the attitudes of gifted and nongifted children toward each other as they enter adolescence.

These studies suggest that although elementary age gifted children have a relatively average global self-concept, at adolescence differing patterns may emerge. At this time peers replace teachers and parents as the most important reference point in a child's life. Gifted children, because of the very exceptionality which has earned them praise and recognition in

the past may now find it hard to find a place in a peer group and this difficulty may then be reflected in their lower self-concept scores. Ross and Parker (1980) support this contention. They split the Sears instrument into academic and social subscales and found that their gifted sample scores were much higher in the academic rather than the social area. They suggest that gifted students tend to focus their attention upon accelerating their already advanced academic skills at the expense of their interpersonal skill development and consequently may feel less confident in their ability to interact fruitfully with others.

Conversely, Kelly and Colangelo (1984) found that gifted students from Grade 7 to 9 scored significantly higher than general and special needs groups on the overall scale of the TSCS. Therefore, it is equally plausible that gifted individuals under certain conditions can maintain their higher self-concept throughout adolescence.

To summarise, there has been considerable variation in the results for global self-concept in gifted children. However, the overall impression is that gifted children have at least average, if not superior, self-concept. How much of this superiority could be accounted for by gifted children scoring very highly in the "academic" areas of these global measures has not been investigated. The results of Ross and Parker (1980) and Winne et al. (1982) suggest that the extremely high scores of gifted children in these academic areas mask their deficient or just average self-concept scores in other areas. A measure of academic self-concept would seem more appropriate and yield more consistent results.

### Academic Achievement and Its Relationship to the Self-Concept

Self concept has been considered an important intervening variable which can either enhance or restrict a person's utilisation of their abilities (Bailey, 1971; Yauman, 1980). In school where academic achievement is emphatically emphasised, children's self-concept and views of their academic standing must be strongly influenced by various forms of evaluations, informal feedback and the structuring of class activities (Winne et al., 1982).

Numerous studies have shown a relationship between self-concept and academic achievement (Torshen, 1969; Purkey, 1970; Bailey, 1971; Milgram and Milgram, 1976; Colangelo and Pflieger, 1978) but some have not done so (Williams, 1973; Cobb et al., 1975; Bettschen et al., 1977). A stronger correlation has been found between academic self-concept and achievement ( $r=0.4$ ) than between general self-concept and achievement ( $r=0.2$ ) (for review see Hansford and Hattie, 1982).

Given this implied relationship between self-concept and achievement, it is not surprising that underachievers and failure-prone children consistently to have lower general self-concepts than achievers (Shaw et al., 1960; Raph et al., 1966; Purkey, 1970; Bloom, 1976; Chapman and Boersma, 1979a; Lowenstein, 1979; Boersma and Chapman, 1981; Hiebert et al., 1982).

### Academic Achievement and Its Relationship to the Self-Concept of Achieving Gifted Children

For achieving gifted children the situation is inconclusive. Dean (1977) found that his higher self-concept group showed

greater mastery of complex learning tasks and exhibited more flexible problem solving strategies. However, in Ketcham and Snyder's (1977) study there was no correlation between reading achievement and self-concept. Savicky (1980) found a significant relationship between self-concept and achievement for gifted girls but not for boys.

#### The Self-Concept of Underachieving Gifted Children.

Unlike the general literature on underachievement, gifted underachievers have not had uniformly lower general self-concepts and results have covered a complete range. For example, Yates (1975) found that underachieving gifted children obtained lower global self-concept scores on the PHSCS than gifted achievers regardless of sex or grade. Lantz's (1981) study corroborated these findings yet in Ketcham and Snyder's report, children attending a school for the gifted and identified by teachers as underachieving had the same self-concepts as achieving gifted children.

By comparison, Ziv et al. (1977) in a widely cited study found that the self-concepts of underachieving gifted children were higher than those of achieving gifted children. From this totally unexpected result they concluded that the relationship between self-concept and underachievement is different for gifted children. No other study has replicated these results, probably because Ziv et al. used the Semantic Differential Technique. Although the researchers provide acceptable psychometric data for this instrument, Wylie (1974) has described the Semantic Differential as an "inappropriate" measure for assessing self-

concept.

Kanoy et al. (1980) investigated the self-concept of underachieving bright elementary students ( $IQ > 116$ ). There were no differences between these two groups yet when subscale scores of the PHSCS were examined there were significant differences favouring the achievers on the intellectual and school status subscale. In a study of low achieving and high achieving gifted children from Grades 4 to 6, Saurenman and Michael (1980) found that the high achieving students could only be differentiated from the low achieving students in the academic subscale of the instrument.

#### The Inadequacy of Global Self-Concept

The variations and inconsistencies found both in the self-concept of gifted children and in its relationship to academic achievement could stem from several sources. These could include inadequate group delineation and the use of a variety of instruments. More importantly however, these inconsistencies could be inherent in the use of an all-encompassing global self-concept score. When subscale scores were examined in several studies (Kanoy et al., 1980; Ross and Parker, 1980; Saurenman and Michael, 1980; Winne et al., 1982) the academic subscale was the only component of these inventories in which gifted children were superior. In addition, the academic subscales were the only areas where the self-concept of underachieving gifted children were shown to be consistently depressed. The only study that used a measure of academic self-concept (Kelly and Colangelo, 1984) found a consistent positive relationship. Therefore other variables (physical, social and peer relations) would confound

any measure leading to spurious evaluations of gifted children's self-concept. Logically a multifaceted dissection of self-concept would allow for a more accurate determination of this affective characteristic for both achieving and underachieving gifted children.

#### The Hierarchical Model for Self-Concept

In addition to the confounding effect outlined above, there are serious theoretical objections to the assumptions of global self-concept and hence to the construct validity of its research instruments. In fact, Wylie (1974) states that "personality theories which emphasise concepts concerning the self have been stretched to cover so many inferred cognitive or motivational processes that the utility for analytic and predictive purposes has been greatly diminished". Similarly, Bandura (1978) asserts that a global self-concept "cannot possibly explain the wide variations in self-evaluations given at different times and under differing circumstances". Marsh et al., (1984) further criticises the practice of evaluating self-concept as a single score across a broad agglomeration of items. He feels that most instruments provide little rationale for the items used and that the construct itself is generally vaguely defined. In his research only modest overlap has been found between two instruments purported to be measuring exactly the same thing.

The response to these criticisms has been a move away from global self-concept to more situation specific measures. The theoretical base for this shift has largely been provided by Shavelson et al. (1976). They have proposed a multifaceted,

hierarchical model of the self-concept which contains two major areas: academic self-concept and nonacademic self-concept. At each level in the hierarchy the self-concept becomes more situation specific, so that academic self-concept is divided into subject matter areas and then into specific subjects. Nonacademic self-concept is separated into physical and social self-concept then into more specific facets.

The theoretical argument outlined with the formulation of the hierarchical model is that the closer the self-concept is linked to the situation, the closer the relationship between self-concept and behaviour in that situation. For example, academic self-concept is more closely related to academic achievement than to success in physical and social areas.

Marsh and Shavelson (1983) claims that the model of the multifaceted self-concept has been generally, but not universally, accepted (Fernandes et al., 1978; Wylie, 1979; Shavelson and Bolus, 1982; Marsh et al., 1983). Other researchers, whilst accepting the multifaceted nature of self-concept, feel that the facets are virtually independent and cannot be arranged into a hierarchy (Marsh and Shavelson, 1983).

The excellent pioneering longitudinal studies of Brookover et al., (1965, 1967) also give support to these theoretical notions. There is as yet very little evidence for the hierarchical self-concept functions as outlined by Shavelson et al. (1976) but there is increasing support for the multidimensionality of self-concept particularly in the area of academic self-concept (Shavelson and Bolus, 1981). Academic achievement has shown much stronger correlations with this more specific area of the self-concept (Kifer, 1975; Brookover and

Passalacqua, 1981; Marsh et al., 1983). In the special education field academic self-concept has consistently discriminated learning disabled and other failure-prone students from average achievers (Chapman and Boersma, 1979a; Hiebert et al., 1982). In light of the support for the multifaceted nature of self-concept and the more consistent findings particularly in the relationship between academic self-concept and school achievement, the continued use of global self-concept is fraught with problems until theoretical and instrumentation difficulties have been rectified. Because of this only instruments that measure academic self-concept directly are justified.

With respect to the self-concept of underachieving gifted, some studies have found the academic self-concept subscale scores of the global self-concept are adversely affected and feelings of inadequacy have not generalised to other areas (Kanoy et al., 1980; Saurenman and Michael, 1980). These findings can only be thought of as indications and not definitive as no study has used an instrument which has been specifically designed to measure academic self-concept with underachieving gifted children. There is therefore, a need for a study using an academic self-concept instrument to examine this construct in elementary gifted children.

#### THE SELF-EXPECTATIONS FOR FUTURE ACHIEVEMENT OF GIFTED CHILDREN

The second affective variable to be examined in this study is that of self-expectations as they relate to future academic performances. Self-expectations depend upon the degree to which individuals predict their own abilities and performance levels.

These expectations have been shown by many researchers to be related to school achievement and have been demonstrated to discriminate failure-prone from achieving children.

Self-expectations are logically related closely to perceptions of academic ability and causal attributions (Chapman and Boersma, 1980). After the performance of academic tasks students make causal attributions to explain their performance. These beliefs influence behaviour, expectancy of success and confidence that the goals are attainable through the use of their own abilities and effort. Therefore, expectations depend upon the synthesis of previous experiences and the individual's personal perceptions (Rotter, 1954; Jones, 1977; Chapman and Boersma, 1980). Successful past experience leads to expectations of success whilst failure decreases these expectations.

#### The Self-Expectations of Elementary Children

Most of the research has examined the role of teacher expectations on school learning (Beez, 1970; Brophy and Good, 1970; Entwistle et al., 1972; Seaver, 1973; Brophy and Good, 1974). Those studies that have examined students' self-expectations have tended to concentrate on late adolescent/early adulthood populations. There are a few studies that have focused on expectations on elementary aged children but there appears to be no studies of the academic self-expectations of the gifted population.

Despite the dearth of research dealing with self-expectations amongst elementary aged children some conclusions can be inferred from the literature. Self-expectations among very young school age children (five to eight year old) tend to

be high and are unrelated to teacher and parental perceptions (Piaget, 1925; Parsons and Ruble, 1977; Entwistle and Hayduk, 1978; Smead and Chase, 1981, Stipek, 1981). However, from the age of eight or nine expectations become a much more realistic reflection of actual achievement (Nicholls, 1979; Stipek, 1981). Several explanations have been offered for this phenomenon. First, children of this age do not possess the requisite information processing skills to incorporate the feedback in any logical way (Nicholls, 1979; Parsons and Ruble, 1977). Secondly, a young child is still highly involved in feelings of its own omnipotence and these overwhelm any negative feedback they receive from the classroom (Stipek, 1981). Finally, until the child reaches school it does not have a stable "social comparison" group on which to evaluate his own performance (Entwistle and Hayduk, 1978).

A second feature of expectations is that most studies report a decrease with age, becoming relatively stable by adolescence (Parsons and Ruble, 1977). This downward shift might be a reflection of the evaluation systems used in most schools which offer very limited opportunities for success to any but the top students (Covington and Beery, 1976).

Other researchers working in different cultures such as Poland (Tsyzkowa, 1981) and Israel (Darom and Bar-Tal, 1981) found that adolescent pupil expectations were quite optimistically high and in the Israeli study were higher than teachers' and parents' expectations.

## The Relationship Between Academic Self-Expectations and Academic Achievement

The importance of academic self-expectations in school learning has been confirmed by generally significant relationships being found between them and school achievement (Mulligan, 1973; Rappaport and Rappaport, 1975; Chapman and Boersma, 1980; Darom and Bar-Tal, 1981; Smead and Chase, 1981; Tsyzkowa, 1981).

High achieving children have been shown to have very high expectations for academic success and have very high aspirations for future career success (Tsyzkowa, 1981; Smead and Chase, 1981). Stipek and Hoffman (1980) found that high achieving boys in Grades 1 and 3 had higher expectations of success on a novel academic-like task than low achieving boys.

As a corollary to these findings, self-expectations for success have consistently shown that failure-prone and underachieving children have low expectations (Brophy and Good, 1974; Kifer, 1975). Underachievers' predictions of being able to accomplish novel tasks were lower than that of achievers (Adelman, 1969), and learning disabled children, who have a history of school failure have consistently been shown to have lower expectations for success than normal achieving children (Chapman and Boersma, 1980; Swanson, 1981; Hiebert *et al.*, 1982).

Not only are self-expectations different for high and low achieving children, expectations seem to become more consistent at different times for those two groups. Stipek (1981) in a study of kindergarten to Grade 3 children found that those of high ability at the Grade 3 level were already capable of incorporating performance feedback into self perception. Kugle

et al. (1983) demonstrated again that Grade 2 high achievers had stable self perceptions whereas poor achievers were much less accurate in evaluating their own performance and tended to give spuriously high expectations in an attempt at self-enhancement.

#### The Relationship Between Academic Self-Expectations and Other Affective Variables

As a further confirmation of the validity of this concept, significant relationships have been found between expectations and other affective variables which have also been linked to academic achievement. Individuals who have an internal locus of control have been found by numerous researchers to have much higher expectations than externals (Douglas and Powers, 1982; Barling and Snipelisky, 1983; Feldman et al., 1983; Khan and Alvi, 1983). Internals are more accurate in predicting performance (Maqsud, 1983). Expectations are particularly closely related to self-concept (Chapman and Boersma, 1980; Tyszkowa, 1981; Hiebert et al., 1982; Khan and Alvi, 1983).

#### Self-Expectations of Academic Performance and Gifted Children

There are as yet no studies of self-expectations which have specifically focused on gifted children. Despite the lack of confirmatory research, the implications of expectations for achieving gifted students seems clear. As these individuals experience constant success and generate consistent feedback, it is reasonable to expect that their expectations will be extremely, yet realistically high. Expectations gradually dine throughout the elementary school but there are some indications that they do become consolidated at an early age for achieving

gifted children as indicated by the studies of Stipek (1981) and Kugle et al. (1983). The situation for underachieving gifted children is not as obvious. As attributions increasingly become a reflection of actual achievement, their expectations would be lower than those of achieving gifted children and be closer to those of average achievers. However, some underachievers give spuriously high self-enhancing evaluations of their performance and their perceptions remain fluid for longer (Kugle et al., 1983). It must be conceded that more research needs to be conducted into the academic self-expectations of gifted children before any real predictions can be made.

#### THE ACADEMIC LOCUS OF CONTROL OF THE GIFTED CHILD

The third main variable to be considered in this study is academic locus of control. The locus of control construct as proposed by Rotter (1966) is defined as a generalised expectancy for internal or external control of reinforcements. Internal control refers to an individual's belief that outcomes depend on one's own behaviour. External control is the belief that outcomes depend upon factors beyond the individual's control (Stipek and Weisz, 1981).

Significant relationships between locus of control and academic achievement have been found in numerous studies (for review see Bar-Tal and Bar-Zohar, 1977). The predictive power of this variable is strengthened by the evidence that internal orientation is systematically related to behaviours which increase the probability of successful academic performance. Internal locus of control orientation is associated with children

who are more instrumental (Mischel et al., 1974), goal oriented (Dollinger and Taub, 1977), achievement oriented (Gordon, 1977) and more task oriented (Bar-Tal and Bar-Zohar, 1977). Finally, they have higher educational expectations and aspirations (Gurin et al., 1969; Lao, 1970; Bar-Tal et al., 1980).

#### Some Theoretical and Methodological Issues

Locus of control has assumed considerable importance in educational/motivational research. Recent reviews and bibliographies cite hundreds of studies on the implications of the concept for cognitive, motivational and personal-social performance (Joe, 1971; Phares, 1976; Cooper et al., 1981). In spite of the importance it has assumed, major theoretical and methodical criticisms have been raised.

First, although the social learning theory and locus of control research of Rotter (1966) have influenced all subsequent work in the area of self-attributions, the single dimensions of internality/externality have been seen as inadequate to explain the self-attribution process. Weiner (1972, 1974) and other attribution theorists have argued that at least a further two dimensions are necessary: stability (stable-unstable) and controllability.

Secondly, apart from the suspected theoretical inadequacy of the concept there are important methodological issues that must also be taken into account. Rotter (1966) originally postulated that whilst locus of control may vary a little given different situations, the construct should generalise across situations for each individual. However, there is increasing evidence that locus of control does not operate uniformly across

different situations, but is multifaceted, much in the same way as self-concept (Crandall et al., 1965). Joe (1971) concluded his extensive review of the literature by recommending the use of specific rather than generalised measures, and that the locus of control instrument be unidimensional. If academic achievement is the focus in a study then all items on the scale should deal with school achievement.

Thirdly, there has been increasing recognition that self-attributions do not generalise over success and failure outcomes (Gregory, 1978; Marsh et al., 1981). Crandall et al. (1965) point out that success and failure outcomes were nearly independent, supported by a lack of relation between the failure and success outcomes of their instrument, the Intellectual Achievement Responsibility Scale (IAR). In fact, there has been increasing support for the abandonment of the use of total scores of this and other measures (Crandall et al., 1965; Gootnick, 1974; Viney, 1974; Parsons and Schneider, 1974; Gregory, 1978).

Other researchers are now examining the ways in which attributions for success differ from those for failure. Substantial empirical support has been gained for the notion that attributions are asymmetrical: the subjects are more likely to attribute their own success to internal causes and attribute failure to external causes (Simon and Feather, 1973; Nicholls, 1975; Weary-Bradley, 1978; Zuckerman, 1979).

#### The Instrumentation for Locus of Control

Despite the rapid advances and large amount of research being conducted in this area, instrumentation is, as yet, relatively undeveloped. Stipek and Weisz (1981) reviewed 11

instruments which were designed to measure locus of control in children. The questionnaires vary greatly in both content and form (Bailer, 1961; Crandall et al., 1965). Some deal with locus of control across a wide range of situations (for example, Children's Locus of Control Scale, Bailer, 1961; Rotter, 1966; Nowicki and Strickland, 1973), a few with school situations (for example, IAR, Crandall et al., 1965; Academic Achievement Accountability, Clifford and Cleary, 1972 and Stipek, 1980). Only a few of the measures provide separate subscales for perceptions of control of positive and negative outcomes (for example, IAR). Stipek and Weisz (1981) advised future instrument developers to concentrate on these areas.

The majority of the scales have been criticised for a lack of internal consistency and test-retest reliability (Milgram and Milgram, 1975; Stipek and Weisz, 1981).

The most popular instrument is the IAR (Crandall et al., 1965) and is considered by Marsh et al. (1984) to be the only instrument that has been standardised in the field. It is unidimensional, in that all its items refer to school achievement and it allows for discrimination between success and failure outcomes. Although its psychometric properties are only just adequate (Marsh et al., 1984), it has consistently yielded significant relationships with academic criterion variables (Crandall et al., 1962; McGhee and Crandall, 1968; Milgram and Milgram, 1975; Buriel, 1982).

Overall, the extensive research using this instrument has shown that achievers have an internal, and low achievers have an external orientation (McGhee and Crandall, 1968; Buck and Austrin, 1971; Kifer, 1975; Phares, 1976; Buriel, 1982; for

review see Stipek and Weisz, 1981). It follows logically that internality is associated with academic success as internal children would be more aware of the link between their effort and outcomes. They are more likely to persevere at those things that will result in academic rewards.

#### The Locus of Control of Gifted Children

An extensive search of the literature has revealed only nine studies which have dealt with the locus of control construct for gifted children. This is surprising, as such research would provide a validity check for the locus of control construct since the academic success associated with this group suggests a difference in control orientation.

Most studies of gifted children have found them to have an internal locus of control as would be predicted from social learning theory (Rotter, 1966) and research with other groups (Chapman and Boersma, 1979a; Hiebert et al., 1982). However, it is hard to generalise about the results given that no two studies have used the same instruments, age groups or research methodologies.

Fincham and Barling (1978) using an instrument which gives a measure of general locus of control, the Nowicki-Strickland (Nowicki and Strickland, 1973), found that when they compared gifted to learning disabled and normal 10 to 11 year old boys, the gifted group was significantly more internal than either of the other two groups.

In an innovative study using a case-study research paradigm, Zaffrann (1983) examined the locus of control of four adolescent

gifted students over eight categories (sense of self initiative, preparation, decision-making, goals, leadership, conformity and involvement in social concerns). Given the different methodology, it is difficult to directly compare his results with previous research, nevertheless, some relevant conclusions can be drawn from his findings. Zaffrann, himself dismisses the locus of control construct as imprecise, unstable and meaningless on the grounds that none of the cases could be described as exclusively internal or external. Even though some of his criticisms are valid, a second look at his findings suggest that overall his subjects were far more internal than external and this was particularly evident in the academic and career situations (initiative and planning, goals and decision-making).

Milgram and Milgram (1975, 1976) developed a multidimensional locus of control measure based on the IAR which they used in two studies with gifted children. The measure included three dimensions of content, time and orientation toward success-failure outcomes. Content was measured in three important settings in the child's life: school, home and neighbourhood. The time dimension referred to the difference between assuming responsibility for events of the present, past and future.

In the first study they compared 298 normal children with 166 gifted children (WISC FS >125) from Grades 4 to 8 on the locus of control scale, two intelligence tests and the Tennessee Self-Concept Scale. The most relevant findings were that the gifted group was more internal than the nongifted group on the Past Scale, but the difference was entirely accounted for by the positive rather than the negative subscale. The same trend of

superiority of gifted over the nongifted on the positive rather than the negative subscale was evident in the Future Scale as well. They also found that for both groups locus of control was related to scholastic achievement and self-concept.

The 1976 study by these authors examined 182 gifted children attending enrichment classes for the gifted and talented. Again gifted children were significantly more internal than nongifted on the positive subscales of both Past and Future Scales. Additionally, in this study they were also more internal on the overall Past Scale.

Therefore, gifted children assumed greater responsibility for past events and expressed greater feelings of competence to affect future events but only with reference to desirable outcomes. For undesirable outcomes there was no difference between the groups again reflecting the "bias" shown in the general population.

Why gifted children should have greater feelings of personal responsibility, for success experiences only, is open to question. Perhaps in reality, gifted children do only fail when the external environment has been manipulated so that it is extremely hostile to success. An alternative explanation is that for the gifted, as in the general population, success or failure are completely different motivational expectancies.

Not all research has shown that gifted children show this asymmetrical pattern. Using Lefcourt's Multidimensional Multi-attribitional Scale (Lefcourt *et al.*, 1979), Douglas and Powers (1982) measured the achievement locus of control of gifted adolescents enrolled in a pre-college enrichment programme. They

found that their gifted group was strongly internal but success was attributed to effort rather than to ability. In a later study Powers and Douglas (1983) using the same subjects and data, reported that the same group attributed failure outcomes also to internal but unstable forces, i.e. effort, as would be predicted from attribution theory (Heider, 1958).

#### Locus of Control and Underachieving Gifted Children

Only two studies have examined locus of control with underachieving bright students. Fitzpatrick (1978) examined the locus of control of a group (n=14) of underachieving bright (IQ>110) females using a scale of "Other Directions", a scale designed to measure the degree to which a person is influenced by others. The only significant result for the construct was found between her measure of "Other Directions" and mathematics test scores. Those girls with the highest test scores had the more internal orientation.

Kanoy et al. (1980) compared nine bright (IQ>115) underachievers with 20 bright achievers using the IAR to measure locus of control. In this study the achievers were more internal than the underachievers on the Total and IAR negative scale; on the positive scale there were no differences between the groups. Kanoy et al. (1980) concluded that bright underachievers are willing to accept responsibility for positive outcomes but in comparison to achievers they were unwilling to accept such responsibility for the negative outcomes.

It is difficult to generate a clear set of predictions about the relationship between locus of control, giftedness and underachievement on the basis of the research reviewed. It seems

reasonable, given the previously reported relationship between academic achievement and locus of control, that academically gifted children would exhibit an internal orientation, particularly in the academic setting. This prediction has been borne out in all of the studies, but only with perceived control over success outcomes.

For failure outcomes the situation seems much more complex. From both theory and research it would be predicted that achieving gifted children would also have a more internal orientation for failure experiences in the academic setting. Given their high ability and generally superior feelings of competence in this setting they would not be psychologically threatened by accepting responsibility for failure experiences that might have resulted from lack of motivation and effort. Some studies have supported this finding (Kanoy et al., 1980; Douglas and Powers, 1982; Powers and Douglas, 1983) others have not (Milgram and Milgram, 1975, 1976). The studies which have found children to be internal for both success and failure have used older adolescents as opposed to the other research (Milgram and Milgram, 1975, 1976; Kanoy et al., 1980) which used younger subjects. This seems to imply that gifted children become increasingly more internal as they mature and as more success is experienced. This trend has also been observed with other samples (Kifer, 1975).

Underachieving children have generally been found to have a more external orientation in the academic situation (Coleman et al., 1966; Buck and Austrin, 1971; Bar-Tal, 1978; Stipek and Weisz, 1981) and that as failure accumulates over time, the trend

is to greater externality (Kifer, 1975). However, the only study which used a scale capable of discriminating between positive and negative outcomes (Kanoy et al., 1980) found that underachieving gifted children adopted what has been called a "defence" locus of control or hedonistic bias (Heider, 1958). That is, they accept responsibility for successful academic experiences but reject it for unsuccessful ones. This ego defensive stance is typically postulated as an attempt to enhance or protect self-esteem. However, a substantial body of literature has established that this asymmetry in the attribution process is typical of the general population (Marsh et al., 1984).

In summary, achieving gifted children have an internal orientation in achievement situations. Uniform results have been found for a relationship between internality and success outcomes. There are two quite distinct results extant examining the relationship between internality and failure outcomes. For the underachieving gifted, results are extremely sparse. Kanoy et al. (1980) suggest that bright underachievers do not follow the trend of underachievers from the normal population to greater externality, but perhaps as their achievement is usually average albeit below their potential, they reflect the attributions of the normal population. They accept responsibility for success but refute it for failure. Obviously more work needs to be done before any definitive statement can be made about the function of this construct for these differing groups.

#### CONCLUSION

Underachievement in gifted children could be a potentially tragic problem. For individuals it may be a degenerative

process, beginning early in life and having cumulative effects with achievement worsening each year (Shaw and McCuen, 1960). In spite of its doggedness for the individual, there is a burgeoning recognition by educationalists that it may be far from incurable if combatted in the early stages (Pringle, 1970; Whitmore, 1980; Pirozzo, 1982). Hence the early identification and remediation of the underachiever who is gifted is vital.

As this review has highlighted, theoretical and definitional issues particularly those relating to identification of underachievers have yet to be surmounted. The most valid approach indicated by the underachievement literature was the regression equation method where a standard error of estimate of 1.0 above or below the achievement predicted by the regression equation was used to differentiate achievers from underachievers (Thorndike, 1963; Behrens and Vernon, 1978; Kanoy et al., 1980). However, very few studies in the underachieving gifted literature have employed this approach, preferring to rely on statistically inadequate but easily employed methods of identification or by drawing their samples from referrals to child-guidance clinics. Obviously, up-to-date research is needed which uses more rigorous identification methods and avoids referrals as an initial mode of contact.

The majority of research has examined adolescents, but as remediation efforts at the high school level have been found to be relatively ineffective, examining the problem before high school would seem to be necessary. In the New Zealand educational environment the entry into intermediate school would seem an appropriate time for investigation.

There have been some indications in the literature that a relatively small change in the educational environment and social reference group can lead to a shift in affective characteristics for gifted children (Coleman and Fults, 1982). As intermediate schools are usually larger than the primary schools from which the pupils are drawn, the exposure to more children of the same ability level could induce gifted children to reevaluate their abilities downward, abilities which up to now have been considered exceptional. This could have some depressive effect on the self-concept. Offset against this notion is the largely heterogeneous grouping that is advocated by most New Zealand intermediate schools. If students use their heterogeneous class as a major reference point, their abilities would still be considered atypical and hence no decrease in affective characteristics would occur other than the one that is observed for all students throughout the elementary years. Therefore it is the intent of this study to investigate underachievement amongst gifted children in a group of nonreferred 11 year old children.

Each case of underachievement is an amalgam of many predisposing sociological, educational and psychological factors. Sociologically, most underachieving gifted came from higher socio-economic backgrounds that were adequate in physical aspects but were lacking in intellectual stimulation and close parental ties. It appeared that not infrequently there was a problem in the father-son relationship. Educationally, no matter how able these children were, they appeared to lack the study skills and application needed to ensure success at the higher levels of learning. They were only motivated to achieve in specialist

areas that interested them or in which they feel they are experts. Other educational variables, such as poor teaching, lack of challenge in the early grades and lack of recognition of the child's giftedness have not received very close attention.

In most cases, previous research has looked within the individual to basic personality deficiencies to explain discrepant performance. However, there has been little up-to-date research using variables which have been shown to have a significant interaction with achievement, on rigorously selected subjects.

Nevertheless, educators at all levels are beginning to look more directly at the self-perceptions and affective characteristics of all students because of the limits set by these variables on motivation and thereby affecting achievement-oriented behaviours. Remedial programmes are often hampered by negative affective states (Pringle, 1970).

Nongifted underachievers are characterised by the negative school-related behaviours typically associated with histories of school failures. Of all the personality variables available for study, academic self-concept, self-expectations for future success and academic locus of control were identified as being three key factors of particular interest. All three have assumed considerable importance in recent affective literature particularly as they have been shown to have significant interactions with achievement (Milgram and Milgram, 1976).

As the review highlighted, a poor self-concept has often been seen as the crux of the problem for underachievers (Purkey, 1970; Whitmore, 1980), and these lower self-perceptions tend to

be related to a persistent lack of school success. In addition some studies found that academic self-concept declines throughout the elementary years. Other studies have shown that negative self-perceptions set limits on what students are capable of achieving because of their effect in reducing motivation and task persistence (Brookover et al., 1965, 1967). Academic self-concept in setting limits on ability, helps students to define their expectations for future academic achievement. These self-expectations in turn, influence subsequent achievement (Chapman and Boersma, 1980). Finally, although empirical studies are lacking on academic self-expectations on gifted underachievers, it seems reasonable to assume that these underachieving children will hold lower expectations than achievers because of the accumulation of failure experiences.

Expectancies regarding the locus of control are logically related to the two previous variables. Here the literature suggests that failure inhibits the development of an internal locus of control (Chapman and Boersma, 1980). Poor achievers have been shown to view success as being beyond their own control. However, "bright" underachievers tend to exhibit a different pattern, that is they are internal for success outcomes but are external for failure outcomes, suggesting the development of a "defence" locus of control (Kanoy et al., 1980).

Considering these variables together, a pattern emerges of the affective development in underachieving and failure-prone students. Failure is associated with the development of lower self-perceptions of ability and lower expectations for future success and the belief that success in school is a function of external sources beyond their control. These negative school-

related feelings interact with reduced achievement to contribute to the suppression of achievement (Chapman and Boersma, 1980).

Although underachieving gifted children exhibit average and not depressed academic achievement, the consequence of these findings are important for them as well. If these children develop negative attitudes towards school, the potential benefits of remediation are likely to be lessened. Finally, should underachieving gifted children continue to experience failure in secondary school, then more serious mental health problems could arise.

Therefore, there appears to be a need for research with underachieving gifted children using the regression equation method to identify those students who are underachieving before they reach high school. Such a study should provide unique information on the role of these affective variables. As the review has indicated, previous research on these variables is either lacking or at best, inadequate. Hence, it was the intention of this study to examine academic self-concept, self-expectations for future achievement and academic locus of control of a group of nonreferred achieving and underachieving intellectually gifted ( $IQ > 125$ ) 11 year old children. As underachieving gifted students exhibit average achievement, an average achieving group was chosen for comparison and control purposes.

CHAPTER 2

HYPOTHESES

ACADEMIC SELF-CONCEPT

SELF-EXPECTATIONS FOR FUTURE ACHIEVEMENT

ACADEMIC LOCUS OF CONTROL

## CHAPTER 2

### HYPOTHESES

The main purpose of this study was to investigate three salient affective characteristics of underachieving gifted children, namely, academic self-concept, self-expectations for future achievement and academic locus of control. Based primarily on the review of the literature the following hypotheses were proposed.

#### ACADEMIC SELF-CONCEPT

The use of the global self-concept was rejected because of theoretical difficulties and because there were indications in the literature that academic-self concept would discriminate more strongly for academically gifted children especially those who are underachieving (Kanoy *et al.*, 1980; Saurenman and Michael, 1980; Winne *et al.*, 1982) because of the reflection of academic achievement more in academic rather than global self-concept. In spite of these indications, few studies of the gifted have used an instrument specifically designed to measure this variable.

Underachievers and failure-prone children have generally been characterised by lower academic self-concepts than those of achievers of the same ability levels (Chapman and Boersma, 1980). However, as underachievers who are gifted may have achievement levels that are average for the general school population it was hypothesised:

1. that achieving gifted children would have higher self-concepts than underachieving gifted children;
2. that achieving gifted children would have higher self-concepts than average achieving children;
3. and that the underachieving gifted and average achieving groups would not differ from one another.

Furthermore, as all of these children were experiencing a slight change in their reference group, by entry into a more competitive environment; as academic self-concept gradually declines annually during the elementary period; and as academic achievement worsens each year for underachievers, it was further hypothesised:

4. that there would be a decrease of academic self-concept for all subjects over the school year.

#### SELF-EXPECTATIONS FOR FUTURE ACHIEVEMENT

There has been no relevant research on the self-expectations of the gifted but conclusions drawn from studies of other groups indicate that at school entry expectations are high and over time they decrease so that by adolescence they are a much more realistic reflection of school achievement (Stipek, 1980). In addition, high achievers have been found to have high expectations for academic success, whereas underachievers have low expectations. Therefore, it was hypothesised:

1. that there would be a significant difference in self-expectations for future achievement between the

achieving gifted and underachieving groups;

2. that there would be a significant difference between the achieving gifted and average achieving groups;

3. that there would be no significant differences between the underachieving gifted and average achieving groups;

4. and that over the time of the testing period all the groups would show a decline in their self-expectations scores.

#### ACADEMIC LOCUS OF CONTROL

This affective variable has been shown to be strongly related to academic achievement. Internal control is related to behaviours that increase the probability of successful academic performance (Coleman et al., 1966; McGhee and Crandall, 1968).

Past research has found that underachievers have an external locus of control particularly for failure outcomes (Chapman and Boersma, 1980). For gifted children, consistent results have been found for success outcomes so that it appears that they have an internal locus of control for success outcomes. However, they are not always more internal for failure (Milgram and Milgram, 1976; Douglas and Powers, 1982; Powers and Douglas, 1983). Logically, gifted children should not be threatened by accepting responsibility for the infrequent failure they experience but the acceptance of internal responsibility for failure is age-related. Underachieving bright children have been

found to exhibit an asymmetrical pattern suggestive of a "defence locus of control" (Kanoy et al., 1980) reflecting the findings for the general population. Therefore it was hypothesised:

1. that the achieving gifted group would be higher in internality for success than both the underachieving gifted and average achieving groups;
2. that the achieving gifted group would be more internal for failure than the other two groups;
3. that underachieving gifted children would be more external for failure than either of the achieving groups;
4. and, as successful children have a tendency towards greater internality as they become older, that there would be a shift towards more internality over time for the achieving groups.

Failure experiences do accumulate over time, therefore it was further hypothesised:

5. that the underachieving group would become increasingly external, at least for failure outcomes.

## CHAPTER 3

### METHODS

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## CHAPTER 3

### METHODS

#### INTRODUCTION

From the review of the literature it can be seen that many methodological inadequacies have occurred when the affective characteristics of both achieving and underachieving gifted children have been assessed. The major problem has been the suspect lack of representativeness of the selected sample as most underachieving subjects have been identified using either suspect identification procedures or by referral. It was the intention of this study to screen a total normal school population and to identify intellectually gifted children for testing. Another difficulty with other reported studies has revolved around the definition of underachievement. As pointed out in the review, most studies have not utilised stringent identification procedures and there have been statistical errors in the selection process. In an endeavour to overcome these deficits, a regression equation method was employed in this study to ensure that some of the definitional problems were reduced.

A final weakness of previous work centred on the instruments used to measure academic self-concept. This study will be the first to utilise a measure specifically designed for this variable in elementary age children.

This chapter therefore describes the identification of subjects, the IQ and achievement tests used, the affective measures and how they were applied and the statistical methods used.

## SUBJECTS

Eighty children were chosen from 1220 children being the total 1982 Form 1 cohort in all five Palmerston North and Feilding Intermediate Schools. These children were participating in the larger three year longitudinal study of affective development of Dr J.W. Chapman, Department of Education, Massey University. A group test, the Test of Scholastic Abilities (TOSCA) (Intermediate B: Reid et al., 1981) was used as an initial screening device for selecting the gifted groups. The TOSCA raw score of all those children who gained a Stanine of eight or nine was regressed onto the Wechsler Intelligence Scale for Children - Revised (WISC-R) (Wechsler, 1974) IQ score. All individuals whose predicted WISC-R score was greater than 118 were administered the WISC-R Full Scale (FS) test by the experimenter. Only those children whose WISC-R FS IQ was greater than or equal to 125 were included in the study (n=41). The justification for this definition of academic giftedness is presented in the Appendix.

From within this group of subjects the regression equation method (Thorndike, 1963) was used to discriminate the achieving gifted from the underachieving gifted group. The WISC-R FS IQ scores were used to form a regression line equation which predicted an expected achievement on four Performance Achievement Test (PAT) achievement measures for each child. Those students whose actual PAT scores were one standard error of estimate or more below their expected scores on three out of the four scales were classified as underachievers (n=7).

The average achieving group was chosen from those students

who scored in the 90-110 range of a previously administered WISC-R FS test. Those children whose achievement was within one standard error of estimate of their predicted achievement as determined by regression equation were classified as average achievers (n=39).

Table IA presents the demographic characteristics for the three groups. There were 17 males and 22 females in the average achieving group. There were only eight females in the achieving gifted group as compared to 26 males and only two of the seven members of the underachieving gifted group were girls. Analysis of variance (ANOVA) revealed that there were no significant differences in age between the three groups. Differences were observed for socio-economic status based on the father's occupation and classified according to the Revised Elley- Irving Scale (Elley and Irving, 1976) (Table IB). The average achievers came from predominantly clerical and highly skilled backgrounds, whereas over 80 percent of both gifted groups came from the higher professional backgrounds. There were three Maoris included in the average group, one Asian in the achieving gifted group and one Pacific Islander in the underachieving gifted group. All the other subjects were of European descent.

#### WISC-R IQ AND ACHIEVEMENT DATA

Means and SD for the TOSCA, WISC-R IQ scores and PAT achievement data are presented in Tables II and III. As IQ was used as the criterion for sample selection, the differences in IQ between the gifted and average groups is expected. ANOVA of the achievement data reveals that in three measures of the PAT (Raw Scores) - Reading Comprehension, Reading Vocabulary,

TABLE IA

DEMOGRAPHIC CHARACTERISTICS OF AVERAGE ACHIEVING, ACHIEVING  
GIFTED AND UNDERACHIEVING GIFTED CHILDREN

	AVERAGE ACHIEVING	ACHIEVING GIFTED	UNDERACHIEVING GIFTED
Male	17	26	5
Female	22	8	2
Total	39	34	7
Age (mean)	11.23	11.17	11.25
Ethnic	European:36 Maori:3	European:33 Asian:1	European:6 Pacific Islander:1

TABLE IB

FATHER'S SOCIO-ECONOMIC STATUS OF AVERAGE ACHIEVING, ACHIEVING  
GIFTED AND UNDERACHIEVING GIFTED CHILDREN

CATEGORY*	AVERAGE ACHIEVING	ACHIEVING GIFTED	UNDERACHIEVING GIFTED
1	6**	18	5
2	5	7	1
3	10	2	1
4	5	7	0
5	4	0	0
6	4	0	0
8	2	0	0

\*CATEGORY 1: Professional  
 CATEGORY 2: Managerial  
 CATEGORY 3: White Collar/Farmer  
 CATEGORY 4: Skilled  
 CATEGORY 5: Semi-skilled  
 CATEGORY 6: Unskilled  
 CATEGORY 8: Unemployed  
 (Revised Elley-Irving Scale, 1976)

\*\*Number of fathers

Listening Comprehension - the achieving gifted group was significantly different from the underachieving gifted and average groups. These latter two groups did not differ. On the Mathematics test, a statistically significant difference was only observed between the underachieving gifted and average groups.

## INSTRUMENTS

### IQ Measures

The TOSCA was used in the first step of the selection process for the gifted children. The TOSCA, developed specifically for use in New Zealand schools, is a pencil and paper test with 70 strongly school-related items (Reid et al., 1981). Unlike many other tests of its type, IQs are not provided but age norms are determined as percentile ranks and stanines. Data on validity and reliability presented in the manual indicate that the test is technically sound.

The WISC-R was used to assess the IQ of all individuals participating in this study. This test is one of the two routinely used in the identification of gifted children (Karnes and Brown, 1980a,b; Schiff et al., 1981). The technical data and characteristics of the WISC-R are very well known and it is one of the most extensively used tests in psychological research (Rubenzer, 1979).

### Achievement Measures

To assess achievement levels, four of the tests in the PAT (Level 5, Form B) - Reading Comprehension, Reading Vocabulary, Listening Comprehension, Mathematics - were used. These tests

are group administered, New Zealand normed, paper and pencil scales, administered by the majority of New Zealand primary and intermediate schools at the beginning of each school year (Beck and St George, 1983).

#### Affective Measures

Academic Self-Concept:- Boersma and Chapman's (1977) Student's Perception of Ability Scale (SPAS) was used to measure academic self-concept. The SPAS contains 70 forced choice "Yes/No" items which cover attitudes about school in five basic academic areas and to school in general. These items are grouped into six subscales, originally derived through factor analysis. The subscales are Perception of General Ability, Perception of Arithmetic Ability, General School Satisfaction, Perception of Reading and Spelling Ability, Perception of Penmanship and Neatness, and Confidence in Academic Ability. This test was specifically constructed for use with primary age children. Items are read aloud to minimise the effects of reading difficulties. Scores derived from the SPAS may range from 70 (high academic self-concept) to 0 (low academic self-concept).

The available technical data summarised include a Full Scale mean score of 46.24 with a standard deviation of 11.71 and a standard error of measurement (SEm) of 3.41. For the Full Scale, Cronbach's alpha is 0.915 with 0.803 being the median alpha for the subscales. Full Scale test-retest reliability was 0.834.

The authors of this instrument found that the SPAS discriminated strongly from general self-concept, it distinguished clearly between poorly achieving and normally

achieving elementary school students, even when IQ had been controlled (Boersma and Chapman, 1978; Chapman and Boersma, 1980). In addition they have just published results based on New Zealand data which lends support to its use as a measure of academic self-concept for New Zealand primary school children (Chapman and Boersma, 1983).

Future Academic Expectations:- The Projected Academic Performance Scale (PAPS) developed by Chapman and Boersma (1978) was used to assess self-expectations for future academic achievement. This instrument has 42 four response multi-choice items allocated to six subscales each containing seven items - Spelling, Reading, Language Arts, Mathematics, Social Studies, Science. The items concern predicted performance in the near and long-term future. Responses are weighted on a four point scale with higher values reflecting higher expectations. Full Scale scores range from 42 (low expectations) to 168 (high expectations). The available technical data (Chapman and Boersma, 1979b) indicate a Full Score mean of 121.41 and a standard deviation of 17.37. Cronbach's alpha was 0.901 while the test-retest stability was 0.801. Although this is relatively untried instrument, it appears to have promising possibilities.

Locus of Control:- Academic locus of control was assessed using the Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall et al., 1965). The IAR consists of 34 forced-choice items describing both positive and negative achievement experiences. Two subscale scores can be obtained. The IAR positive score (I+) measures acceptance of responsibility for

positive successful achievement experiences and the IAR negative score (I-) measures acceptance of responsibility for negative (failure) achievement experiences. Scores in each subscale range from 0 to 17 with the higher score representing a more internal locus of control.

Spearman-Brown split-half reliabilities are reported as 0.54 for the I+ and 0.57 for the I- subscales, test-retest reliabilities are in the range of 0.47 to 0.66 for the I+ scale and 0.69 to 0.74 for the I- scale (Robinson and Shaver, 1973).

Although there has been some disenchantment with this instrument (Marsh et al., 1984) many studies use it as it is one of the few measures of locus of control which specifically relates to children's perception in academic achievement situations (Phares, 1976).

## PROCEDURES

### IQ Measures

The TOSCA was administered in April 1982 by two senior researchers and two graduate education students to the Form 1 cohort from which the present sample was drawn.

The WISC-R was administered to the average group during June, July and August 1982 by the same four personnel as well as the experimenter. Before testing began, the test administrators attended rehearsal sessions to ensure accuracy and consistency of testing and scoring procedures.

Following the recommendations of Tuck et al. (1975), some items in the Information, Arithmetic and Comprehension subtests were changed so that the tests were fairer for New Zealand children. In the Information subtest "Who discovered America?"

became "Who discovered New Zealand?"; "Name two countries that border the United States" became "Name two Australian states"; "How tall is the average American man?" became "How tall is the average New Zealand man?"; and "How far is it from New York to Los Angeles?" became "How far is it from Auckland to Sydney?". In the Arithmetic subtest "pennies" were changed to "cents" and "cartons" were changed to "bottles". The Comprehension subtest changes included "meat packing plants" to "freezing works"; "street beggar" to "beggar" and "senators and congressmen" to "members of parliament".

For both gifted groups, the WISC-R was administered in April 1983 by only the experimenter.

#### Achievement Measures

PAT data was obtained after the schools' routine administration in March 1982.

#### Affective Measures

The SPAS, PAPS and IAR were administered in February and November 1982. The children were tested in their regular classroom groups as part of a larger study.

Subjects were informed that the questionnaires were being used in a city-wide survey to find out something about "what kids thought about school and schoolwork". It was emphasised that the questionnaires were not tests and that although it was necessary to be honest, there were no right or wrong answers.

Testing time took 35 to 45 minutes. All items were read aloud by the tester. Because of differences in local vernacular two minor item changes were made. These included items that

mentioned "being smart" which were paraphrased to "bright or clever" and items relating to "arithmetic" were changed to "arithmetic or maths".

The administration was conducted in the absence of teachers by the same five personnel who conducted the WISC-R testing.

#### STATISTICAL PROCEDURES

Differences between the groups in the affective variables (SPAS, PAPS and IAR) were examined using an heirarchical procedure beginning with analysis of variance with repeated measures (MANOVA) and examining univariate effects when appropriate.

A multigroup discriminant analysis was computed to see if the groups could be discriminated by their ranking on these particular affective variables.

## CHAPTER 4

### RESULTS

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ACHIEVEMENT MEASURES

AFFECTIVE VARIABLES

    Academic Self-Concept

    Self-Expectations for Future Achievement

    Academic Locus of Control

DISCRIMINANT ANALYSIS

## CHAPTER 4

### RESULTS

#### INTRODUCTION

The results presented here fall into two broad parts. The first defines the prevalence and male:female ratio of underachieving gifted and the socio-economic group from which these students come. The second and major part reports the MANOVA and ANOVA results for academic self-concept, self-expectations for future achievement and academic locus of control. The results are given of a discriminant function analysis using the three affective variables.

#### DEMOGRAPHIC DATA

The demographic data described in Table IA revealed that the two-stage identification procedure found many more males than females for both gifted groups. Only 10 of the 41 children identified as gifted using the criterion of a WISC-R FS IQ>125 were females.

Table IB shows that the majority of fathers of the academically gifted children were in the professional socio-economic group.

#### IQ MEASURES

Both the achieving and underachieving gifted groups had the same mean on the WISC-R FS IQ scores (Table II). However, the subscale scores showed differing patterns. The achieving group had a higher Verbal IQ, whereas the underachieving group had a much higher Performance IQ. For the underachieving gifted

TABLE II

TOSCA AND WISC-R SUMMARY DATA FOR AVERAGE ACHIEVING, ACHIEVING GIFTED AND UNDERACHIEVING GIFTED GROUPS

	AVERAGE ACHIEVING		ACHIEVING GIFTED		UNDERACHIEVING GIFTED	
	Mean	SD	Mean	SD	Mean	SD
RAW TOSCA	30.29	7.00	48.56	5.48	44.57	4.58
VIQ	102.26	6.90	127.62	9.12	123.71	7.15
PIQ	102.77	10.68	128.12	7.23	133.43	6.68
FSIQ	102.26	6.19	131.29	4.12	131.86	4.88*

\* $F=302.51$ ,  $p<0.000$

VIQ: verbal IQ

PIQ: performance IQ

FSIQ: full scale IQ

children there was a discrepancy of 10 points between their mean verbal and performance scores in contrast of only one point in the two scores for the achieving gifted group.

#### ACHIEVEMENT MEASURES

On the Reading Comprehension, Reading Vocabulary and Listening Comprehension tests of the PAT it was found that underachieving gifted children scored well below their achieving counterparts, but no better than average achievers (Table III). For Mathematics, there were no significant differences between the two gifted groups but both were significantly above the average achieving group. Therefore, the majority of underachieving gifted children were deficient in the reading skills area.

A further point is that although the average achievers fulfilled the criteria for selection, many of these individuals had high achievement levels given their IQ so that the achievement for this group as a whole was slightly above average.

#### AFFECTIVE VARIABLES

Summary data for the three groups on the affective variables are presented in Table IV.

#### Academic Self-Concept

The SPAS instrument tested the hypothesis that significant differences in academic self-concept would be found between the achieving gifted, underachieving gifted and average achieving groups and that over time there would be a perceptible decrease

TABLE III

PROGRESSIVE ACHIEVEMENT TEST DATA FOR AVERAGE ACHIEVING,  
ACHIEVING GIFTED AND UNDERACHIEVING GIFTED GROUPS

	AVERAGE ACHIEVING		ACHIEVING GIFTED		UNDERACHIEVING GIFTED	
	Mean	SD	Mean	SD	Mean	SD
R COMP raw score	24.23	5.11	33.18	3.21	25.57	4.28*
R VOCAB raw score	44.44	7.41	55.15	3.82	49.00	3.65**
L COMP raw score	34.69	4.56	40.15	2.76	36.14	2.19***
MATH raw score	27.10	6.71	40.06	5.52	36.14	4.49****

\*F=40.24, p<0.000

\*\*F=30.36, p<0.000

\*\*\*F=19.29, p<0.000

\*\*\*\*F=42.14, p<0.000

R COMP: reading comprehension

R VOCAB: reading vocabulary

L COMP: listening comprehension

MATH: mathematics

TABLE IV  
 SUMMARY DATA FOR THE AFFECTIVE CHARACTERISTICS OF AVERAGE  
 ACHIEVING, ACHIEVING GIFTED AND  
 UNDERACHIEVING GIFTED GROUPS

		AVERAGE ACHIEVING		ACHIEVING GIFTED		UNDERACHIEVING GIFTED	
		Mean	SD	Mean	SD	Mean	SD
SPAS	TIME 1	46.82	13.05	55.24	7.40	52.67	9.85
	TIME 2	46.09	13.11	55.14	6.30	52.71	5.71
PAPS	TIME 1	117.67	15.99	138.97	11.48	123.33	12.42
	TIME 2	114.75	15.77	129.52	12.14	119.71	28.47
IAR (I+)	TIME 1	12.90	2.53	13.79	1.98	12.33	2.81
	TIME 2	12.81	2.90	14.17	2.34	12.71	3.95
IAR (I-)	TIME 1	10.26	2.71	9.15	2.40	9.50	4.64
	TIME 2	9.95	3.47	9.43	2.94	9.57	1.90

SPAS: Student's Perception of Ability Scale  
 PAPS: Projected Academic Performance Scale  
 IAR: Intellectual Achievement Responsibility  
 Questionnaire

in academic self-concept for all groups.

As predicted, the results of the repeated measures analysis of variance for academic self-concept (Table V) reveal a statistically significant main effect for group ( $F=6.31, p<0.05$ ).

Analyses of variance were performed to clarify further this result. ANOVA summary data for both the beginning (T1) and end-of-year (T2) full scale SPAS scores are presented in Table VI. These analyses revealed that on both testing occasions, the group effect was the result of a significant difference between the achieving gifted and average achieving groups. Contrary to expectation there was no statistically significant difference between either gifted groups, although the mean score of the underachieving group was below that of the achievers. There was no statistically significant difference between the underachieving gifted and average achieving groups on the SPAS at either testing time.

The repeated analysis of variance also revealed unexpectedly, that there was no main effect for time, nor was there any interaction effect observed (Table V). In other words, over the 10 month period between the first and second testing occasions, there was no change in the children's self-concept of academic ability, nor did any of the groups change in their relative positions with regard to each other. The change to a new academic situation (viz., their progression from primary to intermediate school) did not result in an alteration of the academic self-concept of these children. In summary, although the groups scored in the ranking positions hypothesised (achieving gifted, underachieving gifted and average achieving groups), the difference between the two gifted groups was not

TABLE V

ANALYSIS BY MANOVA WITH REPEATED MEASURES OF THE STUDENT'S PERCEPTION OF ABILITY SCALE SCORES AT TIME 1 AND TIME 2 OF AVERAGE ACHIEVING, ACHIEVING GIFTED AND UNDERACHIEVING GIFTED GROUPS

SOURCE	DF	MEAN SQUARED	F	P
ERROR	67	196.44018		
GROUP	2	1240.47172	6.3146	0.003
ERROR	67	18.81107		
TIME	1	5.86861	0.31198	0.578
TIME X GROUP	2	3.90423	0.20755	0.813

TABLE VI

ANOVA OF THE STUDENT'S PERCEPTION OF ABILITY SCALE SCORES AT  
TIME 1 AND TIME 2 OF AVERAGE ACHIEVING, ACHIEVING GIFTED  
AND UNDERACHIEVING GIFTED GROUPS

TIME 1:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	1306.8030	5.669	0.0051
WITHIN GROUPS	76	8759.1813		
TOTAL	78	10065.9824		

  

MEAN	<u>LSD</u>	GROUP
46.8205		AVERAGE ACHIEVING
52.667		UNDERACHIEVING GIFTED
55.2353		ACHIEVING GIFTED

TIME 2:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	1339.8620	6.372	0.0029
WITHIN GROUPS	68	7149.6082		
TOTAL	70	8489.4688		

  

MEAN	<u>LSD</u>	GROUP
46.0857		AVERAGE ACHIEVING
52.7143		UNDERACHIEVING GIFTED
55.1379		ACHIEVING GIFTED

found to be significant, whereas there was a marked difference between the achieving gifted and average children. There were no changes over time in either scores or rankings as a result of exposure to a new social milieu, nor was there the typical small drop in self-concept as a result of age.

#### Self-Expectations for Future Achievement

It was hypothesised that in the area of future academic expectations as assessed by the PAPS there would be significant differences between the two groups of gifted children, between the achieving gifted and average children but not between the underachieving gifted and average groups. It was also hypothesised that the scores of all these groups would decrease between T1 and T2 testing occasions.

Table VII presents the repeated measures analysis of variance for the PAPS Full Scale scores. There was a main effect for group ( $F=18.97$ ,  $p<0.01$ ) and time ( $F=18.09$ ,  $p<0.01$ ) but there were no interaction effects.

The univariate analysis of variance at T1 (Table VIII) revealed that the significant group effect was caused by the underachieving gifted and average groups differing significantly from the achieving gifted group but not from each other (average achieving  $M=117.67$ ; achieving gifted  $M=138.97$ ; underachieving gifted  $M=123.33$ ). This result is consistent with the hypothesis. At T2 only the average children differed significantly from the achieving gifted, although the results of the underachieving gifted group were very close to approaching significance.

The hypothesis that the PAPS scores of all three groups would deteriorate over the year was supported. At T2, all three

TABLE VII

ANALYSIS BY MANOVA WITH REPEATED MEASURES OF THE PROJECTED  
ACADEMIC PERFORMANCE SCALE SCORES AT TIME 1 AND TIME 2  
OF AVERAGE ACHIEVING, ACHIEVING GIFTED AND  
UNDERACHIEVING GIFTED GROUPS

SOURCE	DF	MEAN SQUARED	F	P
ERROR	68	305.58951		
GROUP	2	5797.32990	18.97097	0.000
ERROR	68	130.92876		
TIME	1	1059.40711	18.09148	0.006
TIME X GROUP	2	261.16161	1.99468	0.144

TABLE VIII

ANOVA OF THE PROJECTED ACADEMIC PERFORMANCE SCALE SCORES AT TIME  
1 AND TIME 2 OF AVERAGE ACHIEVING, ACHIEVING GIFTED  
AND UNDERACHIEVING GIFTED GROUPS

TIME 1:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	8344.5944	21.360	0.000
WITHIN GROUPS	76	14844.9445		
TOTAL	78	23189.5389		

MEAN	<u>LSD</u>	GROUP
117.6667		AVERAGE ACHIEVING
123.3333		UNDERACHIEVING GIFTED
138.9706		ACHIEVING GIFTED

TIME 2:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	3519.3511	6.863	0.0019
WITHIN GROUPS	69	17691.3945		
TOTAL	71	21210.7422		

MEAN	<u>LSD</u>	GROUP
114.7500		AVERAGE ACHIEVING
119.7143		UNDERACHIEVING GIFTED
129.5172		ACHIEVING GIFTED

group mean scores on the PAPS had decreased (average achievers  $M=114.75$ ; achieving gifted  $M=129.52$ ; underachieving gifted  $M=119.71$ ). The greatest difference was recorded by the achieving gifted group (9.45 points) and the least by the average group (2.92 points). Hence underachieving gifted and average achievers clearly hold lower expectations for future academic performance than achieving gifted children. However, in accordance with social comparison theory, it is possible that once gifted children were exposed to a more potentially competitive environment there was a downward shift in their perceptions of future achievement. This shift is not so marked for average achievers whose academic environment has remained virtually unchanged. Alternatively, this decline could be a reflection of a steady decrease in expectations observed for all children over time.

#### Academic Locus of Control

For academic locus of control, analyses were performed separately on the I+ and I- subscales of the IAR. Tables IX to XII present the statistical summary data for each scale. Contrary to prediction, there were no significant main or interaction effects for either scale at T1 or T2. For all groups the scores on the positive subscale were higher than on the negative subscale. These results indicate that all of the subjects in this study ascribed responsibility for successful academic outcomes to internal causes such as ability and effort. With respect to the I- subscale the data indicate that all of these children have more of a tendency to ascribe responsibility for

TABLE IX

ANALYSIS BY MANOVA WITH REPEATED MEASURES OF THE INTELLECTUAL  
 ACHIEVEMENT RESPONSIBILITY QUESTIONNAIRE (I-) SCORES AT TIME  
 1 AND TIME 2 OF AVERAGE ACHIEVING, ACHIEVING GIFTED  
 AND UNDERACHIEVING GIFTED GROUPS

SOURCE	DF	MEAN SQUARED	F	P
ERROR	70	11.91555		
GIFTED	2	11.97618	1.00509	0.371
ERROR	70	5.84809		
TIME	1	0.00581	0.00099	0.975
GIFTED X TIME	2	1.76210	0.30131	0.741

TABLE X

ANOVA OF THE INTELLECTUAL ACHIEVEMENT RESPONSIBILITY  
QUESTIONNAIRE (I-) SCORES AT TIME 1 AND TIME 2  
OF AVERAGE ACHIEVING, ACHIEVING GIFTED AND  
UNDERACHIEVING GIFTED GROUPS

## TIME 1:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	22.6739	1.493	0.2313
WITHIN GROUPS	76	577.1997		
TOTAL	78	599.8735		

LSD

NO 2 GROUPS SIGNIFICANTLY DIFFERENT AT P=0.05

## TIME 2:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	4.4874	0.225	0.798
WITHIN GROUPS	71	706.9720		
TOTAL	73	711.4594		

LSD

NO 2 GROUPS SIGNIFICANTLY DIFFERENT AT P=0.05

TABLE XI

ANALYSIS BY MANOVA WITH REPEATED MEASURES OF THE INTELLECTUAL  
 ACHIEVEMENT RESPONSIBILITY QUESTIONNAIRE (I+) SCORES AT TIME  
 1 AND TIME 2 OF AVERAGE ACHIEVING, ACHIEVING GIFTED  
 AND UNDERACHIEVING GIFTED GROUPS

SOURCE	DF	MEAN SQUARED	F	P
ERROR	70	11.17666		
GIFTED	2	27.87619	2.49734	0.090
ERROR	70	2.39957		
TIME	1	0.25406	0.10588	0.746
GIFTED X TIME	2	0.67262	0.28031	0.756

TABLE XII

ANOVA OF THE INTELLECTUAL ACHIEVEMENT RESPONSIBILITY  
QUESTIONNAIRE (I+) SCORES AT TIME 1 AND TIME 2  
OF AVERAGE ACHIEVING, ACHIEVING GIFTED AND  
UNDERACHIEVING GIFTED GROUPS

## TIME 1:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	19.9496	1.838	0.16
WITHIN GROUPS	76	412.4816		
TOTAL	78	432.4312		

LSD

NO 2 GROUPS SIGNIFICANTLY DIFFERENT AT P=0.05

## TIME 2:

SOURCE	DF	SUM OF SQUARES	F	P
BETWEEN GROUPS	2	33.5945	2.148	0.1248
WITHIN GROUPS	71	555.2701		
TOTAL	73	588.8645		

LSD

NO 2 GROUPS SIGNIFICANTLY DIFFERENT AT P=0.05

unfavourable outcomes to external factors but not extremely so. This result was expected for the underachieving gifted as it was postulated that they would develop this stance as a defence against failure. However, it was unexpected for achieving gifted children whose achievement would seem to be related to the internal effects of ability and effort.

In sum, the results for academic locus of control as measured by the IAR did not demonstrate any discrete characteristics. None of the groups differed significantly from one another on either scale at the beginning or the end of the year, nor was there any change in scores over the 10 month period.

#### DISCRIMINANT ANALYSIS

To see whether this particular set of variables (academic self-concept, self-expectations of future achievement and locus of control) could discriminate the three groups, the results were subjected to a discriminant function analysis (Tables XIII and XIV). Two discriminant functions were derived. The first function was highly significant with an eigen value of 1.00384 and a Wilk's lambda of 0.4291877 indicating considerable discriminating power existing in the variables being used.

The second discriminant function had an eigen value of 0.16276 and a Wilk's lambda of 0.860020. The Chi-squared test indicated that this was nonsignificant and it was decided that interpretation of this function was unjustified.

On the first discriminant function the PAPS at T1 had the highest weight (0.98436) with the SPAS at T1 being the next highest (0.32719). All the other variables were of very little importance. Given the loading of these two variables this

TABLE XIII

DISCRIMINANT FUNCTION ANALYSIS OF THE AFFECTIVE CHARACTERISTICS  
OF AVERAGE ACHIEVING, ACHIEVING GIFTED AND  
UNDERACHIEVING GIFTED GROUPS

FUNCTION	EIGEN VALUE	PERCENT OF VARIANCE	CUMULATIVE PERCENT	CANONICAL CORRELATION
1	1.00384	86.05	86.05	0.7077833
2	0.16276	13.95	10.00	0.3741364

AFTER FUNCTION	WILK'S LAMBDA	CHI-SQUARED	DF	SIGNIFICANCE
0	0.4291877	48.214	18	0.0001
1	0.8600220	8.595	8	0.3776

## STANDARDISED CANONICAL DISCRIMINANT FUNCTION COEFFICIENTS

	FUNCTION 1	FUNCTION 2
PAPS (T1)	0.98436	0.35875
IAR(I+) (T1)	-0.11975	-0.26530
IAR(I-) (T1)	-0.18802	0.05727
SPAS (T1)	0.32719	0.23240
SPAS (T2)	0.05694	0.97920
IAR(I+) (T2)	-0.03942	0.39555
IAR(I-) (T2)	-0.03704	-0.25947
PAPS (T2)	0.19313	0.69785

function could be interpreted as a perception of ability at the beginning of the year.

As can be seen from Table XIV there is some overlap between the groups. However, the classification routine was able to correctly identify 71.88 percent (hits); 83 percent of the achieving gifted, 67 percent of the underachieving gifted and 62 percent of the average achieving group were correctly grouped. However, this result must be not over-interpreted as the ratio of sample sizes to the large number of predictors introduces some bias into the procedure, in favour of correct classifications.

TABLE XIV

CLASSIFICATION RESULTS ON THE DISCRIMINANT FUNCTION ANALYSIS  
OF THE AFFECTIVE CHARACTERISTICS OF AVERAGE ACHIEVING,  
ACHIEVING GIFTED AND UNDERACHIEVING GIFTED GROUPS

ACTUAL GROUP	PREDICTED GROUP MEMBERSHIP (PERCENT)		
	GROUP 1	GROUP 2	GROUP 3
GROUP 1	62.1	13.8	24.1
GROUP 2	6.9	82.8	10.3
GROUP 3	16.7	16.7	66.7
PERCENT OF "GROUPED" CASES CORRECTLY CLASSIFIED: 71.88			

CHAPTER 5

DISCUSSION

THE AFFECTIVE CHARACTERISTICS OF UNDERACHIEVING GIFTED CHILDREN

Academic Self-Concept

Self-Expectations for Future Achievement

Academic Locus of Control

Affective Characteristics and the Identification of  
Underachieving Gifted Children

THE DEMOGRAPHY OF UNDERACHIEVEMENT AMONGST THE GIFTED  
IN NEW ZEALAND

The Prevalence of Underachievement Amongst the Gifted

Underachievement Amongst Males and Females

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THE DIRECTIONS FOR FUTURE RESEARCH

## CHAPTER 5

### DISCUSSION

This study of the affective characteristics of underachieving gifted children shows that at least in one measure, self-expectations for future achievement, these children can be differentiated from achieving gifted and average achieving children. Furthermore, this research makes a number of unique contributions to the field of underachievement and giftedness. It uses three groups of children drawn from a total nonreferred school population of all Form 1 students in the Palmerston North and Feilding area. As these groups were defined by what is recognised as stringent selection procedures it enables accurate demographic data on underachievement to be gathered in New Zealand for the first time. It is the first measure of both expectations for success and academic self-concept for achieving or underachieving gifted children of elementary school age. Finally, it is the first use of Chapman and Boersma's instruments to measure academic self-concept and the self-expectations of gifted children.

The most important results relate to the affective variables and these will be discussed first. The discussion will finally deal with the character of underachievers who are gifted, the educational implications of this study and the directions for future research.

#### THE AFFECTIVE CHARACTERISTICS OF UNDERACHIEVING GIFTED CHILDREN

##### Academic Self-Concept

For academic self-concept the hypotheses were that:

- (i) achieving gifted would have higher self-concepts than underachieving gifted children;
- (ii) achieving gifted would have higher self-concepts than average achieving children;
- (iii) the latter two groups would not differ from one another;
- (iv) there would be a decrease of academic self-concept for all subjects over the school year.

The prediction that achieving gifted children would have significantly higher self-concepts than achieving average children was clearly supported at both testing times. Obviously, the success experienced by these gifted students in the academic area has led to relatively high perceptions of ability, confirming the indications in the literature that academic self-concept would discriminate more consistently for gifted children (Milgram and Milgram, 1976; Kanoy et al., 1980; Ross and Parker, 1980; Saurenman and Michael, 1980; Winne et al., 1982; Kelly and Colangelo, 1984).

This finding also adds to data concerning the external validity of the SPAS. Previous research using this instrument has focused on learning disabled and special class elementary students and early adolescents (Boersma and Chapman, 1978; Hiebert et al., 1982). Obviously this instrument is capable also of discriminating groups at the upper end of the achievement spectrum.

The prediction that the perceptions of ability of underachieving gifted would be significantly below those of the gifted achieving groups was not supported at either testing time.

The lack of support for this prediction was unexpected given the consistently depressed general self-concepts of average underachievers found in the literature (Shaw, 1961; Raph et al., 1966; Purkey, 1970; Bailey, 1971; Whitmore, 1980; Burns, 1982).

Although the gifted underachievers could not be significantly differentiated from the average achievers group either, their academic self-concept is much closer to, although below that of the achieving gifted group. These buoyant academic self-concepts are not a reflection of the academic achievement of the underachieving gifted child as their achievement is not significantly different to that of achieving average children in three out of four subject areas (see Table III). Only in the mathematics area was the underachieving gifted group significantly above that of achieving average group suggesting that the underachieving gifted identified by this study were much weaker in what might be called the reading/language area. This finding was to a certain extent confirmed by the WISC-R results. Although both gifted groups had the same mean on the WISC-R FS IQ scores, the subscale scores showed differing patterns (Table II). The achieving gifted group had a higher Verbal IQ whereas the underachieving group had a much higher Performance IQ. For this group there was a discrepancy of 10 points between their mean Verbal and Performance scores, whereas the achieving gifted group had only a discrepancy of one point between their two subscale scores. Bush and Mattson (1973) in a study examining the intellectual patterning of bright and gifted underachievers, were not able to show this pattern. For their sample, the Verbal subtest scores were higher than Performance subtests. As a consequence the Verbal IQ of underachieving

gifted was not found to be significantly different from the achieving bright and gifted groups. Schiff et al. (1981) in a study of gifted, learning disabled elementary students confirmed Bush and Mattson's results. In contrast, Otop (1977) found that 72 percent of her sample were assessed by teachers to have difficulties in verbal expression. Pringle (1970) also found that almost all her underachieving gifted children were retarded in the reading area. These two sets of contrasting results are not easily explained.

The overemphasis on verbal intelligence has long been recognised as one major problem area in present educational systems (Burns, 1982). Many teachers fail to encourage children to recognise, use or value other skills and abilities. Consequently, those children who excel in other areas, even though they are also gifted, may be assessed as less capable than their more verbal peers. In addition, given the differences in both the WISC-R IQ and the achievement data of both gifted groups in this study further research should examine the subscale scores of the SPAS instrument to see if these patterns were reflected in the differing subscales.

Finally it was hypothesised that over the 10 months of the experimental period, the self-concepts of all of the groups would decline and that the change would be greatest for the gifted group. The change of the reference group by entry into a more competitive environment and comparison with more children of the same ability would decrease the academic self-concepts particularly of the gifted children. Added to this, there is evidence that the academic self-concept of all students declines

during the elementary years (Larned and Muller, 1979; Marsh et al., in press). The literature also indicates that the academic achievement of underachieving gifted worsens every year (Shaw and McCuen, 1960) and therefore the academic self-concept of these children should decrease accordingly.

Again the prediction was not supported. There was no change over time for any of the groups with the rankings remaining the same.

Clearly then, academically gifted children are characterised by higher academic self-concepts than average achieving children. Underachieving gifted children could not be discriminated on this variable nor did this variable show any change over the school year for any of the groups. The lack of any significant change implies that the academic self-concept may be relatively fixed by the time children reach age 11 or that the decrease might have been so slight that the instrument could not detect it. Bloom (1976) and Hamachek (1978) feel that school attitudes are generally established during the first few years in primary school. Kifer (1975) has shown that differences between high and low achievers become more marked between Grade 2 and the end of Grade 6. Chapman and Boersma (1980) have also demonstrated significant differences between learning disabled and normal children from as early as Grade 3 on the same instrument as was used in this study. These findings plus the results of this study suggest that remediation of a depressed academic self-concept would have to be started well before the end of primary school. However, this is an area that obviously needs more attention with longitudinal investigations beginning at earlier ages as other studies have shown that academic self-concept

continues to decline throughout school (for example, Parsons and Ruble, 1977).

The only slightly diminished academic self-concepts of underachieving gifted children could result from three factors. First, they could experience early school success and it is only later that their achievement significantly falls behind that of their achieving counterparts. Indeed the research of Shaw and McCuen (1960) found only significant differences beginning at Grade 3 level for males and for females Fitzpatrick (1978) found differences only after Grade 6. Hence their academic self-concepts could remain unrealistically high as a result of the carryover from previously high achievement.

Alternatively, these children occasionally display glimpses of their ability in a favourite subject or in areas where they consider themselves experts (Newman et al., 1973; Whitmore, 1980). The reinforcement they receive at these times probably makes them aware of their superior ability without changing the nature of their achievement in more conventional subjects.

Thirdly, these scores could reflect an effort of self-enhancement. The underachievers might be trying to protect their egos by inflating their ratings of competence in the academic area.

Again, as with the finding that academic self-concept might be reasonably firmly established by the end of elementary school for extreme students, the results of a less than significantly depressed self-concept of underachieving gifted children are supportive of the importance that elementary years play in the development of self- and school-related attitudes (Chapman and

Boersma, 1980; Burns, 1982). Gifted children who underachieve seem to be able to maintain these high perceptions in the face of possible adverse reinforcement and reduced academic achievement. Given this situation it is possible that the remediation of underachieving gifted might be more successful than similar efforts with other underachievers who are not gifted. They have not as yet developed the very negative self-perceptions of ability which tend to lead to the attenuation of any remediation efforts with other underachieving groups, and hence perpetuate low academic achievement.

#### Self-Expectations for Future Achievement

The results in the area of expectations for future achievement were quite consistent with the hypotheses which were that:

- (i) there would be a significant difference between the achieving gifted and the underachieving gifted groups;
- (ii) there would be significant differences between the achieving gifted and the average achieving groups;
- (iii) there would be no difference between the underachieving gifted and the average achieving groups;
- (iv) over time there would be a decline in scores for all three groups.

At Time 1 it was observed that achieving gifted children had significantly higher ratings than the underachieving or average achieving groups. These latter two groups did not differ from one another. At Time 2 the difference between the achieving

gifted and average achievers was significant and the difference between achieving and underachieving gifted approached significance. As hypothesised, between Time 1 and Time 2 the scores of all of the groups declined with the greatest change being found for the gifted achieving group.

Support was also found for the contention that underachievers hold lower expectations of future success than achievers of the same ability level (Brophy and Good, 1974; Kifer, 1975; Chapman and Boersma, 1980; Swanson, 1981; Hiebert et al., 1982). Underachieving gifted students clearly hold lower expectations of future success than achieving gifted, and as at neither testing time were they significantly different from average achievers, these expectations are consistent with their achievement levels. This occurs in spite of their high potential, which their high self-concept scores indicate that they are quite aware of.

Again these results add to the promising validity data available on the PAPS instrument. Previous research with this instrument has, like that on the SPAS, concentrated on learning disabled subjects (Chapman and Boersma, 1980; Hiebert et al., 1982). In the present study it clearly discriminated between the gifted groups of interest. As indicated by the expectation literature, the persistent success experienced by the achieving high ability child is accompanied by higher self-expectations for future success (Stipek and Hoffman, 1980; Tyszkowa, 1981; Smead and Chase, 1981).

As there appears to be little research using the PAPS instrument on gifted children in the field it is important to conduct more research before definitive statements can be made

about the academic expectations of gifted children. The implications of these relatively lower expectations for underachieving gifted children are potentially serious. A low expectation for success would probably contribute to reduced motivation to learn and thereby interfere with attempts aimed at helping such children reach their potential, setting up a self-fulfilling prophecy that traps the child into perpetual underachievement (Bar-Tal, 1978).

However, unlike academic self-concept this variable appears more sensitive to change. Perhaps the move to a different educational environment, offering reduced opportunities for success was influential in producing this decrease. However, it is impossible to determine how much of this results from the change of school and how much from the decrease which seems to occur for all pupils during their school careers. Nevertheless, the change of school is potentially more noticeable for gifted students as they are being exposed to more children of their own ability level or above. Interestingly, the achieving gifted group's average score decreased nine points between Time 1 and Time 2, whereas the underachieving gifted and average groups decreased by four and three points respectively.

The very malleability suggested by this finding implies that the raising of self-expectations might be a profitable place to begin any remediation efforts. This could only be accomplished if the recognition is made of the problem of underachievement amongst the gifted through the use of identification programmes. Without any identification it is very easy for these children to just progress through school being continually regarded as just

"average" by teachers and parents who consequently would hold only "average" expectations for their future academic careers. Although the expectation literature, especially that relating to adult expectancy effects, is quite controversial (Seginer, 1983), the results of some studies highlight the potential influence that low expectations have. For instance, Otop (1977) reported that 64 percent of her teachers assessed her underachieving gifted students as having low intelligence. Pringle (1970), Newman et al. (1973) and Whitmore (1980) all found substantial numbers of underachieving gifted students who had been referred for behavioural and educational problems but were not assessed as gifted before referral took place.

For achieving gifted children it is imperative that schools maintain and expand opportunities for success, so that these children do not prematurely lower their expectations if exposed to a more competitive academic environment which occurs for the majority of New Zealand school children with their transition into Intermediate School. Secondly, the findings suggest that for academically gifted children segregation into complete withdrawal programmes or specialist schools might be inadvisable. Students exposed to gifted children as their primary reference group might reevaluate their achievements as just average and so lead to the development of unrealistically low expectations for future success. Negative effects have been found when children are placed in highly segregated programmes (Barbe, 1955; Gallagher, 1965). Stopper (1978) found lower self-concepts among gifted students in a self-contained programme than among mainstreamed gifted children and nongifted controls. Rodgers

(1979) compared scores between two groups of gifted children, one placed in a programme, the other not. The self-concepts of those in a programme declined after placement. Coleman and Fults (1981) also found that gifted children's self-concept decreased after being involved in a one-day withdrawal programme. It was apparent that the gifted children were using the gifted programme as their major reference point, even though the period they spent in the programme was relatively short.

#### Academic Locus of Control

An unexpected feature of this project was the failure to determine a difference in locus of control orientation. The IAR did not confirm the hypotheses which were that:

- (i) the gifted achieving group would be higher in internality on the success (I+) scale than the underachieving gifted and average achieving groups;
- (ii) the gifted group would be highly internal also on the failure (I-) scale;
- (iii) underachieving gifted children would be more external on the failure scale than either of the achieving groups;
- (iv) there would be a shift towards more internality over time for the achieving groups;
- (v) there would be a shift towards greater externality for the underachieving group at least for failure outcomes.

Neither at Time 1 or Time 2 did the I+ or I- scale of the IAR discriminate between the three groups. All of these children accepted responsibility for their successes and had more of a

tendency to refute it for their failures confirming the more recent research in the area which has found this to be the typical attributional pattern of the general population (Marsh et al., 1984)

The results using the IAR confirms some of the previous research with this particular instrument. Findings that scores on the positive subscale were higher than those on the negative subscale were consistent with the findings of Crandall et al. (1965) and those of Milgram and Milgram (1975) and Kanoy et al. (1980) in their work with gifted children. However, other findings of this study do not support the limited literature in the area. At least with regard to success outcomes, gifted children have been shown consistently to be very high in internality (Milgram and Milgram, 1975; Kanoy et al., 1980; Douglas and Powers, 1982). The scores gained by this sample of achieving gifted on the I+ scale were below those found by Kanoy et al. (1980) for bright achievers. This is the most comparable study as it uses similar identification criteria and exactly the same instrument. In their study achieving bright students were also much more internal on the I- scale. In contrast, this present study found that achieving gifted were less internal for failure than success outcomes. The underachieving gifted group results were very similar to those obtained by Kanoy's bright underachievers. However, exactly the same results were obtained for the average achievers.

The lack of any significant differences between the groups in the locus of control construct as measured by the IAR is quite surprising. It is hard to account for the slightly depressed

scores of the achieving gifted children, at least as they relate to success outcomes. Perhaps the New Zealand educational system and society at large does not encourage independence and the taking of responsibility by children of this age group. These findings need to be replicated with other groups and in other situations to tease out the real dynamics of this construct with gifted children. Alternatively, the lack of significant results must inevitably lead to the questioning of the utility of using this instrument with these groups. Although significant results have been recorded before with the IAR, perhaps the groups in this study were not sharply dicotomised enough with respect to academic achievement. The IAR has been shown in the past to be more closely related to achievement test scores and grades than to IQ (McGhee and Crandall, 1968; Messer, 1972; Stipek, 1981) and as all of these children were achievers to a certain degree, the IAR may not be sensitive enough to discriminate between them.

Twenty years ago when Crandall et al. developed the IAR, it was an important contribution to the field. However, even then Crandall advised the need for further refinement. In the light of advances in attribution theory (Weiner, 1980) it is inadequate, dealing as it does with only the internal-external dimension. Attribution researchers have attempted to divide the success and failure items into subscales representing ability and effort (Weiner and Kukla, 1970; Dweck and Reppucci, 1973). However, Marsh et al. (1983) found that internal consistencies of the four subscales (varying between 0.32 and 0.54) were unacceptably low. Furthermore, Marsh et al. (1984) argued that the scale was not intended for this purpose and that many of the internal responses cannot be classified unambiguously as

representing effort or ability.

Even though all of the groups achieved the same result this could be a reflection of different attributions. For example, the results of the achieving gifted group could reflect reality. Children of this age might not feel completely autonomous in their academic endeavours in New Zealand society. Again, their slightly more external scores could also reflect the possibility that achieving gifted might only fail if the external environment is quite hostile. For those who are underachieving, their result of a greater tendency to refute responsibility for failure outcomes and to accept it for success could be an attempt at enhancement or a further indication that these children do not differ greatly from the norm in their locus of control characteristics, unlike more severely affected underachievers. Unfortunately, the IAR cannot delineate these differences.

A better instrument would have shown whether the acceptance of success was ascribed to effort or ability and whether failure outcomes were ascribed to task difficulty or luck. Powers and Douglas (1983) have shown that achieving gifted children put effort before ability in their attributions for success and failure. It would have been interesting to know if underachieving gifted also follow this pattern or whether they would attribute their successes more to their ability which their reasonably high academic self-concepts seem to suggest that they are aware of.

Any further research would need to be conducted with an instrument capable of discriminating more than one dimension. At the time of planning this research (1981), the IAR seemed to be

an obvious choice for measuring this construct because of the lack of any well-tested alternatives (Cooper et al., 1981; Stipek and Weisz, 1981). However, the continued use of this instrument which has been so widely employed to measure attributional dimensions now seems dubious and readily exposes the lack of suitable instrumentation and measurement sophistication in this field (Marsh et al., 1984). Most researchers recognise the need to develop new instruments; one that has shown promise is the Sydney Attribution Scale described by Marsh et al. (1984).

#### Affective Characteristics and the Identification of Underachieving Gifted Children

The small numbers of underachieving gifted students that were identified, means that some caution must be exercised in the interpretation of these results. Nevertheless, the following picture emerges of the affective characteristics of the groups under study.

Achieving gifted children have high perceptions of ability which seem to be relatively stable by age 11. They accept responsibility for their successes and refute it for their failures. They have high self-expectations for future success but these are subject to change.

The pattern is not very different for underachieving gifted children. Their academic self-concept is slightly below those of the gifted achievers but not significantly so and their locus of control is similar. The most significant finding of this study was a difference in self-expectations for future achievement. In spite of high ability their expectations for success are only those of average achievers whose achievement

they equalled except in mathematics.

Self-expectations were depressed for all groups over 10 months of the testing period, probably as a result of the move to a larger more competitive environment, with the change being greatest for the achieving gifted.

Whilst it might be disappointing that more definitive results were not obtained on all variables, the discriminant analysis tends to justify the use of at least the self-expectations for future achievement construct as being valuable in discriminating these various groups (Tables XIII, XIV). One highly significant function was derived which clearly discriminated the three groups based on the SPAS and PAPS results. The second function was not significant and hence was not interpreted. Although the classification routine was not completely accurate, over 70 percent of cases were correctly classified. These variables predicted 80 percent of group membership for the achieving gifted, but only 62 percent for the average achievers. Some previous studies have found that school-related affective characteristics are more influential for "extreme" groups (Burns, 1982) and also the affective characteristics of high ability children become established at an earlier age (Stipek, 1981). Burns (1982) argues that it is the middle students who show the least relationship between academic achievement and the affective variables, especially academic self-concept. He feels that they attain enough positive feedback to balance any negative feedback and they know that they are adequate in relation to the majority of their peers and hence turn to other areas and activities to gain more positive

appraisals of self-worth. Again, it must be acknowledged that the small sample size compared with the relatively large numbers of predictors could have biased this result.

#### THE DEMOGRAPHY OF UNDERACHIEVEMENT AMONGST THE GIFTED IN NEW ZEALAND

Whilst the affective characteristics were the focus of this study, it was also the intention to provide information about the demography of gifted underachievement in New Zealand, information which has been unavailable up to the present time.

##### The Prevalence of Underachievement Amongst the Gifted

The prevalence of gifted underachievement amongst First Form Intermediate School intellectually gifted children was 17 percent. This result only slightly exceeds the lowest estimates found in the literature of 15 percent (Whitmore, 1980) but this is not surprising given the stringency of the identification criterion using the regression equation method. Other procedures have been criticised for a tendency to overidentify (Thorndike, 1963; Behrens and Vernon, 1978).

Giftedness is not a major issue in New Zealand education and there are very few efforts made to specifically provide for this type of child (Dixon, 1980; Reid and McAlpine, 1981). Whilst it is obvious that underachievement has not reached the very high proportions found in other countries it is still arguable that having close to a fifth of the gifted population as underachievers is quite a serious loss of potential to an educational system as well as to the individuals themselves. Whilst the numbers of gifted underachievers may never be immense

taking into account the small number of gifted children in any school system, it does not justify the complete neglect of these children.

#### Underachievement Amongst Males and Females

A surprising finding of this study was that very few females were identified in either gifted group. The ratio of males to females in the total gifted sample was 3.1:1 and for the achieving group 3.25:1. There is some evidence of a greater range of IQ in males (Vernon et al. 1977) and therefore more males are identified as gifted. There are many sociocultural reasons that could explain this overrepresentation at the extreme end of the IQ range. Other research in the field which has also used IQ as a selection criterion has shown similar bias. Ziv et al. (1977) originally planned to examine sex effects for both achieving and underachieving gifted, but out of 67 gifted children only 11 girls were identified, eight achievers and three underachievers. Other studies of achieving gifted have also had a predominance of males (Tidwell, 1980; Maddux et al., 1982). One study had more females (Ross and Parker, 1980) but generally studies fail to report what sex their subjects are.

Previous results in the literature (Shaw and McCuen, 1960; Tieglund et al., 1966; Pringle, 1970; Newman et al., 1973) found that underachievement amongst gifted children is much more prevalent amongst males. This study is no exception as of the seven underachievers five were males yielding a ratio of 2.5:1. This ratio, of course, reflects the bias within the total gifted population but it is within the range suggested by the literature of 2:1 to 3:1 (Tieglund et al., 1966; Pringle, 1970). This

particular study can not offer any explanation for the overrepresentation of boys in these particular groups.

With respect to the underachievers, the small numbers of female underachievers did not allow for separate analysis of results by sex which might have revealed whether males and females underachieve as a result of the same or differing predisposing factors or whether they display differences in their affective characteristics. Given that the gifted population under study is biased with regard to sex, it is still generally acknowledged that males predominate in most remedial populations (Burns, 1982). Boys appear to have more problems on entering school than girls. This could be related to the relative maturity of girls to boys and to the school being a female dominated environment initially as most teachers for the earlier grades are female. Kellogg's (1969) study found that school-related objects were considered to be female by children. Hence boys are perhaps working in an environment better suited for girls. As a result boys could experience more failure making the maintenance of academic achievement more difficult (Burns, 1982).

No satisfactory explanations seem to be offered for female underachievement. This is an area which needs more research but investigators are constantly hampered by the small numbers of female underachievers who can be identified at these early ages. Fitzpatrick is the only investigator to specifically investigate female underachievement in bright students over the past 10 years. Her criterion for inclusion in the study was  $IQ > 110$ , which cannot be classified as gifted.

### Socio-Economic Class

Giftedness is much more likely to be found in professional rather than among other categories of the Revised Elley-Irving Scale (Table IB). Even in an egalitarian society like New Zealand, giftedness is the product of differing, perhaps superior cultural and educational opportunities. Although it proves that there is a long way to go before equality of educational opportunity is achieved, the headstart that these children might gain from a superior home environment does not justify the neglect of this particular group of children.

This demographic data is strong as it involves a study that avoids the pitfalls and inconsistencies found in the literature. These include the lack of suitable identification procedures and confounding due to the previous identification of subjects either through referral or in withdrawal programmes. Interestingly, despite the care in identification, the "face" of underachievement amongst the gifted in New Zealand is remarkably similar to that reported from overseas.

### UNDERACHIEVING GIFTED CHILDREN - A CONCLUDING STATEMENT

What then can be concluded about the problem of underachieving gifted children in New Zealand? There can be no doubt of its existence. Despite its relative insignificance in the overall context of an educational system, it is important to the individual and to society in that it entails a severe loss of academic potential. Although the prevalence (17 percent) was not as high as has been found in other countries, perhaps as a result of identification procedures, nevertheless it is a serious

problem which warrants more recognition than it is presently receiving. Males predominated in both gifted groups. Given the small numbers of underachievers available it was not possible to investigate males and females separately, so it was impossible to determine whether there were any differences between males and females in their affective characteristics. As the numbers of underachieving gifted will always remain small in a society like New Zealand, more in-depth individual research methods such as case-studies and one subject designs will have to be employed to examine sex differences.

Gifted children appear to develop a distinctly different set of affective characteristics to average achieving children. These are a relatively high academic self-concept which appears to be stable by age 11, and high expectations for success in the future.

Underachieving gifted children also have high perceptions of academic ability probably fostered by their early success at school. However, their expectations for future achievement are only average as is their achievement.

For all groups academic self-concept did not change over time whereas expectations seemed much more responsive.

Whilst the picture of mental health of the underachieving gifted child in this study is not as dismal as that portrayed in the literature, there are some indications that depressed affective variables could influence their subsequent achievement. Their expectations are consistently below their own assessment of their ability suggesting that these students lack the necessary motivation to succeed. Possibly they have been "turned off" by the lack of challenge in the early grades and as a result they

may not have developed the necessary study skills and application needed to succeed in their later academic careers.

Although future academic performance is a result of interaction between complex factors including, for example, socio-economic status, motivation and teacher variables, expectations serve to encourage the individual to keep trying. If they perceive that success is possible, then they will be motivated to invest the requisite amount of effort to achieve. However, if individuals feel that a goal is beyond their reach, then they will not aspire to the goals which are actually quite attainable given their high ability. Therefore, it is imperative that the expectations of these children be increased. To do this teachers and parents will have to be made aware of their potential so that children will not be confirmed in their beliefs about their academic success by teacher and parental expectations. The results of this study imply that expectations are still very sensitive to changes and this is where remediation efforts might begin. It is fortunate that underachieving children who are gifted do not express the very depressed academic self-concepts that so often hampers remediation efforts with other underachievers. Amelioration of these gifted children's academic achievement should not be too difficult to attain under these circumstances.

The expectation findings also have implications for achieving gifted children. Obviously gifted children need to secure success if they are to maintain their high expectations (Richer, 1968). Therefore it will be necessary, particularly as the great majority of New Zealand school children change to

larger schools at this time, to think of more creative and wider challenges than are available now.

The results of this research suggests that complete withdrawal of gifted students into segregated groups might not be advantageous to the development of superior characteristics at least in the expectations and self-concept areas. Partial withdrawal programmes, which would probably be more acceptable to New Zealand educators (Dixon, 1980), could benefit both achievers and underachievers. Gifted children could be offered a challenging environment without having to reevaluate their abilities. Underachieving gifted children could be involved in an environment that did not overemphasise verbal intelligence and which also offered remedial study skills training if this was necessary (Fearn, 1982). This type of intervention would need to be introduced as early as possible as previous efforts introduced in the later years of high school have been shown to be relatively ineffective (Pirozzo, 1982).

#### THE DIRECTIONS FOR FUTURE RESEARCH

1. This present study was hampered by the small number of underachieving gifted children identified. This scarcity of available subjects is the perennial problem that affects all research on the gifted. It must be conceded that the numbers of gifted children who are not achieving their full potential will always be small. Therefore, future research should use different methodologies such as a case-study approach or one-subject designs. These would yield a greater depth of information and could delineate the dimensions and potential differences between male and female underachievement.

2. The results for academic self-concept suggest that investigations should cover a longer time-span and should have a cross-sectional component. This would establish the dynamics of academic self-concept, especially with reference to younger children. At the same time, it would be advantageous to measure academic achievement variables so that important predictive or causal relationships can be studied. Also, given the differences in the WISC-R IQ scores and the differing patterns of achievement variables it would be advisable for subsequent investigations to examine the subscale scores of the particular instrument used (SPAS and PAPS).

3. The expectations research needs replication and amplification. Results from this present study suggest that programmes designed to raise expectations could be investigated. Teachers' and parents' expectations and their role in affective and cognitive development should also be examined for both groups. As expectations seem to be amenable to change such data could contribute to the development of procedures whereby teachers and parents could remedy their inappropriate expectations without the need for drastic and time consuming remedial interventions.

4. Finally, the complete lack of findings in the locus of control area suggests that any further research must use a much more appropriate instrument which can discriminate in more than one attributional dimension.

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**APPENDIX**

## APPENDIX

### THE IDENTIFICATION OF ACADEMICALLY GIFTED CHILDREN

Terman's monumental longitudinal research into intelligence has shaped the general perception of the gifted during this century (Terman, 1925; Terman and Oden, 1947). He assumed that giftedness was related directly to intellectual activity and that a standardised intelligence test was the preferred objective assessment tool for identifying giftedness. Generally speaking, children equalling or excelling some predetermined IQ score in an individual intelligence test have been considered intellectually gifted. However, the suggested criteria ranges from IQ>120 to IQ>140 (Vernon et al., 1977; Karnes and Brown, 1980a; Renzulli, 1980) and there has been very little rationale behind the chosen level.

#### The Changing Definition of Giftedness

Although individual IQ tests have been shown to have extremely good psychometric properties and to be highly predictive of academic achievement and adult eminence (Foster, 1965; Jastack and Jastack, 1965; Brooks, 1977; Hartlege and Steele, 1977; Reynolds et al., 1981), after the 1950s political, social and theoretical developments were instrumental in turning researchers towards other forms of giftedness. It was the launching of Sputnik in 1957 by the Soviets that led to a call in the United States for the encouragement of more creativity and innovative thinking to make that country more competitive (Vernon et al., 1977).

In addition to the altered social and political climate, there was a burgeoning criticism by psychologists for the idea of a static genetically fixed intelligence (Thurstone, 1938; Hebb, 1949; Guilford, 1950). In 1950, Guilford pointed a new direction for the field with his famous address on creativity. His argument was that psychologists and educationalists had ignored a whole class of abilities of the imaginative and productive kind. The publication of his theoretical model in 1956 (Guilford, 1956) provided a further challenge to the concept of intelligence that had developed from the work of Terman. Guilford hypothesised that there were 120 special mental abilities and initiated the effort to assess mental aptitude for each type of quality.

Following Guilford's lead many researchers turned their attention to the intelligence/creativity distinction (Getzels and Jackson, 1962) and to developing tests that purported to identify children's creative potential (Torrance, 1962; Wallach and Kogan, 1965; Mednick, 1968). However, neither the awareness of the limitations of the IQ score nor an awareness of the existence of creative abilities have helped to locate or select the creatively able. Much of the research in the area is problematical and most of the major issues are still unresolved (Baird, 1972; Crockenberg, 1972; Rekdal, 1977; Khatena, 1979; Keating, 1980; Barron and Harrington, 1981).

Breaking the stranglehold of the intelligence definition for giftedness led to the gradual broadening of the whole field. The simple intelligence/creativity dichotomy of the 1960s has now been expanded to the point where the prevailing view of giftedness now includes not only the academically gifted but also

people with special aptitudes, creative abilities and personal qualities. Official recognition and a redefinition of these developments came from a major review by the Commissioner of Education of the United States Office of Education (Marland, 1972). In this influential report, giftedness was defined as including those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combinations:

1. General intellectual ability
2. Specific academic aptitude
3. Creative or productive thinking
4. Leadership ability
5. Visual and performing arts
6. Psychomotor ability

This United States Office of Education model is a major reference point for definitions of giftedness, but the broadening of the concept, though laudable, has resulted in major problems. These centre around the difficulty of defining the specific kinds of giftedness and the development of measures for the abilities and characteristics involved.

Current usage of the term "gifted" is ambiguous because of the "general lack of clarity on the definition, its categories and their relationship to one another" (Alvino et al., 1981). As a corollary, the state of the art of identifying gifted children within the different categories of this expanded definition is in disarray (Alvino et al., 1981). Some bold attempts at identification have been made but techniques are at a very embryonic stage (Rubenzer, 1979) and there is a general consensus that little progress has been made in the last 10 years (Alvino

et al., 1981; Yarborough and Johnson, 1983).

#### The Identification of Gifted Children under the Broader Definition

Recent surveys of identification practices have revealed some disturbing and inappropriate trends. Most gifted programmes still screen students for general intellectual ability as reflected by IQ, which leads one to question whether there is a serious theory-practice gap. Perhaps more importantly, many tests are being used for populations and purposes for which they were not designed (Alvino et al., 1981; Jenkins-Friedman, 1982; Yarborough and Johnson, 1983). Finally, as a reflection of the lack of validated instrumentation beyond the intellectual and academic categories, the use of nominations particularly by teachers, is becoming increasingly common especially in the last four categories (Martinson, 1974; Alvino et al., 1981; Delisle et al., 1981). Gear's (1976) review of the literature in the area of teacher judgement reveals that teachers are ultimately ineffective and inefficient in identifying gifted students. Further, teachers appear to favour high-achieving gifted students, particularly well-behaved girls and overlook gifted youngsters who are bored, restless or underachieving (Marland, 1972). Recent research has verified the previous criticisms of relying on teacher judgements. For example, Lowenstein (1982) found that teacher identification is still based on their students' actual academic attainment in basic subjects and tended to overrate high-achieving girls for inclusion in gifted programmes. The broadening of the definition of giftedness has probably added to the problems of teachers trying to identify

gifted children.

In addition to traditional IQ testing and teacher nominations, there are other identification practices, that have gained wide acceptance. These are the use of multi-method identification procedures such as those outlined by Renzulli (1976). The different techniques include the case-study approach (Renzulli and Smith, 1977); a multi-talent identification in which a variety of instruments can be administered on an individual basis (Rubenzer, 1979); a comprehensive review of information drawn from a variety of sources (Treffinger *et al.*, 1979) and a series of rating scales identifying behaviours that are characteristic of gifted children (Bernal, 1973; Renzulli, 1976).

Despite their extensive use, there have been very few studies to test the validity of these alternative approaches. Renzulli and Smith (1977) reported on the validity of one case-study approach for academically gifted children. Time and cost analyses were conducted as was an examination of the usefulness of various types of information included in the case-study. In the traditional approach, performance on individually administered intelligence tests was the basis for identification. The results indicated that the case-study approach was generally superior to the traditional procedure because of the former's consideration of multiple sources of information.

Dirks and Quarforth (1981) also compared the case-study method with IQ and achievement testing using the same group of children. They found that the children identified by the case-study approach were high classroom achievers with only moderate

IQ scores who were thought well of by their teachers. By comparison, the more traditional techniques identified children who had high IQs but who were manifesting underachievement.

Obviously, case-studies are mostly observational and they could be seen to be returning to the subjectivism of the pre-IQ test era. Compounding this subjective difficulty is the fact that teachers nominate as gifted, striving, conforming high-achievers who do neat work, to the exclusion of other not so good students who might also be gifted (Pegnato and Birch, 1959; Cornish, 1968; Gear, 1976).

Behavioural rating scales have been suggested also as a more objective way for teachers to assess gifted students. However, these suffer from the inclusion of dimensions that lack a rationale at a conceptual or empirical level (Alvino et al., 1981; Burke et al., 1982). More studies are needed before their use as screening measures can be empirically justified (Argulewicz et al., 1982; Burke et al., 1982). Again, there are indications that teachers are still influenced by the traditional attribute of achievement (Burke et al., 1982).

Clearly more research is needed to determine the conditions under which these alternative means of identification can be used but at present, multi-method systems for lack of adequate alternatives, are relying excessively on teacher nominations and judgement and on observational data, and as such the only children who will be identified as gifted are those who are already exhibiting the characteristics of being gifted. Hence these methods cannot effectively identify at least one type of gifted child, the underachiever.

## Identification of the Intellectually Gifted in Studies that Involve Underachievers

The underachieving gifted child does not exhibit the quick-paced learning, multiple interests, enjoyment of challenge, task persistence and voracious reading, which are characteristics that are often thought associated with gifted and talented students. If their standardised IQ tests do indicate their superior ability, their school performance is often not high enough for them to fulfil the criteria for placement into gifted programmes (Golicz, 1982).

In conclusion the individual IQ test, in spite of its weaknesses, (for example, it discriminates against minorities and lower socio-economic groups) is still recognised as the strongest and most valid criterion for intellectual giftedness and is used in the majority of test programmes for gifted children. As this present study is concerning itself exclusively with this category of gifted child, and, more importantly, with underachievers within this category, the IQ test is the only parameter that can be included in any such study. Furthermore, the discrepancy between IQ and achievement measures is the axiomatic definition of the underachievement concept.

For this study "giftedness" will be determined by a selected criterion on an individual IQ test. The WISC-R is one of two frequently administered tests and has been shown to have good validity (Rubenzer, 1979). Following accepted practice, a group intelligence test will be used as an initial screening test, to be followed by further testing. Any children scoring or exceeding 125 on the WISC-R Full Scale will be included in the

study.

The choice of any cut-off point is fraught with problems. For example, any rigid score does not allow for interpretive factors such as the standard error of measurement. In spite of this situation nearly all research in this field employs rigid cut-off points ranging from 120 to 130. Renzulli (1980) states that most identification focuses on the 125 to 130 range. The criterion of  $IQ > 125$  has been chosen because it coincides with general practice overseas, and the great majority of the research that has examined self-concept and locus of control amongst the intellectually gifted has used this criterion for giftedness (Milgram and Milgram, 1975,1976). Choosing this level will allow direct comparison between this study and much of what has proceeded it in the area of the affective characteristics of underachieving academically gifted children.