

ACHIEVEMENT-RELATED BEHAVIOUR IN GIFTED CHILDREN:

A Case Study Approach

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DECLARATION

I, Helen Kenny, being a candidate for the degree of Master of Arts as awarded by Dublin City University, declare that while registered as a candidate for the above degree I have not been a registered candidate for an award at any other university. Secondly, that none of the material contained in this thesis has been used in any other submission for any other award. Further, that the contents are the sole work of the author except where an acknowledgement has been made for assistance received.

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ABSTRACT

This thesis explores achievement-related behaviour in a group of twenty-two gifted children living in Dublin. The literature relating to giftedness and motivation is reviewed. The methodology is described. The children's home and school backgrounds are described in terms of factors believed to influence motivation and achievement. Conclusions are drawn about the effectiveness of the home and school as environments for facilitating achievement. The homes, on the whole, are found to provide the type of background generally associated with the development of gifts and talents. Gifted children are found to have problems in Dublin schools. These problems concern the content and difficulty level of work assigned, the pace of progress, teacher feedback, working conditions and disciplinary regimes. Reference is made to the effect of perceived demand/ acceptance by parents and teachers on the child's motivation. Children's self-concepts, thinking styles, attitudes to school and learning, peer relationships and actual achievement levels are described. Inappropriate classroom behaviours are seen to be linked to a particular cognitive style involving the right cerebral hemisphere, indicating that the convergent thinking tasks so often prescribed for these children may be alien to their preferred way of thinking. Peer problems are also evident in the data. Many of these resulted from differences in lifestyle, levels of experience and reasoning ability as well as a desire to excel and show leadership. The conclusions are summarised and recommendations made for improving the school as a learning environment for gifted children. There is a danger that in looking for generalizable patterns of behaviour in such a small sample, one may depersonalise the child and fail to take account of the unique background of experience and a unique set of perceptions which s/he selectively brings to bear on any situation. To give a better insight into each child's achievement-related behaviour profiles have been drawn up for each child showing the factors which at the time of the study seemed to be most relevant to each child's achievement behaviour and highlighting areas of concern where appropriate.

THE IRISH EXPERIENCE

The Irish Department of Education issues no guidelines for the identification of gifted children, nor does it make any special educational provision for them.

In 1983, following representations by the Irish Association for Gifted Children, the then Minister for Education appointed a Senior Inspector to liaise with the Association on matters concerning the gifted. This inspector was given no budget and no special powers and was not available for consultation by individual parents. The following year (1984), a government "Programme for Action in Education. 84-87" was published, setting out educational priorities. Item 2.35 of that document reads as follows:

"A submission has been received in relation to the particular problems of gifted children. The implications of catering specifically for the needs of this group will be considered during the period of the programme".

A Progress Report for 1985 showed that very little progress had been made (March, 1986):

"The Department continued its liaison with parties interested in this matter and is considering a proposition, as yet in its early stages, under which regionally-based special courses in mathematics might be organised for gifted children in primary schools".

The Progress Report for 1986 showed little change. No mention was made of the aforementioned special courses in mathematics:

"The Department continued its contacts with interested parties in 1986. In certain cases arrangements were made for accelerated promotion of individual children, although, having regard to the need for the development of individual children, it may be that in the majority of cases, an extension of the range of challenging experiences, while retaining the "gifted" children within age peer groups may be the best strategy. Reference is made to the needs of this group at in-service courses for teachers".

The words "it may be " seem to imply that the Department is not sure of its ground, that there is no evidence on which to base any decision in relation to the placement of gifted children, so that the traditional system, placement by age, has become, by default, the "best strategy".

As can be seen from the foregoing, the Department has taken no initiative on the matter, but simply reacted to submissions from interested outside parties, foremost among which is the Irish Association for Gifted Children. This Association is a voluntary group working to assist parents, educators and the social services in the care of gifted and talented children in Ireland.

Through her work as a Council member and later as Chairperson of the Association the present researcher became aware of the presence of very many gifted under-achieving children. Because there was no school psychological service at primary level, and because of excessive demands on the Health Board Services, gifted children requiring psychological services for educational guidance and placement purposes only were, with few exceptions, being put

on the end of very long waiting lists. Children with severe medical and emotional problems were given priority. Many children were in fact first recognised as gifted as a result of having been referred for assessment for behavioural problems and not as a result of high educational achievement. It seemed that becoming disruptive, emotionally distressed or refusing school altogether was the only way these children could get the system to acknowledge their ability. When teachers finally received a report stating that the child was gifted, frequently changes were initiated with a view to modifying the child's behaviour, not his/her academic performance. The symptoms were treated while the cause remained untouched. Often this was because the teachers lacked training in dealing with gifted children and hesitated to do anything which would make the child stand out as different or special, even when the child was unquestionably different and recognised as such by his/her peers.

THE BRITISH EXPERIENCE

One would expect that countries which have for a considerable time recognised that gifted children exist and have specific needs could provide models of progress from which Ireland could learn. However, evidence from British and American studies shows an alarming degree of educational underprovision and of underachievement among gifted children as the following reports show. A survey undertaken by British school inspectors in 1978 in over a thousand primary classrooms containing seven, nine and

eleven year olds showed that, in subjects other than art, crafts and music, the higher the child's ability, the less likely s/he was to be doing work that was sufficiently challenging (H.M.S.O.,1978). The results of a survey of 10% of second-level schools in England and Wales also found that gifted children were not reaching their potential. Concern was expressed that teacher opinion was the main means of identification employed rather than more formal measures (H.M.S.O,1979).

Painter (1980) studied the attainments and other characteristics of seventy-three gifted and sixty-four average bright (I.Q. Stanford-Binet 130 or under) primary school children. She found that for many of the comparisons made, levels of attainment relative to their ability were lower for the gifted group than for the other group, She also found a high level of frustration and a more variation in levels of attainment among the gifted group.

THE AMERICAN EXPERIENCE

A Nation at Risk: The Report of the National Commission for Excellence in Education (1983) caused consternation among United States educators. It was found that over half of the gifted students failed to match tested ability with comparable achievement at school. Among the recommendations made was:

".....gifted students may need a curriculum enriched and accelerated beyond even the needs of the other students of high ability..." (p24).

On the subject of excellence, the Report states:

"At the level of the individual learner, it means performing at the boundary of individual ability in ways that test and push back personal limits". (p12).

Goodlad (1984) in "A Place Called School", a report on research involving 1350 teachers and 17,163 students from kindergarten to Grade 12 in American schools reveals:

"Only rarely did we find evidence to suggest instruction likely to go beyond the mere possession of information to a level of understanding".

He speaks of boredom as a disease of epidemic proportions, although he did find that children in accelerated or enriched classes did spend more time on relatively high level cognitive processes. (Cited by Feldhusen & Hoover, 1984).

GIFTEDNESS AND UNDERACHIEVEMENT

Gifted and underachieving children risk a high incidence of social and emotional difficulties, (Pringle, 1970; Janos & Robinson, 1985), poor self-image and lack of self-confidence, which is often manifested by aggressiveness in boys and withdrawal in girls (Whitmore, 1980). The higher the I.Q. the greater the risk (Hollingworth, 1942; Janos & Robinson, 1985). Boredom and frustration at school are prime contributors to emotional disturbance (Tannenbaum, 1986, Maltby, 1984) although too low parental expectations and inconsistent child-rearing practises are also factors (Pringle, 1970).

THE PRESENT RESEARCH

Faced with such an accumulation of depressing evidence, the present researcher decided to undertake this study. It was almost a reconnaissance mission. Working on the theory that diagnosis must precede prescription, it attempts to shed some light on the process of achievement-related behaviour as experienced by a small sample of gifted children in primary schools.

The Purposes of the Study

- A. By a review of the literature, to ascertain which factors are commonly associated with achievement-related behaviour.
- B. To describe the life-space of a group of gifted children in terms of factors believed to influence achievement.
- C. To discover those factors which appear to be relevant for each individual child and to describe how they operate and interact to promote or inhibit achievement-related behaviour.
- D. To make recommendations on the educational provision required for gifted children.

The literature on giftedness can be categorised under many headings. Those which follow have been chosen because they encompass the major factors which have been associated with the concept of giftedness, These are: high ability, generally understood as a high level of intelligence and perceived as a sine qua non of giftedness; creativity which seems to characterize the products of those who have reached the pinnacle of achievement in their respective fields; and motivation or task commitment, which appears to be the process which translates potential into achievement

The nature of intelligence has been the subject of much debate. It has been described in terms of the types of knowledge involved, the ways in which the knowledge is represented, the processes which can be applied to it and the developmental sequences in which the various levels of information-processing ability appear. There is disagreement among experts on whether there is one underlying ability (general intelligence), which underpins or controls all intelligent behaviour, or whether there are many different types of abilities, perhaps having a hierarchical structure, or indeed whether there are different types of intelligences, corresponding to different kinds of knowledge e.g. spatial, numerical, logical-mathematical. The search for artificial intelligence has led to a quest for greater specificity in describing aspects of the human information processing system.

The products of many high-achieving people are

characterised by their originality or creativity. The review of creativity research deals with this aspect of high achievement. Creativity is described in terms of problem-solving and of working at the cutting edge of one's field. The various stages of the creative process are outlined and the type of socio-cultural context associated with its development is described. The role of knowledge, especially highly accessible prototypical knowledge, and of domain-specific instruction is discussed. The choice of cognitive style and the application of appropriate cognitive strategies are examined. Evidence is presented relating to the feasibility and usefulness of attempting to test creativity. The impact of personal, motivational and environmental factors on real-life creativity is described. The section concludes with a discussion of the usefulness of creativity viewed as a construct separate from intelligence.

Motivation is a necessary link between ability and achievement. It is intrinsically linked with the self-concept, the way in which the individual conceptualises experience. It is the product of person-environment interaction. The section on motivation which follows deals with the cognitive aspects of motivation, in particular with the reasons which one attributes to success/failure experiences. As every would-be non-smoker has discovered, changing what we know will not, by itself, always alter behaviour. There is also an emotional aspect to be considered. The literature suggests that the cognitive and emotional aspects influence each other, but some experts

believe that it is the anticipation of the affective consequences of behaviour which appears to be the "spring of action". Parents, teachers and peers, because they are significant actors in the child's field of experience, can influence the child's knowledge and emotions and thus his/her motivation and achievement. The section on motivation discusses their role. Other elements of the child's experience, which the literature shows to be important for achievement behaviour, for example the challenge potential of the environment, the degree of independence accorded the child and the type of feedback available to him/her, are also examined.

WHO ARE THE GIFTED ?

To find the answer to this question, let us first look at some commonly used and officially approved definitions.

Eric Ogilvie (1973) working in England with the Schools Council produced the following definition:

"The term gifted is used to indicate any child who is outstanding in either a general or specific ability in a relatively broad or narrow field of endeavour"

He goes on to suggest that recognized tests (e.g. intelligence tests) could be used to define giftedness, or that, in their absence, subjective judgements on manifest originality and imagination could be used as criteria. There is a certain instinctive appeal about this definition which attempts to be all things to all men, but it is too poorly focused to add much to the concept of giftedness.

Her Majesty's Inspectors of Schools (H.M.I.) (1977) produced the following:

"Gifted children are those who are generally recognized by their school as being of superior all-round intellectual ability, confirmed where possible by a reliable individual intelligence test giving an IQ of 130 or more".

Both of these British definitions agree on the notion of giftedness as exceptional ability (Ogilvie: "outstanding"; HMI: "superior").

However, while Ogilvie refers to general or specific ability H.M.I. require "all-round" intellectual ability. Both approve of the use of intelligence test scores as

criteria of giftedness.

Albert & Runco (1986) point out that general intellectual ability and specific academic aptitude are usually and significantly positively correlated, and that accurate measurement of one of these areas should give a useful prediction of potential performance in the other.

The official American definition is more informative than either of the British ones, since it specifies the performance areas in question. In 1972 the U.S. Commissioner of Education, Marland, reporting to Congress, used the following definition which was later enshrined in U.S. Public Law 91-930 Section 806. This definition is accepted and used widely throughout the U.S. for the purpose of selecting children who are in need of special curricular provision. It reads as follows:

"Gifted and talented children are those identified by professionally qualified persons, who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realise their contribution to self and society. Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas:

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

Another definition is found in Renzulli's (1978) "Three-Ring Conception of Giftedness":

"Gifted behaviour consists of behaviours that reflect an interaction among three basic clusters of human traits - these clusters being above average general and/or specific abilities, high levels of task commitment and high levels of creativity. Individuals capable of developing gifted behaviour are those possessing or capable of developing this composite set of traits and applying them to any potentially valuable area of human performance. Persons who manifest or are capable of developing an interaction among these three clusters require a wide variety of educational opportunities and services that are not ordinarily provided through regular instructional programs".

Renzulli has further developed his conception of giftedness to take into account the fact that the three basic clusters are embedded in a background of personality and environment (Renzulli, 1986). His graphic representation of the Three-Ring Concept of Giftedness gives examples of general and specific areas to which gifted behaviour can be applied.

It should be noted that neither of these American definitions refers to a particular IQ cut-off point, below which one cannot be considered gifted. This reflects the modern thinking that giftedness is a multi-faceted phenomenon, which encompasses much more than simply the school learning which IQ tests predict quite well. The implication here is that identification through provision should be the objective rather than identification followed by provision. This is to say that a child can more easily be identified as gifted in a challenging environment where the learning experiences require high intelligence, evoke creative response, and stimulate motivation thereby enabling the child to manifest gifted behaviour and where the teacher is a careful observer and monitor of progress. Both Marland

and Renzulli distinguish between potential and manifest giftedness. High ability does not necessarily translate into high achievement.

The definitions produced by H.M.I., Ogilvie and Marland fail to make a link between ability and achievement. Renzulli's definition goes some way towards bridging the gap by introducing the notion of task commitment as well as by acknowledging the part played by personal and environmental factors.

This accords with Feldhusen's view: "Giftedness is a combination of general ability, special talents, self-concept and motivation that pre-disposes the gifted individual to learn, to achieve and to strive for excellence" (Feldhusen, 1986).

In general it seems that giftedness encompasses a complex interaction between intellectual abilities (high level general intellectual ability and /or specific abilities/talents and possibly creativity), a high self-concept, a high level of motivation and an environment favourable to the pursuit of excellence.

Intelligence has been described as "that combination of abilities required for survival and advancement within a particular culture" (Anastasi, 1982).

At the beginning of the century Alfred Binet in France devised tests designed to measure intelligence. The questions increase in difficulty until the child fails to give correct answers. The level at which this happens indicates the child's mental age i.e. if most ten year olds could reach that level, the mental age is ten. This is then divided by the child's chronological age and multiplied by 100 to yield an intelligence quotient I.Q.

Louis Terman of Stanford University translated these tests into English and they became known as the Stanford-Binet tests. Terman subsequently used the Stanford Test to identify a sample of high-scoring Californian children whom he considered to be future genius material. His pioneering study "Genetic Studies of Genius" appeared in 1925. The progress of these children was followed through into later life and results did indeed seem to point to the predictive power of IQ tests in identifying as children those who would achieve highly as adults. Twenty five years after the initial study 71% of the sample occupied high-status professional and managerial positions compared with 13.8% of the Californian population generally (Terman & Oden 1959). These children did however come from educationally and economically favourable backgrounds.

In 1926 Cox published "The early mental traits of 300 geniuses". This was a retrospective study of 300 people whose achievements were widely recognised e.g. John Stuart Mill, Galton, and whose IQ's were estimated from biographical data.

Both Terman and Cox agreed that "the genius who achieves highest eminence is the one whom intelligence tests would have identified as gifted in childhood". Thus began the search for childhood indicators and determinants of potential for exceptional achievement in adulthood.

The psychometric tradition which equated giftedness with ability to score at very high levels on standardized intelligence tests has persisted to this day. Many states in the U.S. use a cut-off point of IQ 130, which depending on which test is used will place a child's performance in the top 2 - 3% of a randomly selected population. Freeman used an IQ score of 141+ (S. Binet) to identify her gifted sample. The most commonly used tests are the Stanford Binet and the Weschler Intelligence Scale for children (Revised) although a wide range of other tests has also been recommended by the U.S. Department of Education. Typical intelligence tests measure largely verbal abilities. They also cover abilities to deal with numerical and other abstract symbols to a lesser degree. These are the abilities which predominate in school learning. There are of course many important psychological functions which established intelligence tests do not presume to measure e.g. motor, musical or artistic abilities (Anastasi, 1982).

Conceptions of intelligence have altered over time. Spearman (1923) invented a technique called factor analysis, and by measuring correlations between intelligence tests extracted what he called a 'g' or general factor which was common to all the tests. He described this general factor in terms of three operations which he called apprehension of experience (encoding of stimuli), education of relations (inferring relations between various aspects of stimuli) and education of correlates (applying relations from one set of stimuli to another) (Sternberg & Davidson, 1985) These three processes have counterparts in modern information processing theories of intelligence e.g. Sternberg (1986). Spearman also believed that there were specific factors which were also required for specific tasks.

While there have been many competing as well as complementary theories on the structure of intelligence, the contents of the intelligent mind, the cognitive processes performed by intelligent people and the development of intelligent thinking abilities, some of which will be discussed later, the link between giftedness and general intellectual ability (especially general intelligence) continues to be made.

Eysenck (1985) argues that: "modern research ... has demonstrated conclusively that there is a general factor of intelligence which runs through all cognitive tasks and problems".

Humphreys (1985) states that: "The fundamental basis for intellectual giftedness is a high level of general

intelligence". Together with Parson and Park (through their study of data generated by Project Talent) he discovered that an important determinant of access to high quality second-level education was intelligence. He concluded that: "Being in a position to make a gifted contribution to society depends very largely on education and education depends very largely on intelligence".

Thurstone (1938) was not convinced of the existence of Spearman's 'g' and, by applying factor analysis to a battery of tests, concluded that there were seven primary abilities - verbal comprehension, word fluency, spatial relations, perceptual speed, facility with numbers, associative memory and induction.

More recently Gardner (1983) has proposed a "theory of multiple intelligences". He suggests that there are seven separate domains in which talent develops: e.g. linguistic, logical-mathematical. Although separate, they interact and build upon one another from the beginning. For this reason he suggests that the IQ test is too undifferentiated a measure to tell us much about domain specific talent. Eysenck (1985) tries to reconcile the idea of giftedness as 'g' and giftedness as domain - specific ability:-

"General intelligence is much the most important variable for the gifted child, though, in addition, giftedness in the various special abilities is very important in determining the direction of its development in terms of the child's interests and achievements".

Guilford (1977) put forward a more complex theory which viewed intelligence as "a systematic collection of

abilities or functions for processing information in different ways". He envisaged intelligence as having three aspects which he represented by a cube. The three faces were: operations, contents and products. Each operation could be applied to a content area to produce a product. Operations consisted of cognition, memory, convergent and divergent production and evaluation. Content consisted of: visual, auditory, symbolic, semantic and behaviour contents while Products consisted of: units, classes, relations, systems, transformations and implications.

Although basically a structural model, Guilford's theory has much in common with more recent information processing models because it draws attention to various intellectual processes and also to the centrality of contents i.e. knowledge.

Piaget (1972) described cognition in developmental terms. He describes the child's progress through four qualitatively different periods during which the child develops mental structures which interact with the sense data. The mind contains these structures as ordering principles which can be applied to experience.

"The inter-active role of the structural elements of knowledge signals their constructive function in ordering and synthesising what is given through the senses. The assumption is that reality is constructed to become the phenomena we experience". (Fabricius, 1983).

Gifted children are often described as having a greater capacity to create structure and organize data (Powell & Hadon, 1984).

Piaget's four periods are:

the sensori-motor period (birth to 2 yrs approx.)

the preoperational period (2 - 6 yrs approx.)

the period of concrete operations (6 - 12 yrs approximately).

and the period of formal operations (c 12 -)

Every child was believed to pass through the stages in the same order. Those who did so at an accelerated rate could be deemed precocious, but since it was assumed that everyone, or almost everyone, would eventually reach the fourth stage, Piaget's theory did little to account for gifted adult performance.

The ability which characterizes the fourth stage is the ability to perceive relations among relations i.e. second order relations.

Commons, Richards and Kuhn (1982) suggest the existence of periods beyond the fourth. They proposed a period of "systematic operations", which involved ability to deal with fourth order operations, and a period of "metasystemic operations", that is operations for comparing and contrasting systems with one another. Sternberg and Davidson (1982) found that the ability to recognize third order relations continued through adolescence.

The quest for artificial intelligence, particularly for "expert systems" which could imitate the performance of an expert in domain-specific fields (e.g. medical diagnosis) led psychologists to become more specific about how humans process information and how they represent knowledge. The fact that early computers could only retrieve knowledge by

exhaustive serial searching while humans achieved the same result apparently by intuitive jumps led to questions about skilled performance and automatic retrieval.

Rabinowitz and Glazer (1985) attacked the subject of giftedness and intelligence by asking questions about cognitive structure and highly competent performance. They showed that possession of a well-organized knowledge base which is readily accessible, is an important determinant of skilled performance.

Keating and Bobbitt (1978) found that children of above-average ability search memory faster than do those of average ability.

MacKinnon (1978) found that his large samples of creative successful people had access to a large data base of domain-specific knowledge.

One possible cause may be a shift from conscious controlled processing which is sequential and subject to capacity limitations to automatic processing which is parallel, faster and not subject to capacity limitations. The importance of automatic processing for the performance of complex tasks is also referred to by Sternberg (1985).

Rabinowitz and Glazer (1985) suggest that automatic processing, giving a greater accessibility of knowledge may result from the automatic spread of activation along associative pathways in a knowledge structure. They view this superior rapid accessibility to organized and cohesive knowledge structures as an important aspect of cognitive skill and gifted performance. They go on to consider how this ability works to favour problem-solving by

qualitatively altering the ways in which experts as distinct from novices represent and attack problem situations.

Novices start work on a physics problem with a data-driven approach to representing the problem which they then tend to solve using a means-end strategy. Experts base their representations on higher level principles which they apply to the data (Newell & Simon, 1972). This ability of experts to base their problem representations on higher level principles can be attributed to the existence and accessibility of structures of prototypical knowledge or problem schemata that unify superficially disparate problems (Rabinowitz & Glazer, 1985).

Sternberg (1981) proposed a componential theory of intellectual giftedness. He holds that there are three kinds of basic elementary information processes:

(a) metacomponents, which are higher-order control processes that are used in executive planning and decision making in problem solving.

(b) performance components which are lower-order processes used in executing a problem solving strategy and

(c) knowledge-acquisition components which are lower-order processes used in acquiring retraining and transferring new information.

He suggests that the knowledge acquisition components provide the data-base and the performance components implement the problem-solving strategy. Feedback from both to the metacomponents enables the individual to monitor the effectiveness of the strategy and learn from mistakes.

He concludes that:

"Intellectually gifted children are ones who are particularly effective in their componential functioning and in their ability to use the intercommunication among components to correct and improve task performance Truly outstanding individuals in history seem to be those who are particularly well able to attain insights by using selective encoding, selective combination and selective comparison in original ways".

These three abilities are very similar to Spearman's "g".

Davidson and Sternberg (1984) reported that gifted primary school children were superior to non-gifted ones in their use of insight i.e. they applied the three knowledge-acquisition components described above spontaneously and in an appropriate manner when solving mathematical problems.

To conclude, highly intelligent behaviour would appear to involve superior performance in a variety of cognitive skills: accuracy in perceiving stimuli, ability to perceive relationships between stimuli, ability to deal with second, third or even higher order relations, ability to build complex structures of prototypical knowledge and to search memory quickly and automatically, possession of problem-finding and problem-solving abilities as well as of metacognitive skills to exercise higher-order control over all the other processes, monitor feedback from them and learn by experience.

While intelligence as measured by IQ tests is a good predictor of academic achievement, (Humphreys, 1985), it is not always seen to be a good predictor of achievement in areas unrelated to school-type learning. Various studies of people who were high achievers in their professions showed that intelligence alone could not account for their success (Facaoaru, 1985). It became apparent that some other factor or factors were at work. Creativity is frequently implicated in giftedness although the concept is the subject of much argument. Tannebaum (1986) goes so far as to state that "Because it denotes a rare and valued human accomplishment, creativity should be conceptualized as interchangeable with giftedness, for, after all, giftedness is reflected in the ability to be an innovator of what is new and treasurable, not just a curator of what is old and treasured.". Albert & Runco (1986) believe that creativity in an individual becomes manifest in active problem solving and problem finding as well as in feelings of high responsibility and sensitivity to some pertinent aspects of one's career. Getzels (1962) believed that orientation towards problems is essential to creativity and that finding and formulating a problem is an important aspect of creative performance. He further suggested that creative success depends on the quality of problem the person "finds" (cited in Freeman, 1985).

The creative process, according to Wallas (1926) occurs in four stages:

Preparation, incubation, illumination and verification.

The first stage involves "finding" the problem and acquiring the domain-specific knowledge necessary for its solution. The second stage is often one of apparent inactivity. During this time existing knowledge is analysed and elements are recombined often without conscious intervention by the individual. In the third stage a new mental structure, a conceptualization of old knowledge emerges. The last stage is one of reality verification - seeing whether the new idea works - and often of communication.

At the outset an orientation towards problems is necessary. MacKinnon (1960) found that original and creative persons were "open to experience". Ogilvie(1973), Powell and Hadon, (1984) and Freeman (1979) all referred to curiosity as a distinguishing feature of gifted children. Hollingworth (1942) remarked on the quality of questions asked by highly gifted children. Paying attention is also essential to the problem-finding process. Freeman found that her high IQ group claimed to be able to pay attention to more than one thing at a time almost twice as often as the moderate IQ group claimed to do so. Lazar Stanov(1983) puts forward evidence to show that attention and intelligence are related concepts at an empirical level and can be described in similar terms - coping with a large amount of information.

A curious intelligent child who is paying attention will often pick out ambiguities and inconsistencies in adult statements. (Plowden Report,D.E.S.,1967).

A prerequisite for active problem-finding orientation is the knowledge or belief that our view of the world is not "given", not "gospel" but is somehow open to negotiation and re-interpretation. D.K. Simonton (1977), writing about the socio-cultural context of creative development points to three central processes:

1. Access to numerous role models
2. early exposure to cultural diversity which results in an awareness of diverse perspectives (in this connection excessive formal education can act as an inhibitor.
3. Adaptation to the political environment by generating a set of philosophical beliefs (philosophical commitment).

Cox (1926) found that her eminent subjects had access to inspiring role models .

The creative process has been described as "tolerance for ambiguity" or what MacKinnon (1960) called a capacity to reconcile opposing values. Vaughan (1982) writes: "The creative process can only be maintained by holding opposites in a state of dynamic tension". The attempt to balance or reconcile these opposites requires an act of synthesis. Barron (1958) argues that creative individuals "seek complexity and disorder from which they can create new simplicities and new orders" i.e. they actively seek out situations which lend themselves to new conceptualizations. The gifted are often described as showing a preference for thinking and generating ideas and as valuing intellectual activity.

Powell and Hadon (1984) state that the highly gifted "have the greatest capacity to create structure and organize data and have the greatest need to know". This independence from the need for externally imposed structure was also remarked on by Price (1980). Helson's (1971) findings indicated that creative women in her sample were "strongly motivated to create their own forms and to express and validate their own ideas, but did not enjoy routine duties or working within a highly structured framework". Freeman (1979) reported that the high IQ children in her sample seemed less dependent on the teacher's teaching strategies and could evaluate his performance objectively.

The Role of Knowledge

Once an individual has detected an ambiguity, a contradiction, an inconsistency or a gap in existing knowledge which constitutes a problem requiring a new conceptualization, the next step is to formulate the problem. This requires "access to structures of prototypical knowledge or problem schemata that unify typically disparate problems" (Rabinowitz and Glaser, 1985)

MacKinnon noted that his samples of successful creative inventors, artists, mathematicians and others had access to a large data-base of information on their subject. Feldhusen (1986) states "Our general faith in that gifted and talented youth should receive tutelage of some kind and should become knowledgeable in some discipline or area of

study as a prelude to creative achievement". Bloom's (1985) study shows that mastery of domain-specific knowledge and instruction by mastery-oriented teachers were indeed the precursors of achievement in the highly-accomplished sample of 120 men and women who had reached the highest levels in their chosen careers. Freeman found that 35% of her high IQ children were reported by parents to have extraordinary memory compared to 13% of the moderate IQ group. Wallach (1985) concludes that creativity understood as excellence of accomplishment is a by-product of field-specific instruction rather than a teachable skill in its own right. He states that "To become creative is to master a given domain, to the point where one's contributions are viewed as advancing that discipline". He sees creativity in terms of "excellence of work in a particular field and expansion at the field's cutting edge".

The question remains - what type of cognitive processes are involved in creative activity?

Arriving at new conceptualizations and creating new structures involves dealing with large volumes of complex and often seemingly contradictory information. It would appear that this is often done at an unconscious level. Helson's creative mathematicians (as described by themselves) seemed to employ less fully conscious cognitive processes ("must exert effort to express mathematical train of thought in words"; "solution to a problem often comes from an unexpected direction") Sternberg and Davidson (1985) found that gifted children (identified through conventional tests) were superior to the non-gifted in, for

example, spontaneously applying the appropriate insight processes of selective encoding, selective combination and selective comparison when solving mathematical problems. As Rabinowitz and Glaser (1985) have pointed out "one important aspect of the development of competent performance is the shift from reliance on conscious controlled processing to derive an answer, to the automatic and fast access of an answer". There are advantages in using automatic processing for dealing with complex ideas because it is a fast, parallel and fairly effortless process not limited by processing capacity constraints (Rabinowitz & Glaser, 1985).

This type of simultaneous holistic processing is a function of the right hemisphere of the brain, whereas the left hemisphere in right-handed people is specialized for sequential, analytic-type processing. Ornstein (1972) suggests that our highest creative achievements are the products of the two modes, the rational and the intuitive which he relates to the left and right hemispheres of the brain respectively. Okabayaski and Torrance (1984) found that gifted achievers and gifted underachievers had different preferred styles of processing information, the achievers being characterized by an integrated style, while the underachievers had high scores on the right hemisphere on Torrance's Style of Learning and Thinking Tests (S.O.L.A.T.).

Stellern, et al. (1984) report that integrated hemisphere scores correlated negatively and significantly

with ratings on a problem behavioural checklist, and moreover as integrated scores increased, problem behaviours decreased, but that as right hemisphere scores increased so did scores on non-adaptive classroom behaviour. They suggest (a) that the school is a left-minded environment that is unrewarding for right-minded pupils or (b) that right handed pupils who prefer the right cognitive mode may have difficulty organizing time and temporal concepts with a tendency to react "now" to what is happening, which is misunderstood as acting out or distractability.

Sahn and Devi (1984) found differential processing for reading in primary school children, the good readers having performed well on both simultaneous and successive tasks, but having a better developed simultaneous processing strategy (even when intelligence was the same for the two groups). Shade (1983) found that, for teenagers, school achievement is related to the acquisition of a particular cognitive style, although she notes that at elementary school level, the lack of significant correlation between preferred strategies and achievement seems to be attributable to developmental factors. It is, of course, possible that gifted children become differentiated thinkers earlier than normal, so perhaps the teenage pattern may apply to gifted elementary school children. Integration of information from both hemispheres results in our highest creative achievements, according to Ornstein (1972).

This kind of integration requires metacomponents as described by Sternberg and Davidson (1986). These are the

"higher order control processes used in executive planning and decision making in problem solving". They monitor feedback from the knowledge acquisition and processing strategy components and incorporate new insights from this feedback into future performance.

Most researchers agree that the gifted learner is capable of using higher level thinking skills than the non-gifted and that s/he is capable of a higher degree of abstraction. In programmes devoted to the education of the gifted, frequent reference is made to Bloom's Taxonomy of Thinking Skills. These skills are: Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation (Bloom, 1956). The higher level skills are usually suggested as being more appropriate to the gifted student. The synthesis level involves creative thinking (recombining elements to make new wholes, discovering new structures and proposing alternative solutions). The highest level - evaluative thinking - involves making personal decisions, based on reasoned argument and supported by valid evidence.

It has been suggested that the type of thinking required for creative activity is "divergent thinking". In Guilford's Structure of the Intellect Model, two of the operations he named were "convergent production" and "divergent production". Convergent production is commonly associated with puzzle-type problems - which have only one acceptable answer. The function of the student is to converge on the one right answer.

However, it appears that in the real world, as distinct from experimental or school-type situations the fully effective individual must grapple with problems in all their novelty and complexity, be able to deal with troubles as well as puzzles and adapt the environment, as well as adapt to the environment in appropriate ways - and that it is this very superior adaptability that constitutes giftedness.

It was assumed that in order to deal with the trouble-type problem which frequently was not well-specified, and for which more than one solution might be acceptable, one first required an ability to think divergently i.e. to cast the net of memory wider, and to generate multiple possible ideas.

Tests of this ability were devised by Guilford, Torrance, and Getzels and Jackson among others. Typical test items included naming as many uses one could think of for a brick or describing all possible occupations one can imagine for which a person's clothing would have a bell on it. Other items tested word fluency (e.g. list all words starting with a given letter) and ideas for product improvement. Some tests were scored for fluency (absolute number of responses) flexibility (number of distinct categories represented by the answers) originality (comparative rarity among total groups' responses, and elaboration. Wallach and Kogan (1965) reduced these criteria to two - absolute number of responses and uniqueness (answer given only by a single child in the group.

Divergent thinking tests failed on the whole to deliver on their early promise as indices of creativity. This was because they correlated about as strongly with tests of intelligence as they did with each other (Wallach, 1985).

However, one element of these tests - ideational fluency - did appear to test something apart from intelligence (Kogan, 1983). An example of an ideational fluency test is Getzel's and Jackson's which requires the subject to give alternative uses for everyday objects. Wallach and Wing (1969) "found ideational fluency measures to relate to out of school accomplishments during the high-school years, whereas ability test scores showed no such relationships". Wallach (1985) concludes that if ideational fluency plays a role in giftedness, which is analogous to but different from general intelligence it appears to be a small one - and that even the evidence for this is mixed at best.

Torrance (1969) found that divergent thinking tests are of value in predicting criteria of creativity in the high intelligence range (Nicholls 1983), although Nicholls suggests that it is fairly safe to predict that intelligence tests will be similarly useful with groups high in divergent thinking.

The weight of opinion seems to come down on the side of abandoning the use of divergent thinking test as predictors of later creativity. Gruber (1982) quoted in Feldhausen (1986) states:

"There is hardly a shred of evidence that scores on (creativity test) correlate with real creative performance in any line of human endeavour". Nicholls (1983) agrees and suggests that researchers should concentrate more on real-life creativity.

Since logic would seem to dictate that the ability to generate many ideas, as well as some novel or even unique ones must have a place in creative activity, why has divergent thinking turned out to be such a poor if not useless predictor of creative performance?

There may be several explanations. A person may be able to generate multiple ideas, but may never be motivated to do so. Quite simply the tasks he encounters may not require a creative response. They may lack challenge. Albert and Runco (1986) say that "whether or not a person becomes creative, depends heavily on the career he embarks on. Different fields offer different opportunities and have their own built-in injunctions for their members to be creative".

Ward (1969) found that unique ideas tended to come later in a string of ideas, suggesting that, for some people, creative responses only come after a more exhaustive search of memory. The speed with which one can search memory and the amount of time one is prepared to devote to the task are factors which would affect the performance of these individuals.

Perseverance and concentration have often been listed as characteristics of the creative personality. One must

also consider the need for adaptive value. Production of ideas which are grotesque, unbelievable, bizarre and unprecedented may result in high scores in an ideational fluency test, but may have no practical or worthwhile application. Simply producing a range of possible solutions to a problem is only part of the creative process. One must then narrow the focus and zone in on the most appropriate solution or solutions for the task in hand. This involves convergent thinking. It would appear that intelligence is possible without creativity but that to be creative one must also be intelligent.

From the foregoing it will be seen that, with the possible exception of ideational fluency, the cognitive processes involved in creativity are exactly the same as those involved in any other intellectual activity - attention, perception, memory, analysis and synthesis. Knowledge, its volume, structure, and accessibility, plays a crucial role as well as the cognitive and metacognitive skills necessary to process it. Some evidence points to the desirability of a cognitive style which capitalises on the analytical strength of the left hemisphere and on the holistic fast, automatic and seemingly unlimited processing capacity of the right hemisphere as well as the ability to integrate information from both. But all intelligent activity calls for either right or left brain thinking. The knack of knowing which is more appropriate for the task in hand and the ability to integrate information for both would seem to be identical to Sternberg's metacomponents (higher order control processes).

There is nothing in all this to suggest the need for a separate construct called "creativity". In the last analysis creativity may simply be the highest form of application of the intellect and not an ability in the conventional sense at all (Gardner, 1983). As indicated, this does not imply that highly intelligent persons are necessarily creative.

Personality, Environment and Creativity

Environment and personality play a vital role in whether or not the very intelligent person chooses or is driven to become creative. Role models are important. Exposure to a wide range of diverse ideas is also a factor. The environment must provide challenge - ambiguities, tensions, problems, contradictions - which requires creative response. It must also provide field-specific, mastery-oriented instruction.

Personality factors which are prerequisites for engaging in creative activity are curiosity, and intellectual orientation, a preference for complexity and a confrontational approach. Willingness to look beyond socially-given explanations is also a necessary precondition for creative activity. Generating ideas which may not be reconcilable with societal norms may open up an "appalling vista" (in Lord Denning's terms) down which it takes great courage to look, much less travel.

Getzels and Jackson (1962) in a study of high IQ and creative youth showed that the creative child is not afraid

of censure. Helson's creative mathematicians were described by observers as more often rebellious and non-conforming than the control subjects (Helson, 1971). Non conformity involves a willingness to give expression to one's impulses and break the rules (Crutchfield, 1955). Torrance observes that one of the characteristics of the successful and creative person is the ability to conform or not to conform in terms of a given situation (Torrance, 1961).

This resistance to social pressure and criticism was also remarked on by Barron (1969). MacKinnon's (1983) creative architects described themselves as independent, inventive and individualistic. Their behaviour was usually dictated by their own values and goals than by the opinions or advice of others.

What leads to this ability to resist social pressure? Childhood socialization may play a part. McCurdy (1983) found a pattern of separation from peers among the twenty of Cox's sample of eminent men who had the highest estimated IQ scores in childhood. In this way they were removed from the influence of peer pressure which can stifle the desire to step outside the circle of socially approved activity. They also tended to have a special position in the family. Thus they may have been regarded by parents as exempt from the rules governing ordinary mortals. Helson noted that a number of creative women mathematicians in her sample appeared to have been adopted as the "son" of an intellectual father.

Other creative people working at the "cutting edge" in their fields may have been relieved of the early burden of peer pressure, simply because, as Bloom's (1985) subjects show, so much of their time was taken up by intense mastery oriented activity in their area of interest that there was no time or opportunity to become involved in the normal social activities of their age group.

They may be more able to break conventional moulds because they never had the opportunity to learn the social rules in the first place. Many gifted people because of their advanced abilities, their intensive instruction and, later on, their chosen careers, move in circles where intellectual risk-taking is not just normal but expected. Nevertheless as Willings & Bruce's (1984) research shows each creative person requires an essentially personal environment stimulus and conditions of working in order to be able to function creatively and each one must identify for himself the optimum idiosyncratic conditions necessary. This may be one reason why scores obtained in test-like conditions fail to predict real life creativity.

All of this might seem to imply that highly intelligent and creative people are impulsive, rebellious, non-conforming - even odd. They are indeed different as many studies have shown. (Freeman found that 35% of her high IQ group was described by parents as feeling "decidedly different" compared with 9% of her moderate IQ group).

While they may give freer expression to their impulses, this has nothing to do with a happy-go-lucky, slapdash approach to work. On the contrary they are described as concentrating, persisting and hardworking.

Barron (1958) found that creative adults during their schooldays had pursued their subject of interest with passion often in an out of school context and that they also displayed persistence.

Freeman's (1979) high IQ group were described by their parents as able to concentrate for many hours - almost three times as often as the moderate IQ group. The high achievers in Bloom's group of exceptionally talented individuals differed from their siblings (even those whom the parents considered to have more natural ability) by their willingness to work and their desire to excel. (Sosniak, 1985). In the follow up to Terman's longitudinal study, what discriminated between the more successful subjects and the least successful was self-confidence, perseverance and integration towards goals.

Self confidence would appear to be a prerequisite for any kind of achievement. Mac Kinnon (1983) describes his creative architects in the following way:

"They are convinced of their own worth and the validity of their effort; indeed they report a sense of destiny".

To conclude, creativity often manifests itself in the production of new and original ideas, products and artforms or in the finding and solution of problems. It can also

be seen as work at the "cutting edge" in a field where one has attained mastery. It thrives in an environment which provides role-models, respects diversity and is open to new ideas. Its origins lie in the personality of the individual. Curiosity, openness to experience, tolerance for ambiguity, belief in the worth of ones self and ones efforts are the motivational springs from which creativity flows. The spring rests on a solid bed-rock of highly organized knowledge laid down by hard dedicated work. It may appear to bubble up spontaneously in the face of censure, ridicule or even rejection. But its flow is carefully brought under control by higher order thinking skills and its direction oriented to suit the purposes of its originator.

In a sense its waters are the distilled contents of the intelligent mind, the "uisce beatha" of mature reflection.

II (1v). PERSONALITY, MOTIVATION AND ACHIEVEMENT

The child does not come into the world totally unequipped for the task of adapting to a highly complex and changing world. There is much evidence pointing to the fact that intelligence is, at least partly, inherited from parents. Studies of genius and of gifted children consistently show that highly intelligent children generally have parents in occupations requiring high intelligence compared to parents of controls who have, on average, lower occupational status. (Terman, 1925; Freeman, 1979). Of course a better job usually results in a higher standard of living with improved nutrition and better health-care. These factors also seem to be related to I.Q. Both Terman and Freeman found that on average children of I.Q. 140+ had better health than normal.

A further consequence of high-status occupation is the ability to make superior educational provision for the children and the children's more frequent exposure to high-status models. Parents whose jobs were directly or indirectly attributable to their intelligence and to their education would be expected to place more value on education and to point their children towards academic pursuits. The superior educational status of the mother has frequently been noted in studies of the gifted. Since the mother is more likely to be the one who guides the child on a day-to-day basis it seems natural that her intellectual interests and the value she places on educational pursuits should be

reflected in her children. Social learning theorists (e.g. Bandura, 1967) propose imitation and modelling as major factors in the child's development of new behaviours. They believe that a child can learn new behaviours simply by observation of a model. The child, it is said, can learn not alone the new behaviour, but the emotional responses associated with it and the consequences that normally follow. Reinforcement works not so much on a simple stimulus-response basis as believed by Skinner, but is mediated by the child's cognitions e.g. the child who is rewarded with a sweet by an old man whom he has just helped across the road will weigh the consequences of taking the sweet against the possibility of his mother's wrath if she finds out that he has taken sweets from a stranger. Modelling works not as a simple copy-cat operation but is also mediated by cognition. The child works cognitively on the displayed behaviour, internalising it and subsequently reproducing it in a form appropriate to the new cognitive structure.

This ability to form structure has been remarked on by Piaget, who evolved a theory to account for the way in which mental structures developed. He observed how his children attended to novel elements in their environment and how they would often vary actions around a known action-pattern or schema deliberately in order to see what would happen. The child, it appeared was an active experimenter. At first the child attempted to absorb reality, fitting it in as best he could to the mental representations he already possessed.

One way by which this was accomplished was through play where the reality element could be suspended or modified at will. When conflict or discrepancy arose between the perceived reality and the child's mental representations, these representations could be modified in such a way as to accommodate the discrepancy, thus leading to a state of equilibrium i.e. children organise their beliefs in coherent, harmonious and equilibrated systems and these are sustained by their adaptive value to the whole system.

This notion of conflict or challenge to the organism and its resolution resulting in a the restoration of a type of balance occurs frequently in the literature. It would appear that just as the physical body appears primed to keep itself in a state of homeostasis, the mind is primed to preserve a consistency and stability in its inner workings even though a degree of variation around the norm may be tolerated, as a means of verifying the validity of the normal state of the organism and of making adaptations forced by changes in the environment. A thing can be partly defined by what it is not, and the child's response to challenge serves to confirm his vision of reality by comparison with the alternative or to adapt it to take account of the alternative.

Development is change, and psychologists have attempted to specify just what it is that motivates a person to change. Drive theorists believe that man is driven by basic needs e.g. the need for food, the need to dominate, to

master the environment etc. They propose that all change in the organism is a response to these basic drives. Among the needs which have been proposed are: the need to achieve, the need for affection, the need for power, (McClelland et al, 1953) and the need to actualize the self (Maslow, 1970).

Jerome Kagan (1979) writes of four primary motives - resolution of uncertainty, mastery, hostility and sexuality. He lists the sources of uncertainty as discrepancy, inconsistency and unpredictability, all leading to the motive to resolve it. The person experiences a challenge to his beliefs about the nature of reality. He points to a need to distinguish between self-generated uncertainty and the externally imposed variety, as the former occurs only when the person believes that he has the resources and strategies to cope with it and the latter can result in learned helplessness and anxiety. He equates the motive to resolve uncertainty with the motive to know. Terman and Oden (1959) referred to the desire to know as one of the traits which distinguished the gifted children in their study from the average ones. Powell and Haden (1984) propose that the more highly gifted the child, the greater his need to know. The ability to tolerate ambiguity and uncertainty has frequently been mentioned as a feature of the creative personality. What is it in the environment that arouses the motive to know? Kagan (1979) writes "The motives that are preoccupying are usually those linked to goals that one is uncertain of attaining". These foci of doubt change as the child matures. This points to the necessity of knowing where

the child is at, cognitively speaking, in order to assess what will constitute a challenge for her/him. Thus some form of assessment and record-keeping, however informal is desirable if the child is not to be bored. It must be remembered however that tests designed for a given class level or age-group may be useless for assessing the gifted child, since s/he may always score highly, but the upper limit of the test may be too low to reflect his/her true knowledge or ability. Harter (1979) suggests that the situation of optimal challenge is one where tasks are challenging, but not excessively difficult. She found that children enjoyed success on these items more than success on difficult items, especially if the solution-time for the latter was perceived to be excessive.

The second motive - mastery- is more related to performance than to knowledge. It is activated when the person generates a discrepancy between his actual level of accomplishment and the level to which he aspires. It has three basic foundations-

- * The desire to match behaviour to a standard.
- * The desire to predict the environment.
- * The wish to define the self. (Kagan, 1969).

The gifted child could be expected to suffer as a result of a discrepancy between the knowledge s/he has of his own abilities and the standard at which s/he is forced to work at school. Freeman noted that gifted children frequently had difficulty in being believed. The Schools Council Report (1973) pointed out that the most difficult

school-book available was too easy for the very able child.

According to Piaget, cognitive development results in the building up of mental representations of the external world and of action-schemata related to it. He saw intellectual schemas and affective schemas as complimentary aspects of the same total reality, and as following a parallel developmental course, both being interdependent, since emotions express the values and interests of actions, regulating their energetic aspects while intelligence provides the structure. Affective schemas derive from basic physiological rhythms and drives and by internalization and adaptation to the requirements of the situation become differentiated, leading finally to moral feelings- the unfolding of the will. Ernest Boesch (1984) argues that the relationship between the development of cognitive and affective schemas is not parallel, but one of mutual influence. He believes that while the child is developing a cognitive structure in relation to some object, he is also developing an awareness of subject-object interactions leading to a realization of his action potential in relation to the object and the feelings by which such action may be regulated and the goals he may aspire to in relation to that object. As this action potential and associated feelings become internalized, it is possible to imagine means, goals, limits and alternatives and thus to exercise the will, i.e. plan intentionally. Social rules or norms may, he believes, guide the child as to the appropriateness of his responses. The affective schemas are related to economy of action but

also to mastery and harmony and lead to the achievement of optimal action potential and thereby self-identity.

Weiner (1984) concludes that emotions appear to be the immediate motivators of action. White (1959) proposed a concept which he called "effectance motivation". He suggested that the child has an intrinsic need to deal effectively with the environment. This need manifests itself in behaviours such as curiosity, play and mastery attempts, and when such behaviours result in a display of competence, inherent pleasure and feelings of efficacy resulted which in turn stimulated more mastery-motivated behaviour. Harter (1979) believes that with sufficient positive reinforcement for independent mastery attempts in early childhood, the child gradually internalises two critical systems- a self-reward system which allows the child to praise or reinforce her/himself for mastery attempts and successes and a system of standards or mastery goals of the socializing agents who have punished or rewarded her/him. She considers that for the child whose social environment co-operates with her/his natural desire towards mastery, intrinsic motivation becomes a major determinant of behaviour. The child's motivation history also has implications for her/his sense of control and competence.

Related to the mastery motive are the motive to achieve and the emotions of pride and shame. Atkinson (1964), quoted in "Human Achievement" (Weiner, 1980), equates the need to achieve with the capacity to experience pride in accomplishment and the motive to avoid failure with the

capacity to feel shame. These emotions come into play in a situation where the person's performance is judged against a standard of excellence. Isenberg (1980) noted that the object of pride or shame must be perceived by the subject to have value and its possession to be relevant to her/his self worth. Stipek (1983) concludes that shame is a learned emotion, experienced when children believe they have failed to reach the standards significant others have set for them or when they believe they are being negatively evaluated by others. Since significant others change during childhood, the child must adapt to new standards e.g. those of parents, teacher, peers etc. as he moves from the mere pleasure in performance of infancy to the more evaluative environment of school. There is a shift from personal to normative standards of evaluation. Later there is a shift to group norms and competition appears. She suggests that since middle elementary school children have not fully internalized socially derived standards of evaluation, they require tangible evidence of adult approval. Since pride or shame can only arise when a child believes that an outcome is dependent on his own qualities or behaviour, when he believes he has control over its outcome and when he is in a position to evaluate his behaviour and see a relationship between the outcome and his self-worth, it follows that there is a close tie between these emotions and cognitions, and that a child's capacity to experience them should increase with the child's developing ability to interpret situations and see other's points of view.

Heckhausen (1982) views the affective consequences of success/failure as the actual motivators of self-evaluation. He assumes that emotions result from specific cognitive structures and contents. Weiner (1984) agrees: "Thoughts give rise to feelings and feelings guide behaviour". Heckhausen states that :

"Achievement motivation pre-supposes that the individual intends by his or her own actions to produce an outcome that will be evaluated against some standard of excellence"

He goes on to explain how the child attributes causes to the resulting outcome and how these causal attributions regarding success/failure generate different affective consequences for the child, e.g. emotions of pride or shame. It is this self-evaluation and the emotions generated thereby which reinforce behaviour and act as the springs of action. Thus achievement motivation can be seen as a self-reinforcing system.

SELF-CONCEPT

However much creativity or information processing ability a child may have, without the motivation to achieve, his/her potential will never be realized. Motivation can be internal or external, but in long term real-life situations only the internal variety can be expected to result in the task commitment and persistence that is so apparent in those who display exceptional achievement in later careers. Internal motivation arises within the personality structure

of the individual and is inextricably bound up with the self-concept- "that dynamic process of conceptualizing experience and the ways in which this influences behaviour" (Burns, 1979). According to Shavelon's definition, self concept is a individual's "perception of self, formed through experience with the environment, interactions with significant others and attributions to his/her own behaviour" (Marsh et al, 1984). He proposes that self-concept is both descriptive and evaluative. Cox (1926) noted that youthful geniuses who became eminent men were distinctly above average in strength of character, confidence in their superior ability and above all in their desire to excel.

The notion of self-concept is central to any theory of behaviour and intellectual performance is a form of behaviour. Rathne & Dahme (1985) speak of "the expectation of mastery" - the child's belief that s/he can succeed as a crucial element in achievement. If the object of achievement behaviour is to demonstrate competence, attempting the impossible would be counter-productive.

The impact of self-concept on motivation and performance was noted by Jones and Grienecks (1970) who found that self-concept of ability was a more accurate predictor of achievement than either I.Q. or aptitude. Brookover et al (1964) in a study of 1000 twelve year old boys found significant positive correlation between self-concept and academic performance. Among Canadian elementary school pupils, Yeger & Mieztis (1984) reported that those

in a low self-concept group showed significantly more social withdrawal, academic difficulties and inappropriate attention than did their high self-concept counterparts. Chapman (1984), in a study of 800 nine year old New Zealand children found that scores on a Student's Perception of Ability Scale used to estimate academic self-concept appear to be relatively independent of intelligence and more related to success levels at school. Burns (1979) points out that only 16% of the variance in academic performance can be explained in terms of self-concept level and that the most significant association between attainment and self esteem occur at the negative or lower end of the scale. It would seem that the child who is sure of his/her ability to succeed is more likely to make the required effort and if able, succeed, while the child who feels he/she is incapable of succeeding at the task will more likely direct his/her attention to self-evaluative, self-deprecatory, as opposed to task-relevant thoughts and either make an ineffectual effort or no effort at all and thus whether able or not, will inevitably fail. The effect of self-concept on achievement and vice versa seems to be reciprocal. Success in school enhances and maintains self-esteem while self-esteem influences performance through expectations, standards, recognition of personal strengths, higher motivation and level of persistence (Burns, 1979).

Of course the question arises: from where does the child derive his self-concept of ability in the first instance? Significant others in the child's environment provide a frame of reference and criteria with which to

evaluate performance. The child's perceptions of what others expect of her/him, of what they believe about her/his abilities and personal characteristics and of how they behave towards her/him all provide information on which self-evaluation may be based. The child's behaviour, in turn will influence the expectations, beliefs and behaviour of significant others in her/his life. Any cyclical process of this kind may become a vicious circle or even a descending spiral.

The child also uses feedback from success/failure experiences in self-evaluation in ways which vary with her/his level of cognitive development. Pre-schoolers focus on the outcome and show joy when success is the result. From about three and a half years, the outcome is seen as self-produced and a source of personal pride which is reinforced by signs of adult approval. At this stage the child is oriented towards learning if praise precedes criticism (Linhart, 1982). The way in which a child understands the concept of ability and the situations in which these concepts are used to evaluate performance and assess probability of success is important. Young children use a global concept of ability where effort and ability are combined in a unitary concept of competence (Nicholls, 1984). They evaluate their competence by improved performance on the same task or by success on tasks where success was uncertain. For them, the subjective experience of gaining insight or mastery through effort is the experience of ability. Later they learn to see ability and effort as

separate causes. Later still, children come to understand ability as capacity and thus a stable cause which cannot be modified and which limits the effectiveness of effort. By this time they can use consensus information (performance of others on the same task) in estimating task difficulty and understand the compensatory relationship between effort and ability, i. e. that, given equal outcomes, having to expend more effort implies less ability (Heckhausen, 1982). At this stage the child with a very high self-concept of ability realises that applying more effort is a viable strategy, whereas the child with very low self-concept of ability may feel it to be just a waste of time. Marsh (1984) found among Australian 5th grade students, that those who attribute academic success to ability and effort and who do not attribute failure to lack of effort, had (a) better academic self-concepts and (b) better academic achievement. Other causal attributions for success/failure can affect self-evaluation, motivation and achievement.

Locus of Control

Locus refers to the notion that causes can be internal to the person e.g. dependent on her/his ability, effort, commonsense, or external e.g. dependant on luck chance, fate, other persons etc. or can even be attributed to unknown causes. A person with internal locus of causation can experience positive or negative self-esteem depending on the outcome. A person who attributes success/failure to extrinsic causes cannot take a personal

pride in a successful outcome and, where the outcome is negative is more likely to experience anger and resentment (especially if these causes are seen as controlling), than s/he is to experience low self-esteem.

Perception of responsibility for the cause of the outcome can also affect one's self-evaluations and affective responses. Failure ascribed to lack of effort (for which one is seen to be responsible) produces more guilt than failure due to causes for which one is not responsible e.g. task difficulty or ill-health.

Intentionality can also be a factor in self-evaluation. Failure where the result appears intentional is regarded as more blameworthy than failure which was not intentional e.g. high effort, but poor strategy. (Nicholls, 1984).

Causal attributions can affect a child's estimation of task difficulty and her/his probability of success which in turn affect the level of aspiration and the selection of future goals. Success which is attributed to internal, stable and controllable causes will lead to the expectation of future success on similar tasks.

Factors which influence motivation and achievement include:

1. Accepting or rejecting behaviour.

Accepting or rejecting behaviour may be affected by the parent or teacher's own self-concept. (Walsh, 1956). Burns (1975) found that there was a relationship between positive self attitudes and positive attitudes towards others. Accepting or rejecting behaviour by adults can take many

forms. Many studies have shown that teachers' verbal comments, gestures, facial expressions etc. are loaded with positive and negative evaluations. Parents of gifted children according to Freeman (1979), frequently complain that their children are more subject to ridicule and to having their efforts deflated with sarcasm than other children in the class. This may arise where the teacher is unsure of his own competence. The Plowden Report (DES, 1967) noted that gifted mathematicians may detect ambiguity or imprecision in the teacher's language. It takes little imagination to see how a teacher could feel threatened by such behaviour and tend to "put the child in his place" in order to defend his own position in the class. Vernon et al (1977) noted that it was "very common for gifted children to play down their intellectual superiority in order to win greater acceptance from peers or unsympathetic teachers and consequently there is a danger that they may cease to value or develop their abilities or interests". Alternatively they may try to undermine the teacher's authority with other children (Bridges, 1973).

Vernon et al (1977) quote a study which showed that greater intellectual growth took place in democratic and acceptant homes than in rejectant or autocratic homes. Ryans (1961) found that among elementary school children a positive relationship existed between observed productive behaviour e.g. alertness and confidence on the part of the pupil and behaviour on the teacher's part which reflected warmth, empathy, understanding and friendliness.

It is not only from adults that the child must seek acceptance. Torrance (1961) has observed that the gifted child, by reason of his gifts, may find himself in a minority of one in a normal classroom. He may experience rejection by the other children who do not understand his gifts. Peer-rejected children in the 8-11 year old range i.e. those who have few friends and are actively disliked by others, have significantly deviant scores on social withdrawal, hyperactivity, delinquency and aggression and hostile isolation (French & Wass, 1985).

Using parental reports, Freeman's study shows that gifted children have fewer friends than their controls and that those they have tend to be older. The target children in this study (labelled by their parents as gifted) were described by their parents as feeling different from other children 17 times more frequently than controls and as having significantly fewer and older friends. 7% had no friends at all. They showed a high tendency to over-reaction and twice as many of them as the controls were described as peer mal-adaptive.

In a study of children's perceptions of teachers' behaviour, it was found that on group comparison measures hyperactive boys (in elementary schools) perceived significantly less acceptance and greater demand than did their non-hyperactive peers. (Peter et al, 1983)

2. Labelling.

Labelling provides a definition of who others think we are. It is more effective when the source is seen as being competent, knowledgeable, socially superior, and legitimately in command of the situation (Reay, 1980). A gifted child who is labelled as gifted may find himself in a no-win situation being unable to behave in a "gifted" manner in all areas of life all the time (Freeman, 1979). S/he may come to regard her/himself as a failure in spite of her/his gifts and may develop intense anxiety and hostility towards those who impose the label. Freeman's group which had been labelled gifted showed more health and behaviour problems of the kind generally associated with anxiety than did their controls. They were also under greater pressure from their parents to achieve. The highly gifted child who is continually praised for his intellectual work and for nothing else may fail to value other aspects of his/her personality and come to believe that acceptance by parents and teachers depends on his/her ability to be smart all the time. This places an unacceptable burden on the child and may lead to emotional distancing from others and from his/her own emotional life (Powell & Hadon, 1984).

3. Assigning roles.

This is important because a socially defined role has a corresponding accepted behaviour pattern and accepted standards of performance. By assigning the role, the significant other is indicating a belief in the child's

ability and competence and the child may internalize this belief and tend to act accordingly. Various studies (e.g. Primary Education in England, 1978) have drawn attention to the plight of the gifted child who is unrecognised as such and is expected to proceed in a lock-step manner and stay on the same page as everybody else. S/he could be expected to suffer from cognitive dissonance (conflict among her/his beliefs about who s/he really is and what s/he is capable of) (Festinger, 1957). Where this dissonance involves a core belief of the child (belief in her/his gifts) the strain may be intolerable and the child will take steps to reduce the dissonance. S/he may reason that since the teacher appears competent and powerful, then her/his own gifts may not be as great as s/he had previously thought and s/he may revise his aspirations downwards. S/he may simply conform to the low standards and do exactly enough work to satisfy the immediate target. S/he may try to rationalize the situation by the use of various strategies. S/he may decide that the teacher is stupid and not worthy of respect (Bridges, 1969). S/he may seek older friends or adults who will appreciate her/his gifts. S/he may show off to evoke favourable recognition of her/his abilities. Stability of self-concept involves achieving maximum consensus about one's identity and ability among significant others. It is the child who is caught between differing teacher and parent evaluations who is most at risk, e.g. the child who is given responsible jobs at home and whose opinions are sought and valued by parents but finds that s/he is a nobody at school who is never given a position of responsibility or trust.

4. Feedback

Feedback is important because it provides information, definitions, expectations and evaluations. Where feedback takes the form of assessment, it should be seen as a means of fostering improved individual performance, of encouraging self-challenge, of facilitating the exploration of areas of weakness and the strengthening of areas of competence if it is to be instrumental in aiding the self-concept (Burns, 1979). David Reay (1980) found that there is a high consensus between the views held by third and fourth year junior school children, their teachers and their peers about each child's position in the academic hierarchy of the class. He concluded that it is important, if the child's self-worth is not to be damaged, that attainment levels are seen to be fluid, always open to change and constantly encouraged to change and improve. Feedback should be realistic and informational. If it is purely evaluational it holds out no hope to the loser and gives no basis for improvement to the winner. A child must know to what factors his failure or success is attributable. Feedback should also specify the amount and direction of effort required. Bloom (1985) found that clear evidence of achievement and progress over more than a decade of increasingly more difficult types of learning was necessary to maintain long-term commitment leading to exceptional achievement in a particular talent field.

5. Providing a stimulating environment.

A child's development, both intellectual and social depends on the degree of physical, intellectual and social interaction available to him. The opportunities for this interaction is determined by the parent's perceptions of education and of life in general. Many early studies linked achievement and ability with social class, Cullen (1969) found that it was not the financial position of the family that matters so much as the value they place on education. Raven (1977) discovered that high-achieving pupils held what are traditionally considered middle-class values and had high personal aspirations. Family belief in the importance of education leads to superior educational provision for the children, even if other material goods have to be sacrificed. A study by Douglas (1960) on the home lives of 5000 children showed that the most important influences on the children's achievement were their parent's own life-styles, their interest in and aspirations for their children and their attitudes towards education. Margaret Clark (1976) found that what went on in the homes was more important than social class. Children exposed to books at an early age and living in homes where parents obviously enjoyed reading became early readers regardless of the socio-economic class of the family. Most studies from Terman onwards have established that the parents of gifted children are generally better educated and hold better-paid jobs than those of non-gifted children. Freeman (1979), for instance, found that the parents of her gifted sample were

better educated, better paid, better read , more culturally and intellectually involved and had higher expectations for their children than the parents of children with lower I.Q.s. Freeman remarked on the abundance of books, musical instruments etc. in the homes of her gifted sample. The parents were remarkable for the quantity and breadth of their reading and the number of interests they pursued.

Exposure to inspiring models has been shown to be a feature of the childhood of youthful geniuses. The perception of the father as a respected person worthy of emulation was noted by Terman (1925). Most studies of gifted children show a preponderance of first-born and only children. Albert (1983) suggests that it is not so much the actual chronological order of birth that is important as the fact that great achievers occupied, in childhood, a special place in the family- for example following on the death of an older sibling or parent. The child in this position could be expected to assume a responsible role at an early age, be exposed to greater interaction with adults and influential models and have more opportunities to shine available to him.

Robinson and Robinson (1982) in an analysis of the reasons some students succeed in the Early Entrance Program of Washington University state:

"Although a well-educated family usually provides an intellectual context that is conducive to academic success, it is the combined purposiveness, respect and support offered by the parents which appears to be crucial".

This kind of purposiveness shows itself in positive educational attitudes. Freeman found that the parents of

the high I.Q. children expected them to stay in formal education until age 21 seven times more frequently than the parents of the moderate I.Q. children. It is also demonstrated in a strong orientation towards intellectual and cultural activities (Bloom,1985) and a belief that art, music and dance are important for a child's overall development (Freeman,1979; Cornell,1983). It can also be seen in higher measures of family cohesiveness and lower measures of family conflict (Cornell,1983).

This type of harmony has been shown by Robinson and Robinson to be an important factor in achievement. (Robinson & Robinson,1982).

In practice, a family sense of purpose results in :

- a) shared interest in the child's activities,
- b) the greater availability of books and musical instruments etc.,
- c) early tuition. (Freeman's gifted sample were taught from birth by their parents and were often taught to count and read before school),
- d) structured learning activities leading with increasing age to field-specific instruction in the child's particular talent area (Bloom,1985),
- e) extra music, art and dance lessons,often out of school, as well as special educational trips (Cornell,1983).

Bloom found that as children, his gifted subjects came from child-oriented homes. Parents invested a great deal of time, money and talent in the development of the child's particular gift. The child's achievement-related activities were given priority and family schedules often organised

around them. These children were not "spoiled". They were constantly reminded to work hard and were under some pressure to achieve. Their parents also showed a sense of purpose. They were models of the work ethic. Work always came before play, even though they led very interesting, active lives. These children were getting clear unambiguous messages about which goals are valuable, models of the work-commitment necessary to reach them and the emotional, financial and other support necessary for success.

6. Goals and Standards

The standards and goals set for a child depend largely on the values and beliefs held by their teachers and parents. There is always a danger that parent's will set unrealistically high standards for their children in the hope of producing high achievers who will reflect glory on themselves. Where parents believe that their child's poor performance is a direct indictment of their own abilities, the child is in danger of developing anxiety and hostility towards life in general and towards the parent in particular. Pringle (1970) found that underachieving gifted children were frequently the victims of unrealistic expectations set by their parents.

At school the child may have a different problem. Several studies have shown that teachers are not particularly talented at picking out gifted children. The standard of work set by the teacher may be such that the gifted child gets top marks every time. This may give the

teacher great satisfaction, since obviously his labours have not been in vain. The child may in fact have known the lesson before he ever came to class. Hollingworth (1942) concluded that extremely bright children waste nearly all their time at school. Freeman (1979) describes how expert they become at devising ways to fill in the time. But the damage does not stop there. The child who gets top marks every time without having to expend any effort may never make the connection between success and effort and when confronted with a really challenging situation may have failed to learn the appropriate coping strategies. The Schools Council Report (1973) drew attention to the fact that the most difficult school-book available to the children was of a lower level than that required to match the child's abilities. Other studies drew attention to the lock-step way in which a child was expected to progress. Primary Education in England (1978) is the report of a survey of over 1000 elementary schools. The report states that the most able children in the class were the least likely to be doing work that was sufficiently challenging.

People typically differ in their need to achieve i.e. their desire to match behaviour to a standard. The other side of this coin is the fear of failure. Everyone is assumed to have both in varying degrees. Recent research has suggested that for women the fear of success is also a factor in whether they will approach or avoid a task. Cox (1926) discovered that the desire to excel was the most notable trait among her youthful geniuses.

Mc Clelland(1961) believes that children can and should be taught achievement motivation. He specifies that what parents must provide is:

"reasonably high standards of excellence imposed at a time when the sons can attain them, a willingness to attain them without interference, and real emotional pleasure in his achievements short of over-protection and indulgence" (Quoted in Freeman,1979).

In order to set realistic goals, it is important that the teacher have suitable methods of evaluation and record-keeping, so that s/he may be able to assess the child's ability and progress at any given time. A child who wants to achieve will be attracted to a task of moderate difficulty (Atkinson & Raynor,1978), i.e. one which is difficult enough to have some incentive value, but not so difficult that s/he believes s/he has no response to make to it. Tasks that are too easy have no incentive value. The type of work a teacher sets for a child is an indication to the child of what is expected of him by way of ability and performance. If the work is repetitive, requiring little or no higher order thinking skills, the gifted child may see it as an affront to her/his self-esteem. S/he may refuse to co-operate because to do so would be to acknowledge that s/he was stupid enough to do the same silly little mechanical sums and answer the same stupid unimaginative questions again and again and, even worse, s/he may know that co-operation and success in the task may simply result in more of the same. Kagan (1979) remarks that "the motives that are pre-occupying are usually those linked to goals

that one is uncertain of attaining". However, people high in need to achieve have been known to persevere at seemingly meaningless, repetitive tasks, but only where it is necessary in order to keep open the opportunity to follow the path to a long-term goal or career. Terman and Freeman found the parents of children of high I.Q. generally have a long-term aspirations for them e.g. third-level education. Perhaps having a goal fixed in the realistic future helps the children to persevere, even when school is boring. Tasks set at an unrealistically high level will be avoided by the child who is geared to success, because s/he knows that the likely outcome will be failure. It is not just the level of difficulty of the task itself which is of importance to the child. The resulting success or failure experience has an impact on the child's level of aspiration. The highly motivated and achieving child who experiences constant success will revise her/his aspirations upwards. The wise teacher will manipulate the goals so as to provide a series of realistic moving sub-goals which require the child to compete against her/his previous best. It is not necessary that high achievers should always be successful. Peter Screen (1982) suggests that able pupils in science should occasionally be exposed to failure, so as to develop some sense of what they cannot do.

The fear of failure, if strong enough will prevent a child from attempting any task at all. If forced to move, s/he will choose one where the subjective probability of success is high, or alternatively one which is so difficult

that no blame can attach to failure. The best way of handling this situation is to remove stress from the child, to encourage unevaluated practise (the motive to avoid failure is aroused by the possibility of evaluation against a standard of excellence), and, by skillfully manipulating goals, to provide frequent success experiences, thus giving the child a sense of her/his own ability and power to master the task. It is essential for such a child to know that it is alright to take risks and to make mistakes and that s/he will not be condemned as well as the work if it turns out badly.

The goals a teacher or parent puts before a child can have far reaching and sometimes unexpected consequences. Michael Scriven (1967) points out that "putting pressure on a (person) to formulate his goals, to keep to them and to express them in testable terms may enormously alter his product in ways which are certainly not desirable".

7. Goal Structures

Different goal structures can induce different causal attribution patterns for success/failure. Maehr (1984) distinguishes between four goal categories: task-involved, ego-involved, social-solidarity and extrinsic rewards.

Task-involvement leads to long-term achievement or continuing motivation (Nicholls, 1984) because in this condition the child's attention is focussed on the requirements of the task with a view to mastery or to

improving his/her own performance. The concern is not with meeting external standards but with with meeting the standards the child has internalized . Effort is seen as the deciding factor in causing the outcome.

Ego-involved goal structures on the other hand are those where emphasis is on ability (seen as a stable factor) and not on effort. Under these conditions for the child who is unsure of his/her ability, the perceived purpose of the activity changes from one of gaining mastery to one of preserving self-esteem by avoiding demonstrating low competence. Failure-threatened children will not attempt to learn if the anticipated result is demonstrating low ability i.e. showing evidence of lacking a fundamental personal trait, or capacity, which is not easily modifiable. Non-participation, because it gives no information about competence, becomes a strategy for preserving self-esteem. (Covington, 1984). If forced to participate, the child will either choose a very easy task where success is assured or a very difficult one where no blame can attach to failure, and effort may even be praised.

(Effort is used in the evaluation of others, while ability has greater affective consequences in self-evaluation. Heckhausen (1982).). These are self-defeating strategies from an achievement point of view.

Competition makes ability the salient factor in self-evaluation (Stipek, 1982). Carole Ames (1984) found that children in the competitive goal situation spent more time wondering "Was I smart?" while the child in the individual

goal structure who was instructed to improve on his previous performance, and given time to improve performance, was thinking "How do I do this task?" and was showing a mastery orientation by engaging in self-instructions and self-monitoring. Competitive goals are not always harmful however. Many of Bloom's gifted samples had, as students, long records of participation in competitions. The difference here was that these children were already high achievers who had a reasonable chance of winning and who had probably already competed against the same people and could predict the standard reasonably accurately. They used the results, not merely for self-evaluation, but also for information - information on progress- comparing their performance with past performance, and also as a learning situation and as a chance to practise hard and hone their skills. Since their ego was never really in doubt, they became task involved.

The social-solidarity goal situation does not induce the same debilitating conditions as the ego-involved situation. Here the task is to demonstrate good intentions and to remain faithful to the group. A poorly-achieving child can share the euphoria of group success. However, should the group fail, blame may be laid on the weakest link.

Extrinsic rewards can undermine intrinsic motivation by changing the meaning of the action. Lepper (1979) demonstrated that giving children rewards for engaging in tasks in which they had earlier shown intrinsic interest,

reduced subsequent interest in the task, when compared with controls who had received no rewards. The effect was to turn play into work. Money prizes and other extrinsic rewards, not inherent in the task itself can also undermine a child's sense of control i.e. give him a feeling of being manipulated. ("I'm only doing it for the money"). These extrinsic goals can only be maintained in the presence of extrinsic rewards. Stress on tests, teacher evaluation and implied rewards/punishment may also affect the meaning of the task. The child may only continue to perform to please the teacher, get grades or avoid punishment, and not for intrinsically motivated interest in the mastery task (Maehr, 1984).

8 Teaching Provision

Of course the motivation to achieve, combined with high ability and realistic goals will not result in achievement without the skills, strategies and concepts needed to tackle the tasks. This, in a nutshell is where old-fashioned teaching comes in. A child must think about something. He must be creative about something. Hollingsworth (1942) showed that highly gifted children were remarkably advanced in the quality of questions they asked. Dunn & Powell (1982) suggested that preference for generating ideas was a characteristic of the mentally gifted. Most researchers agree that the gifted are capable of using higher levels of thinking skills than the non-gifted and that they are capable of a greater degree of abstraction. The content of the curriculum must allow for exposure to great ideas,

controversial issues, significant inventions, problems that affect mankind, etc. It is often remarked that the gifted child is concerned for the future of the world and the people in it. Concern can only result in anxiety when there is no response available to cope with it. While the gifted are said to be capable of independent thought, they also need to be taught the skills necessary to achieve it, i.e. they need to learn how to learn. Belle Wallace (1985) in a report on developing a programme for the gifted found that although the high I.Q. children could cope with complexity, argue in depth and anticipate consequences, they still needed to be taught skills and concepts.

9. Time

In the case of a gifted child who may be using higher thinking skills, setting arbitrary time limits for his work may require that s/he resort to lower levels in order to produce a finished product in time. A recent study by Lyon and Gettinger (1985) found large differences in the rate at which three tasks representing the knowledge, comprehension, and application domains of learning from Bloom's Taxonomy (Bloom, 1956) were mastered. They found that as students advance up the hierarchy of Bloom's Taxonomy they require more time to attain mastery of school learning tasks.

Time spent on engagement and success in academic learning has been found to be strongly related to pupil achievement in reading and mathematics. (Oideas, 24, p39).

10. Independence Training

The perception of success/failure as self-caused has been shown to be an important factor in achievement-related behaviour. The achievement motive pre-supposes that one intends to reach a goal or achieve an outcome which will be evaluated against some standard of excellence. Choice and freedom have generally been found to be particularly significant in determining "continuing motivation" by fostering task goals (Maehr, 1984). De Charms (1984) speaks of the "origin experience" and contrasts it with the "pawn experience" :

"In a nutshell, originating one's actions implies choice; choice is experienced as freedom; choice imposes responsibility for choice-related actions and enhances the feeling that the behaviour is 'mine'".

The pawn experience is one of being constrained, of being used or pushed around and thus one is relieved of personal responsibility for the action. De Charms advocated personal causation training, in which the teacher (who should believe him/herself to be an originator) allows carefully conceived choices, initially simple and short-ranged, not too few or too many, within the child's ability range and preferably of moderate difficulty. The classroom atmosphere should be such that the pupil feels free to influence the activity and personal choice in determining activities and in pursuit of goals should be encouraged.

Trudwind (1982) found that child-centered independence training aimed at fostering the child's independence,

freedom and autonomy in decision-making (even at a certain amount of risk to the child involved) was significantly related to the child's fear of failure. Granting independence late increases fear-of-failure scores, whereas granting independence early seems to compensate for low stimulus potential of the home environment. Trudwind also reports significant effects for independence granted by the teacher (i.e. teacher behaviour which fostered self-guided learning, granted students individual responsibility by extra-curricular activities and allowed students to plan activities and carry them out and thereby increase their competence), was obtained for success orientation (positive), overall effort avoidance (negative), test anxiety (negative) and manifest anxiety (negative). Parent-centered independence training (training which was designed to relieve the parents of routine chores, rather than to give the child freedom in decision-making) was more likely to lead to effort avoidance and dislike of school, possibly because of the control element involved. Trudwind also quotes studies which show that mothers of failure-oriented boys were more likely to control the homework situation, gave less respect to children's decisions and were more likely to intervene directly if asked for help. They also criticized their children more often and praised them less often than mothers of success-oriented children.

Bloom's sample of gifted mathematicians remembered their most successful teachers as those who helped them to grasp the larger patterns and underlying processes in the subject and who allowed them to find and use alternative

procedures for solving problems. Insistence by a teacher on a set procedure often caused friction. Stanley (1986) in describing his very successful programme for highly able mathematicians at John Hopkins University, describes how all correspondence is conducted directly with the children - even those as young as nine or ten years. The objective is to get the children to take charge of their academic planning early and to use parents and teachers as a means of implementing their own decisions.

Conclusion

Studies of child development show that many motives appear to be innate. The desire to know, and to predict and master the environment seem to be universal. The need to define the self and to preserve one's self-esteem seem to be equally ubiquitous. Related to all of these is the motive to achieve. This involves matching behaviour to a standard and evaluating the self on the outcome. Self-evaluation is based on the child's cognitive representation of achievement situations, their value or meaning for her/him and beliefs about her/his action potential in regard to them. In this context, significant others provide information about which goals are valuable and the standards by which performance may be evaluated. They also influence the conditions under which such goals may be pursued. The child may eventually internalise these goals and standards and use the results of associated achievement-related behaviour to evaluate her/his own competence and worth. In doing so s/he will attribute

reasons to success/failure outcomes. These attributions may relate to effort, ability, powerful others, unknown causes, etc. The child who attributes success to stable, controllable and internal causes will expect success on similar tasks in the future. The child who attributes failure to some internal but not readily controllable cause e.g. a lack of ability, will expect future failure. Different goal conditions, by selectively emphasising different causal attributes (e.g. competition makes ability a salient cause), generate different affective consequences. Attribution of success to effort may result in pride in accomplishment, while belief that failure is caused by a fundamental and not easily modifiable factor such as lack of ability may result in shame and hopelessness. It is the anticipation of the affective consequences of goal oriented behaviour which many believe to be the immediate goad to action.

The child can be oriented towards achievement behaviour by being given the physical equipment, the intellectual challenge, the body of knowledge and the cognitive skills, which are necessary. As well as all of these, parents, teachers and significant others in the child's life can provide the example, the knowledge about goals and standards, the emotional support, the experience of success and the intellectual freedom which enable the child to develop the high level of self-esteem and competence which leads to the expectation of mastery and which appears to be a pre-requisite for high achievement.

II (v). SUMMARY OF LITERATURE REVIEW

This literature review has been concerned with the phenomenon of giftedness and the factors which determine achievement. There is no one agreed definition of giftedness, but those in common use emphasise the potential to perform at a high level in a worthwhile field of achievement, based on the possession of outstanding ability or abilities. The child's abilities appear to derive from heredity and the formative environment in proportions which cannot be exactly determined.

Intelligence seems to be the main ability involved in achievement behaviour, although there is as yet no agreement on its precise nature. Is there one underlying ability which accounts for intelligent behaviour or are there multiple intelligences corresponding to different areas of performance? Experts differ. Modern information processing theories emphasise the possession of such cognitive abilities as accuracy in perceiving stimuli, ability to perceive relationships between stimuli, fast memory-searching capability, the ability to build complex structures of prototypical knowledge and the use higher order control processes in decision-making and problem-solving. Superior information processing ability has been associated with the type of holistic automatic and insightful processing believed to be the province of the right side of the brain.

Creativity, characterizes the products and process of those who have reached the pinnacle of achievement in worthwhile fields of endeavour. It appears to involve the selective application of a highly organised body of knowledge, in innovative ways to the finding and solution of real-life problems. Creative activity frequently requires idiosyncratic working conditions, long time spans and particular personality characteristics, such as curiosity and perseverance, often linked to particular types of childhood experience. It can be regarded as the application of intelligence to push out the boundaries of knowledge. It is not easily predicted from performance on "creativity tests" in childhood.

While abilities, or the lack of them limit the scope of possible achievement, it is motivation which determines whether ability will be translated into achievement. Many motives appear to be innate e.g. the motives to know, to gain mastery and to achieve. The goals which the child selects to satisfy these motives are socially and environmentally determined. Significant others in the child's life control, to a large extent, the formative environment, indicate which goals are valuable, decide the standards by which performance will be evaluated. They may also provide the necessary intellectual freedom and emotional support as well as the investment of time money and interest which may be required. The child's perception of her/his interactions with the challenges, incentives and opportunities provided by the immediate environment will determine which goals will be chosen and with what vigour

they will be pursued. Of particular importance is the child's understanding of her/his action potential in regard to environmental circumstances and events and her/his interpretation of how these affect her/his self-evaluation. The cognitive and affective results of achievement-related activity will influence level of ability and self-concept of competence and thus help determine the selection of future goals.

The child is a complex adaptive system. A schematic representation of the relationship between personality, environment, society and achievement would contain many feedback loops. We cannot hope to unravel such a complex system in the case of any individual child. Even if we were to succeed, the unravelled threads would not add up to the complete system, since the action takes place at the points of interaction between the strands. Systemic thinking is required. We may look closely at the strands, but we must always keep the pattern in mind, i.e. we must "stick with the knitting". For this reason any study of the many-faceted phenomena of giftedness and achievement, must tackle the issues from many angles, but must never lose sight of the unifying principle, the individual gifted child, whose unique perception and motivation can alone transform potential into achievement.

III.

DESIGN.

III. (1) OBJECTIVES

The objectives of the study were:

1. By a review of the literature, to ascertain which factors are most commonly associated with achievement-related behaviour.
2. To describe the life-space of a group of gifted children in terms of the factors believed to influence achievement.
3. To discover those factors which appear to be relevant for each individual child and to describe how they operate and interact in the life of each child to promote or inhibit achievement related behaviour.
4. To highlight areas of concern to individual children.
5. To reveal general trends, where appropriate.
6. To make recommendations on the educational provision required for gifted children.

III (11) OPERATIONAL DEFINITIONS

For the purpose of this study, the term "gifted" is applied to children who score at or above the 97th percentile (British norms) on the Raven's Standard Progressive Matrices (S.P.M.) test and/or who score an I.Q. of 130 or above on the WISC-R intelligence tests. The latter tests are in common use as identifiers of gifted children and have a long track-record in the prediction of academic achievement.

The Raven's test is non-verbal and is designed to provide a reliable estimate of a person's capacity at the time, for observation and clear thinking when allowed to work steadily at his/her own pace.

Information on these tests can be found in Appendix B.

Reasons for including the Raven's Progressive Matrices test in this study were:

- a) It is generally regarded as one of the best measures of "g" (Anastasi, 1982).
- b) It is a measure of productive rather than reproductive thinking, and therefore could be expected not to discriminate against children from deprived educational backgrounds. (Freeman, 1979).
- c) Dr Joan Freeman, director of the Gulbenkian Research Project concluded, as a result of her research, in which she used the Raven's and the Stanford-Binet tests, that non-verbal tests, such as the Raven's were the fairest and best measures of innate intellectual ability (Freeman, 1983).

Other criteria which could have been used were: creativity tests, and evidence of high achievement.

The possibility of using creativity tests was considered. It was decided not to test for creativity because, following a review of the literature:

- a) it was not altogether clear that creativity was an entity, separate from intelligence;
- b) the value of creativity tests for predicting real-life creativity seemed questionable;
- c) the literature shows that creative production often requires long time-spans and idiosyncratic working conditions which are incompatible with test situations, and
- d) the researcher was not qualified to judge the creativity of any products which might be made available for evaluation.

High achievement is also an indicator of giftedness. High achievement was not a criterion for inclusion in this study, because if it had been, the effect would have been to exclude the "potentially gifted", those children who possessed very high ability, but who, because of lack of a challenging environment or other factors, had low motivation and were under-achieving relative to their potential. This study was designed to encompass both the "potentially gifted" and the "achieving gifted".

Achievement-related behaviour

The term "achievement motivated behaviour" relates to attempts, by one's own efforts to achieve success, avoid failure, or, in certain circumstances, to avoid success, in circumstances where a standard of excellence applies, and where the outcome results in self-evaluation.

"Achievement-related behaviour" is understood as all behaviour which influences or is influenced by such attempts. It can be manifested in many ways, including the following:

1. Levels of personal aspiration,
2. Levels of personal investment of time, energy, money, and interest in reaching towards goals,
3. Affective responses towards success/failure experiences.
4. Degree of independence of one's achievement efforts from external re-inforcement.
5. Number of areas of activity which one judges in terms of one's ability to reach a standard of excellence.
6. Level of actual achievement.

Finding children for a study of this nature presents difficulties. One is, after all, looking for children of outstanding potential and achievement and these are, by definition, comparatively rare. Given the financial and personal limitations of this study (one researcher; no external funding), the logical course was to limit the search process by going to the most obvious source of potential subjects- the Irish Association for Gifted Children. This is an association which aims to assist parents, educators, and the social services in the care of gifted and talented children in Ireland. Thus the first group of children considered for inclusion in the study were children whose parents' names appeared on the mailing list of the Association on a recent date, whose schools and homes were situated in Dublin City, north of the River Liffey, and within five miles of the researcher's home. Only children in the senior section of Primary Schools were considered, because classroom organisation and teaching methods vary substantially between junior and senior classes. All children from these families who met the above conditions, and for whom parental permission was obtained, were tested with the Raven's Standard Progressive Matrices, regardless of whether they were believed to be gifted or not. Since there was the possibility that children from families who had contacted an association which offers help, might be problem children, a further group was sought. All the children in the school classes of the original group were

tested in school at the same time.

The group which was finally selected was composed of children who met the following criteria:

- a) Attend 2nd-6th class in a Primary school.
 - b) Live and attend school in Dublin City, north of the River Liffey, and within five miles of the researcher's home.
 - c) Score at or above the 97th percentile on the Raven's Standard Progressive Matrices test, and/or obtain a full scale I.Q. score of 130 on the W.I.S.C.-R. (see Appendix B).
- The SAMPLE included twenty-two children from thirteen different classes in eleven different schools. Ten of these were from the group recruited through the Association for Gifted Children, and twelve from the school classes of the children who had originally been considered for inclusion. Five classes had one gifted child each; one had three; the other seven had two each. It might seem odd that eight out of thirteen of these classes had more than one gifted child. This was not a random happening. In one school the Principal had deliberately put the pair in the same room, so they could challenge each other. Parents had also made informed decisions about choice of school - fifteen gave educational reasons for the choice, such as firmer discipline, more facilities, better work ethic, small classes and, for at least two far-seeing parents, access to a better secondary school. Only four gave convenience as the sole reason for their choice. Nine children were attending schools other than the local one; five were in

their second school. One mother summed it up when she remarked "I can't understand a mother who would not push the pram a few miles further up the road, if she thought her children would get a better education".

III (iv) APPROACH TO THE STUDY

1. The approach adopted was ecological and holistic. Emphasis was on the actual personal, social and environmental factors in a child's life, gathered as far as possible in the real-life situations of home and school, and on the interactions between them. It is of course impossible to specify all the conditions which contribute to a person's motivation and achievement, or to disentangle all the relationships between them. Those which have been chosen are those which the literature review shows to be relevant.

2. The approach was clinical and individual. Each child was studied primarily as an individual. The focus was on individually relevant factors, the child's interaction with them and the qualitative difference this made to achievement-related behaviour.

The choice of subjects did not reflect any bias or preconceptions on the part of the researcher, as all children who were available and who met the pre-determined criteria were included. However, while it was not capriciously chosen, the sample did not presume to be a representative sample of the gifted population of the area. The purpose was not to provide results which would be generalizable to the population as a whole, but rather, through the study of individual cases, to highlight areas of concern and relevance to individual children, to reveal general trends, and to uncover issues which might benefit from a large-scale study at a later date.

3. The approach was phenomenological. The child's interpretation of the factors which influence his/her life space and contribute to his/her achievement-related behaviour was regarded as significant, since the same objectively observed factors may result in a different behaviour pattern, depending on how they are perceived by the child.

IV (1) PROCEDURE AND INSTRUMENTS USED

An approach was made to the Irish Association for Gifted Children with a view to finding families which might have children of high ability who would take part in the study. The Association was provided with a letter explaining what was involved. No mention was made of "gifted", as this might have deterred some parents who were unwilling to label their child in this way. It was also explained that for the purposes of the study, the child need not be a high achiever at school. All those on the mailing list of the Association on a recent date and who lived in the North Dublin City area were contacted. The response was very positive with almost all families expressing interest and very few refusals, almost all of these on grounds such as illness in the family or impending change of address. The children chosen for initial consideration from these families were:

- a) those in 2nd-6th class in primary school, who
- b) lived and attended school in Dublin City, north of the River Liffey, and within five miles of the researcher's home.

All children in each family who met these criteria were tested, whether the parents thought them gifted or not. The reason for this was that families often have more than one gifted member and it was also possible that a family with one child who was achieving exceptionally well might overlook an equally bright underachiever.

The Principals of the schools which these children attended were then approached for permission to carry out part of the study in the school. The terms "high ability" or "intelligent" were used to describe the children who were the subject of interest, since it was expected that Principals, particularly in the more deprived areas, were likely to believe that there could be no gifted children in such a school and, furthermore, it was felt that if a child were chosen as "gifted", while obviously under achieving, the face validity of the study, from the teacher's point of view could be undermined, leading to less than full co-operation, or alternatively undue pressure might be put on the child to reach a level of attainment consistent with the "gifted" status. The Principal of the school and later the class teacher were told that the purpose of the study was to study motivation in children. They were not told in advance that any parents had been approached already. This would have been unfair to the parents involved, since they had not specified that the children involved, or indeed any of their children, were gifted. Besides this, the assignment of a new and emotive label to a child might have affected the teacher's behaviour towards him/her and interfered with data collection.

The Teachers of the classes involved (i.e. those which contained a child from the group initially considered for inclusion) were asked :

a) To fill in a form nominating children in various categories:

1. Children born in the month in which the originally chosen child was born. (This was to provide a plausible category to ensure that the already chosen child would be included).

2. The four most intelligent children in the class (This was to discover whether the selected child was recognised as highly intelligent by the teacher. Where the child did not show up here, her/his Raven's score was compared with those who did since there was a possibility that there might be more than four highly intelligent children in the class).

3. The youngest child in the class. (Terman, 1925, found that the youngest was the most likely to be gifted).

4. Any child whom the teacher suspected to be very intelligent, even if not performing well at school. (This was to discover whether the teacher could spot the underachieving gifted child).

5. Any child showing outstanding ability or talent in any direction. (This was to find out whether there were children who could be classed as gifted, but whose abilities did not show up as school-type achievement, and also to find out whether the teacher was aware of the child's abilities in areas not strictly relevant to the school curriculum).

b) To undergo an interview before they knew which children had been selected. The interview was designed to gain information on the teacher's curriculum objectives, the type of cognitive and other skills being taught, the teacher's standards for school and work behaviour, the rewards and punishments which operated in the classroom, the structures

for working and evaluation, the degree of choice available to the child to set her/his own goals and to progress to more advanced work, the teacher's qualifications and special interests, and the information available to the teacher on the child's performance.

c) To fill in a form relating to the schooling, health, interests, attendance and behaviour of the individual children after they had been selected. No teacher was approached until the child had been in his/her care for sufficient time for the teacher to get to know the child reasonably well.

All children in the classes to which the originally chosen children belonged were asked:

a) To fill in a Peer Nomination Form.

This was designed to find out whether the selected children were regarded by their peers as showing leadership, general knowledge, bravery or reliability in caring for pets, and whether they were selected by their classmates as desirable companions for work or play. The children were also asked what they would like to be when they grew up.

b) To complete the Raven's Progressive Matrices, a test of productive thinking (see Operational Definitions and Appendix B).

The child in each class who scored highest on the Raven's test (excluding the original children who had been recruited through the Association) were next considered for inclusion in the sample. Where such a child met all the criteria for inclusion, the parents were approached in

person by the researcher who explained the purpose of the study and asked permission for the child to take part. The word "gifted" was not used, since pre-testing of the parents' interview had shown that the terms "bright" or "high ability" were less emotive and more in line with how parents felt comfortable describing their children to outsiders.

The Selected Children were those who had fulfilled the original criteria plus one more:

Obtain a score at the 97th percentile on the Raven's Progress Matrices scale, or have achieved a full-scale I.Q. of at least 130 on the W.I.S.C-R carried out under proper conditions.

In one class, after a second child had been selected, it was discovered that a third child who had been absent on the day of the test, was considered to be exceptional by Principal, class teacher and the class in general. This child was tested at home and did prove to be exceptional. He is included in the study.

Those children from the original sample who did not score at the criterion level on the Raven's test were retained in the sample pending further investigation if there was any other evidence to suggest that they were gifted, e.g. anecdotal evidence indicating early precocity or parent's strong belief in the child's superior ability. These children are described below.

1) One such child was believed by one parent to be gifted, but the other parent was not sure. The child was

extremely impulsive. He finished the Raven's test in about five minutes, and while his choices were not altogether stupid, results indicated that he chose items without completing the search process. A psychologist had found him impossible to test but thought he 'might be gifted'. This child is not reported on, as he did not meet the criteria.

2) This child did not reach the 97th percentile on the test. He was absent on the day the class was tested and had to be tested on his return. Unfortunately the test had to take place in the only available place- the principal's office. He talked to himself throughout the test, anxiously wondering 'why am I here', and muttering 'I think I've seen this before'. It transpired that the child had taken the test under optimum conditions several months before and had scored very highly on it. Obviously this child had been in the Principal's office under less congenial circumstances! This child was reported on in the study.

3) This child had a tested W.I.S.C.-R I.Q. of 126. She was a high achiever, and according to her teacher 'highly motivated'. Her performance on the Raven's test fell far short of the criterion, although she stood out from the class in her posture and demeanour during the test, and the length of time she took to complete it. She was second last finished. She is not reported on in the study.

4) This child's mother was totally convinced that she was gifted. Her performance on the Raven's fell far short of what was required. She had been assessed as a four-year-old, but the test was a fiasco. The researcher remembered that the children at the table in class where this child sat

seemed unusually fidgety. She was tested again in her home when all the other measures had been completed and reached the criterion with ease. She has therefore been reported on.

The Selected children, as well as completing the Raven's Progressive Matrices and the Peer Nomination Form, were asked:

a) To undergo two separate interviews.

The first of these was highly structured. The Piers-Harris self-report questionnaire was used as the basis of the interview. This is an 80 item questionnaire which requires either a Yes or No answer to each item. The child is required to respond to items such 'I am happy' according to whether it is true 'most of the time'. The instrument is designed to yield an over-all self-concept score and separate scores on a cluster of traits such as 'popularity'. The items were presented in the exact order recommended. The difference was that the child was invited to expand on the reasons for his/her choice. Several children required reassurance that if they told the truth, it would not be regarded as boasting. In general children's reactions to the individual items and to the instrument as a whole revealed information that simply completing a questionnaire could not have done. Since this method required a longer time to administer, a break was organised the moment the child's interest appeared to wane. Some of the children, because of their better than average powers of concentration, did not require a break and would quite happily have talked for hours.

The second interview which took place several weeks after the first, was semi-structured and was designed to obtain information on children's interests, activities and reading habits, the level of the child's personal investment in these, the place they occupied in the child's life and the degree of freedom allowed to her/him in pursuing her/his interests. The child was also asked to describe her/his thinking style. Information was also elicited on personal aspirations and attitudes towards achievement situations, such as, task choice and unexpected failure. Equipment available in the home e.g. video or computer which could be used to facilitate achievement was noted. Children were also given the opportunity to discuss their views on school, teachers and education in general. They were also invited to comment on what they thought the greatest problems in the world today might be. Children were also given the opportunity to discuss their views on school, teachers and education in general.

b) In conjunction with the second interview the children were invited to keep a diary for a week, writing down what they did for the week and 'anything else they liked'. They were told that this was to give the interviewer some idea of how different children spent their time. Children were told to keep a diary 'only if they wanted' since it was envisaged that some would regard a diary as private, and the interviewer made a point at all times not to appear intrusive. The diary was used to cross-check the information given in the second interview and to assess the

type of time-pressure (if any) on the child in reconciling home and school activities which might affect the child's ability to perform well at school.

c) The child was asked to keep a careful record of all the written English marked by the teacher for at least two weeks. The time was carefully chosen so that holidays, school concerts and other such events would not interfere. The child was told that this was to give the researcher an idea of the kind of work which was being done at school. Teachers were not told in advance about this, in case it altered their work-pattern. In fact the information was compared with the teacher's curriculum objectives as stated in the teacher interview (see below) to see whether for this child, at least, the work set, required the type of thinking skills which were appropriate or those which corresponded with the teacher's objectives. A further check was made to discover what type of feedback which the child was getting from the teacher in written English, since feedback has been shown to affect achievement. The chosen weeks were then compared with other weeks to ensure that they yielded a reasonably representative sample of the teacher's style of assigning work and giving feedback. It should be noted that no attempt was made to assess the effectiveness or otherwise of the teaching generally, and other children may not necessarily have been getting the same work assigned or the same feedback.

d) Each child was asked to complete the SOLAT questionnaire. (see APPENDIX B). This instrument, known also as 'Your Style of Learning and Thinking' is designed

to show hemispheric preference and yields scores for Right-brained, Left-brained or Whole-brained thinking. Hemispheric preference has been shown to affect school achievement and behaviour.

All procedures involving the selected children, with the exception of those undergone by the whole class, took place at home, as it was decided that the less attention drawn to the child at school, the better. Children were asked not to tell the rest of the class that they had been invited to take part, and teachers were asked not to draw attention to the child. Apart from one teacher and one student, these instructions seem to have been followed.

The Parents

The parents underwent a semi-structured interview. They were given in advance the headings under which information would be sought and it was impressed on them that it was their personal experiences and opinions which were of most interest to the interviewer. No time limit was put on the interview, and parents were invited to call a halt and take a break any time they wanted. Parents showed a wide variety of response to these instructions, one managing to hurtle very competently through the interview while supervising the cooking of the dinner, and another talking for several hours, causing the interviewer to have a severe aversion to coffee for a considerable time thereafter!

The purpose of this interview was to gather information on the early childhood of the child, the investment of time, effort, interest, money etc which the parents were making in

her/him, the child's home behaviour, health, evidence, of stress, (if any), the degree of independence afforded the child, the parents' hopes, expectations, standards and goals, the parents own backgrounds and interests and the value they put on education and the part (if any) played by other family members in the life of this child. Parents were also invited to describe the child in six words. It was hoped that this combined with other information from the interview would give some indication of the emotional relationship between parent and child. The parents were told that only one parent would be interviewed, and it was left to them to choose which. It was assumed that the parent who had most involvement with the child would be chosen, but contingency arrangements were made if this turned out otherwise. As it happened, two fathers presented themselves for interview. One gave as the reason that the mother had spent so much time talking to the interviewer already that there was little left to say. This in fact was true. Being a natural talker, she had already answered most of the questions without being asked. The views of both parents differed in various ways.

The reasons for the second volunteer father were not altogether clear. He was however, very involved in the child's upbringing and education and only referred to his wife for verification when subjects such as the child's birth were broached. The mother seemed quite happy with the arrangement and her views obtained in other situations seemed to coincide with his.

Information from the interview was also cross-checked against any other information which either parent had given informally on other occasions.

Results from the various measures were analysed, firstly to detect general trends, and then to consider each child individually in the light of the combined information from all sources. Conclusions were drawn from this analysis, problem areas were highlighted and suggestions made for future action.

V (1) THE HOME AS A FACILITATING ENVIRONMENT

The role of the family and home in the development of the achievement motive has been shown to be extremely important. The values explicitly or implicitly enshrined in family life serve to orient the child towards certain areas of activity and certain manners of behaviour which will ultimately affect her/his perception of what counts as success and what is regarded as an effective and legitimate way of attaining it. It is in the home that the child first encounters models of achievement oriented behaviour. It is through the beliefs of the parents, and even more so, through their actions that children grasp a sense of what matters in life. As the song says: "If you don't have a dream, how you gonna have your dream come true?". Making a dream come true, however, requires more than wishful thinking. It requires physical, moral and spiritual resources as well as education and opportunity. The ability and the willingness of parents to provide these can be of crucial importance in translating the motive to achieve into tangible achievement.

THE FAMILY UNIT

All of the twenty-two children in the study had both parents living. Fourteen were the oldest in their families (one of these was a twin), and there were no only children. Six of the others had at least one older sibling who was gifted or talented. In all but one case the family lived as

a unit. The exception was a father who had emigrated to find work, but who remained in close contact. Two of the children were from the same family.

Doing things as a family.

There was a strong sense of the family acting as a unit. All but three of the families reported regular family outings. Typically, these involved the countryside, walking, hiking, cycling, picnicking or holidaying together or going to places of interest such as museums. No one reported regular visits to concerts, theatres or art exhibitions, even when these were of interest, presumably because of the cost involved.

Typical comments (number in parenthesis refers to case numbers of subjects in the study, and are keyed to profiles of individual children in Appendix A):

"Yes, we do a lot together. The family acts as a unit".[2]

"We do everything together" [9,12,16,19]

Even the families which did not go on outings shared some interests in common.

Male/female roles.

In only five of the families was there a male/female divide when it came to household chores. Many of the fathers cooked, some vacuumed and one child described her father as the most important person in the house, "because he cooks breakfast and gets us ready for school on time". This child's mother worked full-time outside the home. One

mother reported that while the boys in the family still thought in terms of separate roles, and while she did everything for her children, "because I'm a mother", the girls were "more liberated now". These five families who did not report any involvement by the father in household chores contained three of the children who showed anxious behaviour.

Family networks.

The sense of family extended also to the extended family. A total of 13 grandparents or sets of grandparents helped out in many ways. These ranged from providing holidays, child-minding, helping during illness, stimulating interest in history, music, and literature to taking the child fishing or teaching him to drive.

Of the eight families where help was not reported, one had only a very ill granny who was visited by the mother on a regular basis, one had an aunt and one an uncle who was especially interested in the child. Two others had a strong relationship with a grandparent who had since died. In all but three cases, a grandparent, aunt or uncle was reported to have taken a constructive interest in the child. One family with innumerable relations said that they never visited, but did not specify a reason. In only one case was a grandparent actually living in the house.

We must conclude that most of these children were reared with a sense of belongingness - of being part of a caring and sharing community. This is a factor which typically positively correlates with mental health and

emotional well-being and is usually regarded as a prerequisite for self-actualising activity. (Maslow, 1970).

THE PARENTS' EDUCATION

The parents' own education or the lack of it could be expected to inform their views on the purpose and value of education and affect their expectations for their children's achievement. Let us now look at the educational history and status of the twenty-one sets of parents of children in this study.

Parents' Education; Highest status attained

University degree or equivalent:

Mothers: 1 Fathers: 3 (not from the same families)

(By night study, after
obtaining a diploma
by full-time study)

(2 fathers obtained their
qualifications by studying while
working by day; the third was
studying for a postgraduate
degree by research, while
working full-time.).

Other third level qualification (e.g. nursing diploma)

Mothers: 2 Fathers: 2 (not from the same families)

(One by home study).

Both fathers had acquired their
qualifications while working
full-time and both chose
career-related courses.
One other father pursued
a professional course, but did
not qualify.

Secondary school education completed:

Mothers: 9 Fathers: 6

Intermediate or Group Certificate:

Mothers: 6 Fathers: 6 (3 of these fathers had
completed apprenticeships)

Left school at 14 years:

Mothers: 3 Fathers: 3. (2 had no qualifications;
one had completed an
apprenticeship).

One other mother left school early, but subsequently attained a professional qualification.

Of the non-professional mothers, nine had typing or secretarial skills. Four had attended courses in law and political science, wordprocessing and child development, providing community information, and business studies respectively. Of the non-professional fathers, seven had taken job-related courses. Nine were not involved in courses of any kind. Of these, three worked irregular hours, two had left school with no qualifications, and three had undergone long apprenticeships.

In 20 out of the 21 homes studied, one or both parents had undertaken further courses of study or apprenticeships since leaving full-time education.

From the above figures, it can be seen that education and training are given a high priority in these homes, not merely as a prelude to work, but as part of life-long development. Only two parents had the luxury of full-time education right up to third level, and even these parents engaged in further part-time studies.

PARENTS' VIEWS ON THE PURPOSE OF EDUCATION

Parents were asked whether they or their spouses had any definite views on the purpose of education. In all but three cases the interviewed parents felt that their spouses were

in agreement with them. The views of the three "dissenters" are noted separately below.

Purpose of education as reported by the parents

Human development, and social competenceTotal...10
Human development, and social competence only.....3
(One spouse was reported as believing a job to be more important)
Human development, social competence, getting a job.....7
One of these seven parents, whose spouse had been bullied into learning as a child stated that the spouse felt that education "wasn't all that important"
Acquiring knowledge.....3
Two parents named this as the sole purpose, although one of these felt that his spouse would view getting a job as a priority. The third parent specified both pursuit of knowledge and job-getting as the purpose of education.

Comment:

"Education seems sometimes a total waste of time. I would like the kids to be well-versed in things-education for knowledge's sake- although his mother would see it more as a means to an end".[11]

No definite purpose.....2
Like the child to enjoy school, but need to work1
Getting a job only.....5

In these five families, one parent had emigrated in search of work, one had recently been made redundant and one was unsure how long his job would last. All five families paid particular attention to their children's out-of-school personal and social development, so it seems that they may have interpreted the question to mean "the purpose of the school" rather than "the purpose of education" in the broader sense.

It is significant that even in time of economic recession when at least six of the fathers had experienced unemployment in the recent past, or were in imminent danger

At least twelve children in all could read before starting primary school, and one other could recognise words. Only five of these readers appear to have had any formal teaching by parents. One parent reported that the child at four years read a whole story book after having it read to her once the previous night. All the early readers had been read to frequently. One child who had been formally taught by the mother ("He showed interest and kept asking what words e.g. road signs meant" [9]) had a reading age of eight on entering primary school at four years old. Five of the non-readers learned very fast after school entry.

One mother, when the child was small, bought a crate or box of books every month (ex-library stock) for future use. Each child in the family had a personal bookcase.

Six children could write their names before school age. At least eight could count, and one of these could add. Three had been taught to bake and five knew some songs.

It is evident that these children received a considerable amount of early stimulation, and that their love of learning, and of reading in particular, was developed on the parent's knee.

Reasons for choosing the present school:

One of the most important choices the parent must make which can impact on future achievement is the choice of school. Parents were asked on what basis they had made the selection. The replies were as follows:

Convenience..... 9
 (Only 4 of these gave this as the sole reason, and two of these had no real choice).

Academic considerations.....15
 These included: small size, wider curriculum, good discipline, better facilities, homework policy, approach to subjects, academic reputation and use of Irish.

Religion.....3 (Only 1 gave this as sole reason)

Dissatisfaction with reputation of local school and children home earlier from present school.....1

Numbers of children still attending local school as school of first choice.....10

Numbers no longer in school of first choice.6

Reasons given included:

- (a) First school not work-oriented.[2]
- (b) House move and problems with religious instruction in previous school.[4]
- (c) Move to improve the child's chances of getting into a good secondary school.[13]
- (d) Child not progressing in first school; second one gave automatic access to secondary school.[17]
- (e) Move from abroad, as foreign city not considered safe or suitable for childrearing.[19]
- (f) The present school had no available places, due to excessive demand, and the parent sent the child to a further away all-Irish speaking school to improve her chances of getting a place when one became available.[16]

As can be seen from the above figures, parents were very selective in their choice of schools. Many academic factors were taken into consideration and when a particular school did not prove suitable, they were prepared to consider alternatives.

It is interesting to note that the parents who demanded most from the educational system and who showed a direct action approach to reaching their objectives were those whose own educational opportunities had been nipped in the bud. Of the six children who had moved school, four of the mothers had been obliged to leave school as soon as they had reached the then statutory age of fourteen, although one had subsequently managed to obtain a professional qualification. The spouses of two of these also left school early. They were acutely aware of the consequences of lack of educational opportunity, and determined that their children should not suffer the same fate. Their comments are revealing, e.g.:

Parent of child at (c) above:

'At the beginning of every year, I go to the school and tell the teacher what he can expect from me and what I expect from the teacher. The school is very strict- plenty of homework- I prefer it that way- If not I would take him out".[13]

Parent of child at (d) above:

"There was never a time that he wasn't learning or I'd have been up to the school to see what was going on". and later "There was never anything for us older ones down on the farm - the younger ones got the education".

This parent had gone to great lengths to get her child admitted to the second school, even to the extent of getting the school to arrange a separate entrance examination for him. [17]

PARENTAL PRESSURE TO ACHIEVE

Parental expectations

Parents' expectations have been shown to have an impact on a child's self-concept and achievement (Pringle, 1970). Eight of the parents interviewed reported that they expected more of the child because s/he was bright. Two of these worried that they were expecting too much. Eight stated that they expected the child to do her/his best. (Three of these were also in the previous group). Three children reported that their parents expected too much of them.

Academic goals set and advice given by parents.

Research has shown that underachievement often results from unrealistic parental expectations. What were the goals and guidelines they set for their gifted offspring?

Number of parents who specifically advocated hard work...9

Of these, 6 tied this advice to long term objectives:
Good job...2; University ...2; Good Leaving Certificate...2

Two of the remaining three were "pushers".

One of these mothers, was disappointed in the child's results.

"I tell him he is well able to be top of the class and urge him to try to achieve that." [7].

The other mother never compared her daughter to other children, but urged her not to slack and to keep up her own standard. This child was being encouraged to study for a scholarship to a private secondary school. [2]

Number of parents who did not claim to set academic goals for their children.....12

Some comments:

"The child doesn't need guidance" [14].

"Take one day at a time" [15]

"Not now, maybe in secondary school" [13].

Parents long-term plans and aspirations.

Number aspiring to third-level education.....18

Some comments:

"We're geared financially"[3]

"I'd get a job if necessary to help finance her"[2]

"We'll stick with him as far as he wants to go".

"This one (the youngest) is our great white hope". This family had saved a significant amount from a slender budget to pay for an older child's education, but she did not get enough points for university.[16]

Number of parents not specifically aiming at third level .3

Comments of these three:

(1) "What's for them - the situation is getting worse".[9] These parents believe that education should be geared to more practical things, everyday living, a wide range. The boys were taught to cook and do housework, although they were also given a musical education.

(11) "I'd be very annoyed if he didn't finish secondary school".[17] Both father and mother had left school at 14 years.

(111) "I don't know; it's too soon to think; I don't want pressure". [20]. This child was isolated at school by her love of learning, and the mother was afraid of aggravating the situation by setting goals for a child who was already self-motivated.

It seems clear that while the majority had high hopes and plans for their children's academic future, and in some cases had already made financial provision to see these through, many were loath to set specific immediate academic

targets, or to make invidious comparisons between the progress of their own children and that of others. With a few notable exceptions they tried to ease the pressure and allow the children to develop naturally.

Parental pressure- push to achieve

There was a possibility that in homes where education was a high-priority item, parents might push their children into academic pursuits or even use what have come to be called Hothouse techniques- intensive structured learning from a young age. The preschool period showed no evidence of this phenomenon.

Now that the children were older, had the situation changed? Parents were questioned on this matter. Their replies follows:

No academic pressure exerted on the child at home....16

Among the reasons given were:

Pressure does not work (x2); would like to see him make own decisions and develop as he is; parents do not believe in it; child needs initial confidence-we don't push-just provide the infrastructure; children interested-will work to amuse themselves; mother wants child to enjoy school; child needs all the encouragement she can get-once she is happy, ability is not a top priority (This child set herself a straight As standard), don't want the child to be different (still being hassled at school- other children are jealous); needs praise to let her know she's good.

It is interesting to note that the three children described as needing confidence and encouragement were all girls who were suffering quite severe peer rejection at school. Since the parents had no qualms about insisting that non-academic tasks like housework should be done, it appeared that they

were deliberately not pushing their children academically so as not to distance them further from their peers.

Parents exerting pressure on own admission.....4

Comments:

"If you don't push your children, they'll get nowhere" [2]

"The child needs a push. He lacks the ability to know how good he is". [7]

"Yes, we push her, but not beyond her ability - more like encouraging her". [6] This child showed a definite resistance to work on subjects, such as Irish, which she considered a waste of time, and mathematics which she could not excel in.

Children given schoolwork during holidays.....4
(Two of these also appear in the previous category)

(i) Children in this family given small academic tasks in mornings during holidays. [2]

(ii) Father insists on a few hours a day for most of the holidays. Mother wonders if this is too much - although more is expected of the older child who is also gifted. She tells the child 'It does not matter now' because he was so upset by the last test. [3]

(iii) Father sometimes gives mathematics exercises during the holidays, but mother will modify the amount if too much is given. [13]

(iv) Child is given some work during the holidays. This would appear to be to alleviate boredom as local friends are almost non-existent. [19]

While academic pursuits were undoubtedly valued in these homes, in only four was there evidence of parents exerting overt pressure on the children to achieve. In one of these cases the mother tried to alleviate the pressure when the child was under strain. In a second, the pressure was said to be designed to show the child how good he was. This child was underachieving at school, even though he had an extremely high I.Q. score. The mother believed that he was

underachieving deliberately - "some gifted children do that" [7]. In a third case pressure was directed only towards those areas of the curriculum where the child was disinclined to work, even though her access to third level education and thus her chosen career might depend on it. Other gifted siblings were under no such pressure.

Pressure to Compete

Seven parents encouraged competition, 3 of these with reservations e.g.

"I encourage him to compete, not for winning, but for participation" [1].

"Yes, to compete for fun but no pressure" [3].

The third mother allowed her son to compete, but was acutely aware of the danger of pressurising him. When the swimming club wanted him to train five mornings a week, she refused.

9 parents did not need to encourage competition because the child was already self-motivated or very competitive.

Comments:

"It's good for her to realise she can't always be first. The club promotes a team spirit. They applaud each others successes." [12]

"Competition is not so good for him or others if he shows them up. He was always first in music competitions- except once when he was cheated." [11]

"We would prefer participation to competition, but he is competitive anyway" [15]

4 children were not encouraged to compete.

PARENTAL SUPPORT FOR THE CHILD'S ACTIVITIES

All parents encouraged their children to take part in activities other than those which are strictly academic and school-based.

"We encourage all talents" [15]

"I got her involved in tap-dancing to meet people" [20]

"We sent him to Explorers to meet children of his own ability" [19]

"If they show an interest, their father will buy any equipment they need for hobbies" [3]

Some parents worked at generating interest initially e.g. "She needs a push to get involved" [2]. Others felt the child needed initial confidence to participate.

What kinds of activities were these parents encouraging?

Sports and Physical Activities

Children were asked about their involvement in organised sporting and physical activities outside of school time.

7 children were seriously involved to an extent of spending more than four hours per week out of school on these activities.

Of these, 3 were captains of a football team, 2 held clubman or player-of-the-year awards and 1 competed at national level in gymnastics. One of these managed to combine this with playing music in a group at national award-winning level.

10 others spent one-two hours per week on organised out-of-school sporting activities, but five of these were also

members of clubs or groups which provided mainly physical activities.

5 children took part in no organised out-of-school physical activity at all. 3 (boys) of these were seriously interested in music, each playing at least two instruments. One had a major commitment to this and was performing to an exceptional standard, which left very little time for anything else. Another held awards for music. The third was never very physically active, although he attended swimming lessons during school time, "purely for safety, not for competition".

The other two were girls. One had had lessons in tap-dancing, swimming and gymnastics, but had given them up. Her mother says she gets bored quickly. The child also seems to hate being organised and even though she had gone to swimming lessons, stated that she had taught herself. The second lived in an isolated area and because of transport difficulties and the presence of younger siblings, did not get the same opportunities to participate.

The above information does not include sporting activity carried out purely within school time. Many of the schools, particularly those for boys, had good sports instruction available and many of the children took part.

Instrumental music

A total of 15 out of 22 children could play a musical instrument. 9 of these could play more than one. 3 were members of bands with a fourth about to join one. A fifth belonged to a musical/singing group.

One boy held a gold medal for theory at national level as well as having achieved spectacular results in music examinations. The group of which another child was a member held an all-Ireland trophy. Top awards in the Dublin Feis were among the spoils of a third.

In some cases, the children's dedication was impressive. One boy who attended two classes spent a further nineteen hours practising [9]. Another who averaged twenty-one hours per week spent ten of these on band practise and was also taking grade 4 piano lessons [21]. Not every child practised so willingly. One, who ironically liked the instrument he played, wished he had never seen it because he bitterly resented the fact that his mother compelled him to spend ten hours per week on band practise [7]. A total of 12 children had taken paid lessons at some time and 8 were currently engaged in these. Several others had been taught by siblings or grandparents. Of the 7 children not involved, 5 had given up and 2 never had any interest. One of these however took a leading part in choral singing. 11 parents were actively engaged in instrumental music or singing. Interestingly enough, they were not reported to have participated in directly teaching their children instrumental music on a long term basis, being more likely to leave this to the professionals.

It is evident from the above that these children were no mere bookworms, swotting over their lessons to the exclusion of all else. In all but two cases they were involved in a plethora of extra-curricular activities all of

which are not reported on in detail here but which include birdwatching, self-defence, first-aid, drama and art.

Paid lessons

Almost all the parents were prepared to make a financial investment in their child's interests and activities. This did not involve providing extra helpings of school-type learning. In fact only one child was receiving a "grind" and this was at his teacher's suggestion, because he had come from another country and missed out on Irish. Two children were learning French after school, and several others were taught it during school. What these parents were really concerned with was enrichment.

In all nine of the subjects were receiving tuition in music - some in more than one instrument. Fourteen were involved in sport-related lessons, mainly swimming, which had to be paid for. Three attended computer courses and two were attending dancing lessons. At various times some had brushes with art or speech and drama, mainly at summer courses, but some schools provided these for a nominal fee. Only five were not currently benefiting from paid lessons - two had never had them because they lived in areas where they were not available and in two other cases the cause was probably economic.

Group activities

On the purely social front, as distinct from class-type situations - current group membership was as follows:

Explorer Clubs.....	3
(one of these also in a band)	
Church-run clubs.....	3
One was Best Club-Person of the Year	
Bands...(3+1recent recruit).....	4
Instrumental/Choral group	
(All-Ireland trophy holders).....	1
(also in football club)	
Choir.....	1
Football Clubs.....	6
Three were team captains, one Best Clubman of the Year	
and one Best Player of the Year.	
Scouts/guides.....	2
One an Assistant Leader.	
(one also in football club)	
Gymnastic club.....	1
All-Ireland finalist.	
Swimming Club.....	2
One holds medals and trophies.	

"Hardware support"

Achievement activity requires a considerable investment in the physical hardware which enables or facilitates the activity to take place. How well equipped were these homes?

Radio and Television.....	21 (all)
Tape-recorder and car.....	20
Telephone.....	19
Recordplayer or Stereo.....	17
Encyclopoedia.....	14
Bicycle (for subject's own use).....	13
At least one musical instrument.....	19
One or more musical instrument.....	11
Piano.....	9

Computer.....	8
Video recorder.....	7
Telescope, microscope, binoculars (one or more).....	7
Other equipment included cameras, typewriters, dictionaries, globes, snooker tables and miscellaneous sports items.	

Some children had access to computers at school and some used their grandparent's piano.

Conclusion - Parental Support for Children's Interests.

It seems from the above that, far from hothousing their offspring in academic pursuits, the parents were looking after their social, physical and musical development. These children were no mere book-worms swotting over their lessons. In all but two cases they were involved in a plethora of activities, not all reported on here. Their parents were not attempting to substitute for school, but rather complementing it and making good its deficiencies. They gladly made the investment of time, interest and money this involved.

THE PARENTS

Parents are the children's first teachers. They provide the hidden curriculum, which is taught more by example than by precept. What the parents do, what they appear to enjoy, what they value (as indicated by the commitment they show) and the way in which they go about achieving their objectives are all noted by the child from an early age. It is often believed that the mother has a

vital role to play in the development of achievement motivation. What kind of models did the parents provide?

Mothers' Occupations

Only four mothers worked outside the home. Two worked in caring professions, one full-time and one periodic. Two others did secretarial-type work. In all these cases, work hours were arranged to suit the children or a grandparent was available. Seven other mothers worked on an occasional basis, often at home, e.g. childminding, running a playschool, keeping accounts. A few of these also took paid outside work on short contracts where this did not interfere with childrearing. Only two parents worked full-time throughout the childrearing period and each of these had close relatives on hand to care for the children. One mother employed a child-minder at some stages when her children were of pre-school age, but this seemed to be the exception.

Three of the mothers had professional qualifications. All of the others were or had been employed in office-type work, as secretaries, receptionists, or clerks with the exception of one who was involved in selling. Five were former civil servants.

Mothers as Community Leaders

In the area of voluntary service, fourteen mothers out of a total of twenty-one held positions of leadership, trust or responsibility currently or in the recent past.

Four of these were operating at national level (1 secretary, 1 treasurer, 2 council members of national charities).

Two served on school boards of management. One of these had left school herself at fourteen.

Three held positions on Residents' Associations; four were involved with Parents' Councils or Committees of their respective schools; one ran a Sunday School and another ran a youth group with her husband.

Of the seven who were not involved in leadership roles, one worked at night, four had very young children and two were kept busy ferrying children to their various activities.

Mothers Interests (excluding reading)

The mothers had a wide variety of interests:

Musical.....	Total	8
Singing:	5	(3 of these train choirs).
Playing an instrument	6	(3 of these also sing).
Outdoor activities.....	Total	11
Organised games and sports	6	
Camping, bird-watching hiking etc.	6	
Social and charitable work	Total	14
(Meals- on wheels, animal rescue advice centre, school shop Residents' Assoc. etc.)		
Arts and Crafts.....	Total	8
Writing.....	Total	1
Research.....	Total	2
Religion (actively involved beyond normal membership requirements).....	Total	8
Archeology , museums.....	Total	2
Astronomy.....	Total	2

At least five of the mothers never got out either on their own or with their husbands just to have fun. One husband was afraid to let the wife or children out after dark on their own. The wife did however manage to become involved in the school and in social work during the day. The other four seemed quite happy with their lot. Two of these earned money by working periodically at home. One reported that she had just recently gone out with her partner and left the children at home for the first time in

fifteen years. Another routinely turned down invitations that did not include the children, while the husband of a third felt it would do her a world of good and put her in better humour if she got away from the house once in a while.

Mothers as Carers.....(currently or in the recent past)

Caring constantly for aged grandparents, either at home or by frequent visits.....7
 Caring for handicapped or old non-relatives.....4
 Caring for other people's children10

Altogether 17 parents were involved in direct caring activities other than caring for their own children. Of the other 4, 1 does social work (unspecified) and 3 have very young children.

Fathers' occupations

Category	
1	Professional.....3
2	Managerial.....2
3	Supervisory.....4
4	Skilled non-manual.....2
5	Technical or skilled manual.....7
6	Non-skilled manual.....3

Two of the professional fathers had obtained significant recognition for their work. One other had come first in England and Ireland in his technical examinations.

One father in category 1 became unemployed during the study, but got a job consistent with his qualifications soon afterwards. In category 5, one was unemployed at the start of the study, but obtained a category 4 job some time later. Three other fathers were in insecure employment at the start of the study, one due to the introduction of new technology,

and two due to the slump in the building trade and one of these lost his job a short time later. In four out of five of these cases the wife took part-time or contract work when the family's finances were threatened.

Fathers' interests

Outside of work interests, and excluding reading, camping walking or hiking, the fathers had an average of two past-times, hobbies or special interests each. For this purpose all games and sports interests were counted as only one item.

Playing one or more musical instruments.....	4
Games and sports.....	11
(3 of these were organisers of these activities 4 held medals or awards).	
Other outdoor pursuits.....	6
(hill-climbing, long walks, etc.)	
Charitable and social work.....	1
Arts, crafts and D.I.Y.....	8
(2 undertook major D.I.Y. work)	
Religion.....	4
(3 organisers, one organist)	
History, geneology, architecture.....	7
(two do their own research)	
Computers, astronomy, quizzes, politics..(one each).....	4
Drama (acting, writing).....	1
T.V. and radio writing.....	1

No father acted in the capacity of carer. This is not to say that they were uncaring. Their treatment of their children testified to this. They did not however get involved with people whose need for constant care, surveillance and/or nursing would have limited the freedom of the carer. This is not surprising, since in almost all of these families the husband was the principal or only breadwinner.

Conclusion: Parents as Role Models

A pattern emerges of families with a common sense of purpose, who do things together on a regular basis, where male/female roles are blurred, crises are confronted jointly and family networks are strong. The mothers, while devoted to their homes and families are not slaves to them. They tend to act as "origins" rather than "pawns". They see matters needing attention and they are prepared to take a leading role in getting things done. Their work, paid or voluntary, is arranged in such a way that there is minimal disruption to family life and children are almost always in the care of an immediate family member. They care about people and this concern often extends to the school, the community and beyond, and almost all manage to find time to pursue some interest of their own. They show commitment to a set of values and they provide their children with models of caring, involvement, responsibility and achievement.

Both fathers and mothers lead busy and interesting lives while providing financially for their children to the best of their ability. Most make a point of sharing work and play within the family, while allowing each other space to develop as individuals.

INDEPENDENCE TRAINING

Independence training has been shown to be an important factor in achievement motivation. This encompasses the notion that one is a free agent and a causal factor in one's

action outcomes and can thus be held responsible for these outcomes. How much freedom were these parents offering their children?

Consultation and Negotiation

Parents were asked whether children were consulted when family decisions were being taken which affected them. Consultation took place in seventeen out of the twenty-one families.

Typical comments:

"Yes we discuss and compromise" [2]

"Everybody mucks in" [17]

"The children know everything that is going on" [15]

Of the four families where the children were not consulted:

(a) The father decides. No one, not even the mother is consulted. The mother discusses everything with the children. [3]

(b) The mother decides. (The father is not at home). The child does not discuss things with the mother - only with strangers.

(c) The father decides and the mother agrees. This mother sees herself in the conventional "mammy" role even though she is deeply involved outside the home. [13]

(d) The parents mostly decide. The father thinks that the child is trying to organise them. "He won't organise me"-mother [19].

Parents were asked what their typical response was on occasions when there was disagreement about what the child should do.

Parents who negotiated with the child.....	7
Parents who were prepared to discuss and explain.....	8
Parents who insisted (no negotiation or explanation)....	5
No answer	1

Among the parents who negotiated were two who would insist periodically. The first of these described the child as a "reformed demon" who often challenged authority and resented arbitrary rules. She felt it necessary to put her foot down on occasion, even though long discussions and hard bargaining were the norm. The second negotiated, but drew the line when the child became aggressive. Both of these were very anxious children.

In the second category - parents who did not negotiate, but discussed and explained, four insisted on obedience most of the time and one some of the time. A fifth said that obedience was expected- "I'm in charge".

Five children had parents who insisted on compliance without discussion. Three of these children had problems. In the whole study, only these three had given an unqualified "yes" to the statement "My parents expect too much from me".

Conclusion

To sum up, most parents were prepared to negotiate with their children or at least to explain when disagreements arose about what the child should do. Often this was because these children were accustomed to requiring and being given exact answers to their questions. They were not easily fobbed off with arbitrary parental decisions or half-baked explanations. Their parents did not however abdicate total responsibility to the child, rather they were inviting

them to share responsibility as a first step on the road to freedom. Only one mother of a large family admitted to letting things go for the sake of peace, but her husband would insist on obedience. Three of the parents who insisted on unqualified obedience had described their children as "manipulative". Were the parents afraid of losing control and authority, or were the children simply trying to achieve their freedom by devious means?

Degrees of Freedom

All parents reported that they placed restrictions on their children's movements e.g. fixed time to be home, knowing where s/he is etc. Almost all accepted these restrictions, often after they had been given reasons for them. Five argued for greater freedom, but on the whole they kept the rules.

Parents were asked how far afield their child was permitted to go unaccompanied by an adult. Five of the sixth class subjects were given a fair degree of independence e.g. they could go into town, go two-three miles on a bicycle or travel by train with a friend. One could go only to school or organised events like football. Another (a girl) was delivered and collected by car. Of the five fifth class children, two were allowed to travel to school or organised activities by bicycle, a third went to school by train or to the local park and a fourth had only recently been allowed travel by bus, accompanied by a friend. The last child in the group was permitted only as far as the local shops [3]. His father had strong objections to his sons joining youth-clubs.

Five of the younger children were confined to the immediate vicinity. One of these was not encouraged to play on the street because of the "rough crowd" [19]. Three other children could go to the local park with a friend (two of these only recently). One child who lived on an extremely dangerous road would have liked to be able to go to the shops on her own, but the mother refused and the father had strong views about children being allowed run wild.

Another aspect of independence is freedom of association. Parents were asked whether they ever discouraged their children from playing with certain others. Fourteen of the twenty-two children were given freedom to choose their friends without restriction. Reasons given for discouraging association with potential playmates ranged from "they're out all night", "interested in snooker clubs", "bold and destructive", "teacher warned me about him and my own child is easily led" to "nasty". One parent only intervened if there was something radically wrong with the other child. These restrictions, however, only applied to the individuals in question and beyond that, children could choose as they pleased. Only one parent stated that she made the choice - on the grounds that many local children were "bowsies" i.e. up to no good.

EMOTIONAL AMBIENCE OF THE HOME and EMOTIONAL SUPPORT GIVEN.

The emotional ambience of the home, the degree of acceptance of the child's abilities and the parents tolerance for failure can affect the child's self-concept and her/his willingness to take achievement risks. It was felt that the terms which parents choose to use in describing their children would give better clues to their perceptions of parent/child relations than those which could be obtained by direct questioning.

Seventeen described their children in terms of being sensitive to the feelings of others, showing concern for family members, being loving and affectionate, etc. This did not mean that blissful harmony was a constant state in these homes. Sibling rivalry was alive and well in some, while in others older children complained of younger siblings getting on their nerves, when they tried to concentrate. A number of the children treated their siblings as best friends and shared interests even where there was an age gap of a few years.

Tension was apparent in many children. Eleven were described as being very emotional e.g. "He bottles things up - had to be taught to let go; "She rebels sometimes"; "Inner frustration explodes sometimes"; "She's easily upset"; "He gets frustrated with his own performance - paces up and down"; "Uptight - loses temper". The mothers of at least four children described how they had to calm them down.

While seventeen parents used terms like "loving" and "caring" and all but one described the child in some socially desirable light e.g. "friendly", "pleasant", only four used the term "lovable". Perhaps this was an indication of the tough job parenting gifted children can be. Many had to cope with a second or even a third highly able or talented child. One mother admitted that she had sent a younger child to school at four "because I would have killed him or committed suicide otherwise". This child was also showing evidence of advanced learning ability. Many of these children were described by parents as having tendencies towards leadership and organisational ability which parents could be expected to find a threat to their authority, although most had learned the value of negotiation and explanation. Four described their children as manipulative.

Health

The health of many of the subjects was also a matter for concern. The following figures show the frequency of the complaints reported. Many of these are commonly believed to be stress-related.

Asthma:

Chronic.....	4
Suffered when younger.....	3 (2 recurring at times)
Of recent origin.....	2
Occasional.....	1
	Total.....10

3 others had siblings with asthma.

In two families all the children had asthma. Most of these were high achievers.

Eczema.....	4
Dermatitis.....	1
Infantile eczema.....	1
Total.....	6 (5 current)
Hayfever.....	3
Suffered when younger.....	2
Other allergies	4
Breathing/bronchial complaints.....	3
Epilepsy (mild).....	1
Convulsions as a baby.....	2

Several children had suffered ear complaints as infants. One was partly deaf as a result.

One child was extremely short-sighted, while another was short-sighted in one eye.

2 children featured in several of the above categories.

Rearing such children is no job for the faint-hearted, but parents did not resent their investment of time, care and money.

Parents were asked what they hoped to achieve by the provision they were making for their children. Academic objectives e.g. improving the child's school performance were not mentioned at all. Instead they were more concerned that the children be well-adjusted, develop interests, be open to experience and aware of what goes on in the world.

The objectives mentioned by the eighteen parents who answered this question can be summarized as follows:

Social development and adjustment5
Expose to interests and open eyes.....	6
Amuse them, be happy.....	4
Encourage.....	3
Develop talents.....	2
Be able to rely on him.....	1
Give him the security of parents.....	1
Education.....	1
Broader education.....	1

Only three mentioned the world of work e.g.

"Give him a means of expression - never starve"

"Open eyes - you work to earn"

"Be happy interested and get a good job"

Parents did not use their children's ill-health as an excuse for molly-coddling them. Those with asthma were among the most actively involved in sport. The emphasis was on positive thinking - on what the child could do rather than on what s/he could not. Children were trained to cope with their limitations and to get on with as full a life as possible.

Conclusion

The composite picture of these homes is of a place where the child is at the centre of a caring network. Explanation, negotiation and consultation are common, enabling the child to gain first hand experience of decision-making. These families work at being families.

V (11) THE SCHOOL AS A FACILITATING ENVIRONMENT

The school is the arena where children are expected to demonstrate their academic achievements. It is a very special place, if for no other reason than that the child must spend so much time there. As we have seen from the literature review, the curriculum content, the structures for working, the emotional atmosphere, the level of challenge provided and the type of feedback available can all affect a child's motivation and achievement. Schools were visited, and teachers and pupils were interviewed in an attempt to explore how these factors operated to facilitate or inhibit achievement-oriented behaviour.

CURRICULAR PROVISION

How relevant is school work to the pupils' interests and abilities?

Children's Interests.

The children's involvement in sports, music and clubs has been described elsewhere. Many schools, especially boys' schools, made provision for organised sports. Although P.E. classes sometimes involved organised games, for the most part these took place, before, and after class or during lunch break, leaving children too tired to concentrate on homework or afternoon lessons. Basically, they were regarded as extra-curricular and this meant that they lengthened the working day for teachers as well.

Many schools provided some training in instrumental music. This too was extra-curricular and had to be paid for

unless the child's own teacher happened to be able and willing to teach the instrument. This ad-hoc arrangement often meant that a child had lessons one year and none the next. Where children were seriously involved in music, either learning or performing, outside of school, by the time they had completed homework, there was little or no time for social life. Any serious progress in art also depended on luck- finding that the class teacher was competent and willing to treat it seriously - although one school called on the services of an enthusiastic retired teacher. Several pupils complained that their teacher tried to avoid art or P.E., (presumably because they were either unenthusiastic or incompetent), or used it as a bribe for good behaviour.

As well as being involved in music, sports and clubs, the children had a wide variety of other interests. Reading has already been mentioned. All but two of the children (one senior and one junior) were very competent and interested readers. At least ten wrote stories, poems, essays or plays at home, just for fun, eight of these on a regular basis, some very prolific and one in both Irish and English. These writings were not for the teachers' eyes and often were longer than the number of pages the teacher was willing to correct. At least six were involved in computer programming and two had won prizes in a national computer problem-solving competition. One school provided a course in computer programming in LOGO after hours on a paying basis and another gave sixth class access to the school

computer. Other children expressed an interest, but had no facilities. Two children were interested in cars, kept up to date on makes and models by reading specialist magazines and were very knowledgeable on performance capabilities and the state of the car industry in general. Six were involved in drama. Some schools put on an annual performance and one provided actual classes on a paying basis after and one during school. Five had taken leading parts in dramatic productions. Five girls were interested in needlework, some of which they learned in class. Six of the girls were very competent dancers, having had paid lessons at some stage and two had won awards for this, even though none of the schools studied provided dancing classes. Other interests, which were not catered for were gardening (six children), astronomy (4), archeology (2), photography (1) modelmaking (2)

Twelve children named museums and historical sites as the most interesting places they had ever visited.

At least five children were doing private research on topics as diverse as over-population, space, football and the history of music. Children often referred appreciatively to a teacher who showed enthusiasm for these interests, even where the teacher had no particular competence in the area. These teachers were often the catalysts who stimulated the child to action in the first place.

Children's Ability to Concentrate.

The level of commitment of time and energy to sports and music has already been mentioned elsewhere. Parents were asked about their child's ability to concentrate on their activities. Eighteen of the twenty-two subjects were reported by parents to have good powers of concentration. Four were said to skip from one activity to another. Three of these had a very low boredom threshold and resisted formal lessons e.g. in music or art, preferring to teach themselves. These children tended to read for specific information and resent anything which wasted their time.

Children's Grasp on Current Affairs

These were very busy children, involved in a multitude of interests. Was there any time left for informing themselves on world affairs or were they simply on an ego-trip? They were asked what they thought were the worst problems in the world today and what they believed should be done about them. Their replies were as follows:

Famine (16 children), War (8), Nuclear Weapons (5), Nuclear Waste (3), Violence e.g. I.R.A. (3), Economic Issues e.g. unemployment, inflation, unequal distribution of wealth, high taxes, (5), Pollution (2), Drugs (2), Kidnapping, Refugees, Planet going off-course (1 each). Almost all of the children could make reasonable suggestions for tackling the problems. Most of their information was gleaned from the media. Several parents had remarked on the fact that their children were concerned for the future of the world.

Could Teachers go beyond the Curriculum?

The eleven teachers interviewed were asked whether they had any scope to go beyond the curriculum and deal with, for example, current affairs, great ideas or inventions, exceptional achievement, cultural, scientific or controversial issues or others topics not strictly speaking on the curriculum. The replies were as follows:

7 dealt with news, topical issues or current affairs (2 of these on a very limited scale).

5 introduced environmental topics e.g. Chernobyl (2 of these were also in the previous group).

3 dealt with controversial issues, (two of these only if they arose during religion class).

Cultural and scientific matters received very little attention. Famous people, great ideas and inventions were not discussed, except in one class where children were introduced to famous composers.

Conclusion

It seems a pity that teachers stick so rigidly to the curriculum. In an era of mass communications one would have expected that more of them would be able to introduce, discuss and explain the issues that are live on the media, the great inventions in telecommunications and the new ideas such as perestroika which are rapidly changing our world. Even the youngest children in the study showed some awareness and understanding of major world problems and some insight into the issues involved in trying to resolve them. Several parents noted their children's concern with these issues and their children's worries about their future

world. It is a pity that they are left outside so many classroom doors.

It would seem that for gifted children at least, the curriculum is not addressing the real-world topics that children hear discussed on the media. A case could surely be made for introducing media studies to help children interpret what they see and hear and distinguish between opinion, fact and propaganda. It seems a pity that children have to pursue so many of their interests out of school, and that when they do, there is often conflict with homework or unnecessary fatigue. Gifted children could be at particular risk here since they are often under pressure to perform at a high level in several areas and they frequently see their extra-curricular activities in achievement terms, setting high performance levels for themselves and becoming upset if these are not met. Some alteration could be made to their academic work-load to ensure that they have time to relax and meet friends. The usefulness of homework, based on the day's lessons which these children have already completed successfully could also be re-assessed. The hit and miss situation with regard to some subjects such as art, music and P.E. could often be avoided, if Principal teachers managed the human resources at their disposal more effectively, making the talents and interests of teachers (and many were indeed talented) available on a mutual choice basis to those children who showed, enthusiasm in a particular area, so that some continuity could be ensured and children would be more likely to come in contact with a teacher who would foster their talents. The one teacher per

class for all subjects system adhered to by most schools means that teachers frequently end up teaching subjects like P.E. or art that they know very little about and have even less interest in. More use could be made of the expertise of parents and where necessary outside experts. There would also seem to be a case for widening the curriculum, giving children some scope to control their own learning, pursue self-chosen topics and do their own research. In order to do this they will need training, resources, supervision and access to experts.

STRUCTURES FOR WORKING: Senior Classes.

(One of the seven senior class teachers involved was not available for interview, and where information is given on the seventh, this has been obtained from the child and verified by at least one other source).

Teachers were interviewed to determine how they grouped their classes and whether there was any arrangement whereby children who showed high ability or performance could be accelerated through the curriculum.

Only one teacher had a formal grouping arrangement whereby a child could proceed through the curriculum at a pace suited to his advanced ability. The class contained at least five ability-based mathematics groups and a standard of 100% correct was set for performance within the group. Children could co-operate with other group members and pace the work themselves, provided they did not get too far ahead. The whole class was using the mathematics book normally used by a higher class. This was the only teacher

who actively encouraged acceleration. Children in this class were also grouped for reading.

One teacher had no groups, but the class was occasionally combined with a higher class which shared the same teacher and room, with the result that the children had covered part of the curriculum of the higher class. This suited the children who both independently praised their teacher for his ability to explain everything.

The remaining four teachers had no arrangements whereby by a child could be accelerated beyond class level. One of these taught three classes where the numbers were small and splitting them further would have been impractical. This teacher gave extra help to slow learners and allowed the brighter ones to co-operate in informal self-chosen groups. (One parent described this school as a "home from home"). When finished the immediate task, reading and discussing library books was actively encouraged. One teacher of a large class sent the slow learners to a remedial teacher and worked the remainder as a group. About a quarter of the class were allowed to do more difficult mathematics problems on their own when finished set work, but these problems were based on the work for the class they were in. In English, forging ahead on one's own was actively discouraged. Three or four of the brighter ones nagged the teacher to allow them to get ahead, and he often gave in for the sake of peace, providing they did not get too far ahead of the class. Children were encouraged to read and discuss novels rather than go on to more difficult work. However this

teacher did give bonus points for written work of higher quality or greater quantity.

One teacher had no groups of any kind, which was surprising, since the class, even though it was the best in the school, covered the whole range of ability as tested by the Raven's Matrices. This teacher occasionally gave harder mathematics problems or questions from a stock of supplementary textbooks and old examination papers to keep the brighter ones on their toes. He also had higher standards of performance for these pupils.

Another teacher gave extra help to slow learners and occasionally harder mathematics problems to the brighter ones. Several children who were attempting scholarship examinations were getting extra practise on old examination papers.

The final teacher in this group was not available for interview, but as far as can be ascertained, there were no formal groups, but children often worked in groups for project work.

As can be seen from above, only in two fifth classes were children doing any work at all suited to a higher class level. In one of these progress depended on individual effort in keeping up with a group of roughly similar ability. In the second, administrative convenience rather than individual effort largely determined the level of work. Apart from reading extra library books or tackling extra mathematics problems geared to the level of the class they were in, brighter children in the other five classes had to do the same work as the average pupils.

INFORMATION HANDLING SKILLS

The curriculum makes provision for project work. This usually involves the gathering, analysis and presentation of information. The six teachers interviewed were asked whether the children received any training in using the following: index, contents page, map, library catalogue, telephone directory. Replies were as follows:

Index.....	5	
Map.....	5	
Contents page.....	4	(some of these knew already)
Library catalogue.....	3	
Telephone directory.....	0	

Other skills which the children might be expected to use in project work are: planning, forecasting, scientific observation, recording results, analysing results, presenting information and summarizing. The six teachers interviewed were asked whether these were being taught.

Replies were as follows.

Presenting information.....	5	
Planning	4	
Summarizing.....	4	
Forecasting	3	
(This involved rough estimates in mathematics x2 or forecasting election results x1)		
Recording results.....	3	
Analysing results.....	2	
Scientific observation.....	0	

A Critical Approach

Project work is of very little value if simply stuck up on a wall when finished. As indicated in the review section, children should be able to argue the pros and cons of tackling work in different ways, question each other on their methods and findings, discuss the subject matter and critically analyse the assumptions and conclusions contained in it. The teachers were asked whether their pupils were encouraged or trained to discuss, question, argue or criticize. The replies were as follows:

Discussion.....4
Questioning.....3
Arguing.....3
Criticizing.....3
Only two teachers trained the children in all four.

What type of reference material was available

All of the seven senior classes studied had access to a school library. Five of these had an encyclopaedia. One school had three, but considering that this was one of the largest in the city, this could be considered as inadequate. Two classes had no reference material whatsoever in the classroom.

How much project work was being done?

Four of the teachers were interviewed by mid-January. Only one had done any appreciable amount of project work. This was not an examination class and projects were undertaken regularly. Two others were interviewed in June. One had done some projects. The other reported that very

little had been done because "The entrance examination changes the time scale". The seventh class for which a teacher interview was not available had done "lots of projects" according to the pupils.

Conclusion

It seems that many of these gifted children at senior level at primary school are still a long way from being able to tackle independent research if one is to judge by the level of skill training and practice they are receiving. From the information given, it seems that most of the emphasis is on finding the information readily available in books, summarizing and presenting it. Discussion is normally encouraged but taking a questioning critical approach is not seen as very important by all but two of the teachers. Finding the less readily available information by telephoning live sources or consulting library catalogues is given lower priority and direct primary research techniques such as direct observation, analysing and recording results get little or no attention.

Project work is time-consuming and difficult to fit into a time-scale which includes major landmarks in the child's life such as entrance examinations and Confirmation. One can only wonder whether many of the children are losing out on their last opportunity to engage in cross-curricular projects which are more easily supervised when the child is taught all subjects by a single teacher.

THINKING SKILLS

Most programmes for the gifted in the United States emphasize the higher levels of Bloom's Taxonomy (1982) and expect that the child should be operating beyond the level of simple knowledge acquisition and comprehension and be able to analyse, evaluate, synthesize and apply knowledge. The six teachers were asked what thinking skills they set for their pupils. Replies were as follows:

Finding the answer in the text.....	6
Choosing alternatives (mostly inserting words in sentences)	6
Rote learning.....	5
Proposing alternatives.....	4
Analysing situations.....	3
Discussing consequences.....	3
Evaluating.....	3
Justifying decisions.....	3
Making inferences.....	3
Applying knowledge to new situations.....	2

Children's written English

To evaluate how these teacher objectives translated into practise, a sample of all the children's work for two weeks was taken and analysed in terms of the thinking and information handling skills required to carry them out. Schoolwork and homework was included. Questions from English readers and workbooks were included, but essays, questions relating to word meaning or grammar were excluded. The results of the analysis of the work of the thirteen children in senior classes follows:

(Each result represents a percentage of the total questions asked).

Comprehension.....	70%
(answers directly available in the text)	
Making inferences.....	17%
(answers available in the text, but requiring an inference to be made).	
Evaluating alternatives or justifying decisions.....	3%
Applying knowledge to new situations.....	0%
Creative response.....	5%
(e.g. imagining or giving an opinion)	
General Knowledge.....	5%
(answer not available in the text, e.g. look up an encyclopaedia)	

As can be seen from the above, the great preponderance of questions involved simple comprehension. In many cases the only skill required was to identify and copy the sentence containing the answer. Many of the second group of questions were extremely simple. Most did not require the child to synthesize information from several paragraphs. Critical evaluation of the subject matter scarcely featured at all. In the whole two weeks, apart from the pupils of one class, no child was given more than one question requiring the evaluation of statements or requiring her/him to justify a decision. Creative responses were rarely required. Two classes accounted for practically all the responses in this category. Applying knowledge to new situations did not feature at all.

Considering that these were the senior classes and that three of them were in the top streams of ability and a fourth had a large number of above-average children, these results seem surprising. They do however tally with the children's accounts.

There was the possibility that questions requiring higher order thinking skills or requiring that children find out information were not available in the textbooks. This

was not the case. A close examination showed that even where these were available, they were routinely skipped by most teachers. Several reasons could have accounted for this. Children preparing for examinations generate a lot of extra corrections for teachers. These teachers already had huge workloads and "messy" questions the answers to which cannot be anticipated, demand more than a tick and thus eat into teachers' time and cognitive resources. Also the low availability of reference material meant that answering the general-knowledge type questions would necessitate a visit to the library which typically would be unmanned and contain only one encyclopaedia for the whole school.

THE CHILDREN'S VIEWS

Thirteen of the subjects were in the seven senior classes. Over the course of two interviews they were given the opportunity to air their views on school. Eight complained about the actual work content. The complaints included too much repetition and revision, and work which was too easy, or uninteresting.

Comments included:

"We learn nothing interesting. I'm not looking forward to going back to school, not even to the new secondary school" [15].

"School is boring for the good ones. Maths and English are not very interesting. I know it all before..I daydream sometimes". [21].

"I don't like doing rough-work. It's boring". [1]

"We revise old stuff from second class- it's a waste of time" [11].

Eight complained about the lack of progress e.g.

"I'm finished very fast. Teacher wants us all to stay the same. I would prefer to work on" [13].

"We usually get a lot of easy sums. It takes time. I get tired. The time spent on the slow ones annoys me" [2].

"Teacher will not let us go on to more advanced mathematics until even the slowest one has caught up" [1].

Three of the children complained that the schoolday was too long e.g.

"The afternoon drags on; you have to force yourself to work" [2].

Three said that they did not like writing e.g.

"Slowing down for writing annoys me" [2].

"My head is at the last word and my hand is at the first. The teacher is mean and stingy - gives no credit except for a complete answer".

Six of the thirteen claimed to hate school. Three gave boredom as the reason and two the length of the school day combined with too much homework. One hated school sometimes. He suffered a high level of frustration because of boring schoolwork, but thought highly of his teacher who gave him freedom to use the computer.

STRUCTURES FOR WORKING: The Junior Classes.

(Five of the six junior teachers were available for formal interview. Where information is given for the sixth this was obtained informally from the teacher or given by the child and verified by at least one other informed source.)

Nine children were in third or fourth class. Was any provision being made for the brighter ones to go on to more difficult work? Teachers were asked how they organised work in English and mathematics. Results were as follows:

Mathematics;

Four of the six teachers formed separate groups for the weaker pupils. One had none and one formed them flexibly as the need arose. Three teachers used books of supplementary problems with the better pupils, but these were geared to the existing class level. Three used the same textbook for all but two of these allowed the brighter ones to progress faster. No child was working on a different topic or at a level higher than was normal for the class s/he was in.

English:

All but one teacher had made some provision for poor readers. Two had "very good" groups for reading. The others taught the average and bright pupils together. One of these set grammar exercises for the first children finished. In no case was a child using a reader of greater difficulty than that normally used by others in the same class.

Conclusion:

It is clear that regardless of effort or ability, no child could go on to work on a book, either English or mathematics, which was designed for a higher class.

PERSONAL READING HABITS

There was the possibility that these children might not be particularly interested in reading, especially since they were heavily involved in extra-curricular activities. Perhaps they needed to be kept at class level? Children were questioned at interview about their reading habits and their replies were verified, where possible, by reference to a diary which they were invited to keep.

Three of the nine children at junior level had well-stocked personal libraries and two of these got up early in the morning specifically to read. The third had "a wardrobe full of books" and read at least one per day. He described the school library as "rubbish" and said that he had read all the contents about five times over. Seven of the nine read every day or almost every day. The eighth switched between reading several items at a time and reading nothing at all. The last child, the only one of the group who could not be described as an avid reader, read one book per month. (Her teacher remarked that she had very little general knowledge). Bed-time reading was also popular and often encouraged by parents.

What type of material did they read? Children were asked about their favourites and about the ones they had

finished most recently. The reading matter selected as "favourite" was mainly recreational with little scientific or technical content. Six of the nine were faithful followers of Enid Blyton. Adventure stories were by far the most popular, followed by detective and mystery stories. Two children read a lot of sports books and one of these was described by his teacher as having an encyclopaedic knowledge of his topics of interest. Football was his current passion. Books of Irish interest were favoured by one girl who was also doing some independent research for a private project. Another girl specialized in books from the early part of the century.

Since, with one possible exception, these children were highly competent independent readers, a question mark must hang over the desirability of keeping them on the same books and often on the same page as the rest of the class.

TRAINING IN HANDLING INFORMATION

The same questions were posed regarding training in information handling skills and the use of information sources as had been put to the fifth and sixth class teachers. The replies showed that these classes fared marginally better on training in the use of sources but, as with the senior classes, use of a library catalogue or telephone directory were the lowest priority items (3/5 and 1/5 respectively). With regard to information handling skills, presenting information and recording results were taught by 4/5 teachers, planning, forecasting, analysing and

summarizing results by 3/5. Only two teachers in the whole study made time for scientific observation and these taught junior classes. Discussion was encouraged by all of the third and fourth class teachers, questioning by four, criticism by two and argument by only one.

The same question was asked about the type of thinking skills involved in the work they set for the children. Results are given here for teachers of junior, senior and both types of class combined (number out of five, six and eleven respectively).

	Junior, /5	Senior, /6	Total. /11
Finding answers in the text	5	6	11
Choosing alternatives	5	6	11
Rote learning	5	5	10
Analysing situations	4	3	7
Discussing consequences	5	3	8
Justifying decisions	4	3	7
Making inferences	4	3	7
Applying knowledge to new situations	5	2	7
Proposing alternatives	3	4	7
Evaluating	3	3	6

Results show a similar score for junior and senior classes on the three most popular items - finding the answer in the text and choosing alternatives and rote learning. Since in practise choosing alternatives simply meant selecting the correct word to fill a gap in a sentence from three or four supplied alternatives, these three items basically involved convergent thinking - finding and/or learning the one right answer. For the last five items on the list which required more than simple comprehension the younger classes scored higher.

Conclusion:

Third and fourth class pupils were receiving more training in using information sources as well as in information-handling skills, with the exception of criticism and argument. The quality of the thinking tasks assigned to them was also higher.

What type of reference materials were available?

All six classes had access to a school library and four of these contained an encyclopaedia. One school library had only Irish books. One class had no access to an encyclopaedia, but had a very good reference section in the library and the teacher also provided books from his own collection for the classroom. In one class the children were running two competing libraries with books they brought in themselves. No reference books provided by the school authorities were in evidence in the actual classrooms.

How much project work was being done?

By January, three of the four teachers of third classes had done some project work and the other planned on tackling it later. The two fourth classes had done none. One teacher was not keen on projects and the other planned one for the end of the year. This pattern is similar to that of the senior classes, with about half of the teachers showing little commitment and putting this type of work on the long finger. While the senior teachers seemed to be leaving it until the "real" work like examinations was taken care of

there did not appear to be any obvious explanation for the others' lack of enthusiasm.

Written English

Inspection of the children's written English showed a similar pattern to that of the senior classes. The overwhelming proportion of questions set required only finding the answer in the book and copying it with minor modifications, choosing between given alternatives or making simple inferences. Teachers, with one exception skipped almost all of the questions where the child was asked to give an opinion, propose an alternative, analyse a situation or discuss consequences.

THE CHILDREN'S VIEWS

Asked whether they preferred questions from their English reader where they could easily find the answer in the book or ones where they had to figure it out for themselves, the children listed their preferences as follows:

Figure it out for myself.....	5
Both types.....	1
Making choices.....	1
Reading between the lines and using imagination...1	
Find the answer in the book	
(but I'll still try the harder ones).....	1

When asked about the questions they actually got, six of the nine were of the opinion that they were too easy.

Comments included:

"The questions are stupid. Why can't they blend them together. I hate simple questions." [4].

"I like making choices e.g. 'What happened next?'. Usually it's just copying. Teacher skips most of the choice questions" [23].

Two of the three children who did not complain of easy work were in the same class.

The views of the children on mathematics were also elicited. They were asked whether they liked solving problems. All of them did. One qualified this by saying:

"I don't mind solving them. I hate writing them down. It takes too long and others get ahead - I cheat!" [4]

However six of the nine said that they rarely got difficult problems. Comments include;

"Computation doesn't exercise the brain - it just makes you weak sitting there doing it all day long - it's not interesting [12].

Three children made no comment on the ease or difficulty of the work. Only four out of the nine did not complain about lack of progress. All four were using a supplementary book such as "Figure it Out" or "Have a Go" for problem work. One of these was bored just the same because he had to sit with pen down while the teacher explained the concepts to the weaker ones before he was allowed to tackle the problems. Generally speaking the whole group was anxious to get ahead. At least six did extra mathematics at home just for fun. One liked to keep ahead of the class but the teacher constantly skipped pages and frustrated her plan. All but two of the nine routinely got 95-100% in mathematics tests. One comment seemed to encapsulate the situation.

"I tend to go daydreaming in maths. I get bored. I don't know if I'm good at mathematics. I usually get everything right" [4].

The children were asked : "in a test for 20 marks, if you had a choice between four simple questions for 5 marks each or two, more difficult (but not impossible) ones for ten marks each which would you choose and why?" All but one opted for the difficult ones. Reasons given were;

It is shorter/faster.....3

I like more difficult ones.....3

Shows you work hard.....2

The ninth child considered the fact that two could be done faster, but on balance settled for the easy ones because "I might get the others wrong".

Conclusion.

It seems clear that these were children who enjoyed challenge and that for the most part they felt that the school was not providing it. Two of them hated school and both of these were in classes where no provision whatever was made for the brighter ones and where no supplementary books were in use. As the literature review section shows what this group needed was a facility to progress faster through the curriculum and more complex work to develop and utilize their cognitive abilities. They needed to tax their abilities to the limit, even if this meant experiencing failure occasionally. Until a child encounters failure s/he will never be able to assess accurately her/his level of competence.

GOALS: All Classes

As we saw in the review section, freedom to choose one's goals and the manner in which these are defined can affect achievement motivation.

Who sets the goals in the classroom?

Eleven teachers answered this question. Seven of them normally set the goals themselves, although three of these negotiated on project work. In four classes negotiation was the norm. All four were mixed-sex classes with pupil numbers below twenty-eight.

How are goals defined?

The eleven teachers interviewed were asked whether tasks such as essay writing were defined in terms of quantity such as a fixed number of pages to be written. Replies were as follows:

Amount	No. of Teachers.
Fixed amount, same for all	2
Minimum only (except remedial pupils)	4
Minimum and maximum	2
Maximum only	1
No quantity guidelines	2

One of those setting a minimum gave bonus points for extra quantity or better quality work. Of the teachers who gave no quantity guidelines at all, one stated that quality was all that mattered, the other appeared to have no specific goal.

Knowing in advance that you cannot develop your theme or characters properly without exceeding a fixed number of pages could be expected to result in children lowering their aspirations in this regard or altering their product to meet specifications. Two of the junior children remarked that they had written 20 and 12 pages respectively, but the teacher had corrected only two. One of these said that he could not leave a story without a proper end. Another child showed her stories to a previous teacher who had an ongoing interest in her work.

Are goals defined by time spent on the task?

The eleven teachers were asked whether they allocated a set time for written tasks and whether they expected the child to complete the work in time. All but one allocated a fixed time. The exception let the child's speed determine how long the task took. (One of her pupils had complained of her inability to manage time effectively). Where times were fixed, they were usually the same for all pupils, but three teachers made some concession towards the slower ones. The actual time allocated was usually based on the weaker ones.

Set times for tasks appear to be necessary in formal school settings. However, basing these on the average or weaker pupils almost inevitably means that in simple tasks like computation the brighter ones will always have spare time. One girl commented "We're always running out of things to do" [2]. Time limits may also have other effects. As the literature review has shown, higher order thinking

tasks take longer than simple comprehension ones, so a bright child, wishing to produce superior work involving these skills would realise in advance that this could not be accomplished within the time limit and thus would not be motivated to do it. One child complained that thinking takes time and if he tried to develop good ideas, he had to rush his writing to finish in time and this led to complaints from the teacher about messy handwriting. [1] This teacher seemed to appreciate the problem and occasionally made concessions on time.

Feedback

Feedback comes in two forms - informational and evaluative. The latter, if positive, may boost the ego and by making the child feel good stimulate her/him to produce similar results next time. The most valuable type of feedback from the point of view of improving performance is the informational kind. The teacher's style of feedback for written English work was examined for all thirteen classes. This was found to be consistent across children i.e. where there was more than one gifted pupil in the same class, there was no discernable difference in the method of correction used. All available written English was inspected, the minimum amount covered in each case representing at least two weeks work. Results were as follows:

Corrections:.. .. .Number of teachers
 Errors indicated.....13
 Correct version given where appropriate.....11

Evaluations

Qualitative e.g. very good, excellent.....7
 Quantitative e.g. 5/10, 78%.....2
 (One teacher in both categories)

Comments:

On layout, presentation, punctuation, grammar.....5
 On subject matter.....1
 No comment.....7

Two teachers were very late in correcting work. One of these appeared to be under a lot of strain. The other taught a huge class which produced approximately twice the volume of output of the others.

Conclusion

Nearly all teachers were diligent in giving useful information on errors and how to rectify them, but these children made very few errors and these were more often due to carelessness than to ignorance. Thus they derived very little benefit from this type of feedback. Comments on layout, punctuation etc. are useful, but do not address the main issue - the content. Only one teacher was giving constructive information on the content of the work. Her comments on the ideas, the interest level, choice of words etc., as well as being thought provoking allowed the child to know where she was succeeding so she could build on her strengths.

Constant emphasis on correction of errors rather on work content could tempt the child to concentrate on producing a page of "perfect" error-free drivel rather than take intellectual risks with the content and then find that only the errors had been noted. One girl appeared to be doing precisely that. Her teacher laid such emphasis on spelling, handwriting etc that she spent ages over homework, trying to get everything exactly right, and at school was often slow finishing for the same reason. Her real creative work was done out of school.

As can be seen from the literature review section, personal factors are intimately involved in motivation and achievement. A child's self-concept, the individual manner in which s/he conceptualizes experience, is very often the determining factor in giving meaning and purpose to behaviour. A child's pattern of achievement-related can be radically altered by beliefs about the self and feelings and attitudes towards the people and events in the environment. Personal thinking style has also been implicated in different kinds of achievement, in particular the style of processing information used by the right cerebral hemisphere has been linked to creativity. The following section explores patterns of self-acceptance, acceptance by peers, thinking styles and achievement.

THE SELF-CONCEPT

The Piers-Harris Children's Self Concept Scale (see Appendix B) is an 80-item self report measure designed to assess how children feel about themselves. The total score gives an overall assessment of self-concept. The scoring is done in such a way that a high score represents a high self-concept. As an aid to more detailed clinical interpretation the instrument also provides six cluster scales - Behaviour, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity and Happiness and Satisfaction. High scores on each measure reflect a high level of self-concept on that particular dimension.

Normally the Piers-Harris scale is administered in a simple dichotomous Yes/No response format, but for the purposes of this study children were invited to elaborate on their choices.

Total scores on the Piers-Harris scale were as follows:

9 children scored at one or more standard deviations above the mean.

8 more scored well above average (69 -83rd percentile).

3 had scores within the average range (31st-60th percentile)

2 scored below average, one of these by almost one standard deviation.

One below average scorer found great difficulty in giving a definitive yes or no response to many of the items, apparently because of a recent radical change in school circumstances which was causing him to re-evaluate his self-worth. His present and previous teachers gave radically different accounts of his behaviour. The lowest scorer was verbally abused by other children, left out of activities at school and cried a lot of the time. Information given by this child, even though she was under emotional strain was readily verifiable by other sources.

There was total unanimity on six items:

I am obedient at home.....Yes
I like being the way I am.....Yes
I like my brothers and sisters.....Yes
I can be trusted.....Yes
I am a good person.....Yes
I wish I were different.....No

The Cluster Scales

The Cluster Scales are designed to give information on various dimensions of the self-concept and can be used in conjunction with other clinical data to generate hypotheses about areas of strength and weakness in a particular child's score. (see Appendix A for more information and actual scores). Performance on each cluster scale can be compared with overall total score separately for each child, to pinpoint areas of individual strength or weakness, or these scores can be interpreted directly as was done in this study. The manual recommends that scores between the 30th and 70th percentile be treated as average scores. Results were as follows:

Behaviour:

14 children scored above average (70th percentile +) on this dimension, 7 had average scores (30th - 70th percentile) and only one scored below average at the 6th percentile.

Intellectual And School Status:

10 children scored above average, 11 in the average range and only 1 below average at 24th percentile.

Physical Appearance and Attributes:

14 scored above average, 5 in the average range and 3 below.

Anxiety:

6 scored above average, 14 average and 2 below average.

Popularity:

Only 5 scored above average on this dimension, 10 had average scores (one barely so) and seven were below average. Six of these scored below the 16th percentile.

Happiness and Satisfaction:

16 had above average scores, 9 of these significantly so (above the 84th percentile); 3 were average and three below average (all below the 21st percentile).

One child had an above average tendency to reply "yes" to questions. On a response bias index his score was almost two standard deviations above the mean and his scores have to be treated with caution.

Conclusion

Overall, these children had positive self-concepts, with only two scoring below average and nine significantly above. The overall positive picture is marred however by self-perceptions of lack of popularity. The fact that seven scored very low on this dimension relative to the norm, six of them at below the 16th percentile is worrying. An analysis of the results reveals that only eleven of the twenty-two scored at or above the 50th percentile on this dimension and two of these scored at the 52nd percentile. Of these eleven three were football team captains and four excelled in some physical activity involving teamwork. The six who perceived themselves as the least popular included three boys and three girls. Two of the boys had such busy schedules that normal social life was extremely limited

during term-time. Both had been subjected to long-term bullying as had the third boy. They had little involvement with organised sports, although one had recently taken up football, improving his popularity while a second had begun learning basketball at the teacher's suggestion. A fourth boy who had an extremely high total self-concept score nevertheless worried about his lack of popularity. He had no interest in competitive sports, so his achievements could not be shared. The girls had a variety of problems which will be discussed later. All but two of the six with self-concept of popularity scores significantly below the mean stated that they felt left out of things. The two exceptions had recently joined Explorer Clubs for gifted children which they enjoyed.

PEER RELATIONS

The Peer Nomination Forms which the children's classmates had filled in were examined for evidence of peer acceptance. This was combined with knowledge gleaned from the two interviews with the child and other information available from parents and teachers to build up a picture of the child's relationships with her/his peers.

Friendship nominations - Boys

There were twelve boys in the study. Analysis of peer nomination forms showed that for item 11 "The children in the class I like playing with the best are...." results were as follows:

No. of Children

Nominated by 25%.....1
Nominated by 20-24%.....3
Nominated by 5 -9%.....2

A total of six out of twelve boys were nominated by 5% or more of the class. Two received no nominations in this or the following category.

Results of Item 13 "Next year I would like to sit beside..."

:
No nominations.....9
Nominated by 33%.....1
Nominated by 12%.....1
Nominated by 3%.....1

Peer Acceptance Difficulties - Boys

One of the two boys who got no friendship nominations at all spoke of "keeping a low profile" at school. The second had been disruptive in earlier years and had trouble with handwriting which did not endear him to teachers. Both these children had recently found enjoyable social outlets outside of school and thus their overall scores and their scores on the happiness dimension were well above average.

A total of four boys were nominated by three or more peers in the two categories combined. Three of these were engaged in activities where social solidarity mattered and where success could be shared with the less talented. To be more specific, all three were football team captains. The fourth took a leading part in school dramatic activities although the number of nominations here may have more to do with the fact that there were very few boys in the class and choice may have been limited.

Six boys admitted that they were made fun of or picked on at school over long periods, and three of these were bullied.

[1] One of the six was outstanding by virtue of his advanced vocabulary. He found it difficult to understand how others could not see that you had to combine ideas.

[3] This child spoke of being picked on, but did not specify by whom, except that it did not happen at home. Until recently he had a fear of physical injury which may have been linked to a medical condition and this was not acceptable in a school where competitive games were almost de rigeur.

[7] This subject had a minor physical irregularity which led to jeering and name-calling, but he had learned to fight back and was gaining more acceptance. His life-style left little room for normal informal social contacts.

[19] This child was seen as an achiever in an anti-intellectual setting and was subjected to long-term bullying and organised isolation.

[21] This child had a full schedule of activities. He felt left out during term-time and realised that he did things differently and that his ideas were not acceptable to his classmates.

[23] This boy was called names on account of his hayfever. He wanted to take charge of things, but was constantly pushed out of the way by other children.

None of the six was involved in competitive sports in the school setting. Three of the children suffered from

allergies and two from asthma. Four wanted to be leaders but were not accepted as such by peers. They each found outlets for their leadership abilities outside the school setting.

Peer Nominations - Girls

There were 10 girls in the study.

Results for Item 11 (The children in the class I like playing with the best) were:

No. of Children

Nominated by 25%.....1
Nominated by 15%.....1
Nominated by 10%.....3
Nominated by 5-9%.....3
The other two got one nomination each.

Results for Item 13 (Next year I would like to sit beside..) were

Nominated by 20%.....1
Nominated by 10-11%.....2
Nominated by 3-7%.....7
All of the girls got at least one nomination in each category.

Peer acceptance Difficulties - Girls

The pattern for the ten girls was more complex than that for boys. They had more nominations on an individual basis, eight having been chosen in one of the friendship categories by three or more peers and the remaining two by

two each. In all but one case at least one of these nominations came from a child who had a Raven's score at the 75th percentile or above. Four girls had above average scores on the popularity cluster scale. One of these, nevertheless had problems at school. In all seven girls had peer acceptance problems either in or out of school e.g.

Subject [4]:

Subjected to organised name calling and general humiliation, she had a strong tendency to organise people and situations. She believed her ideas were brilliant, and could not understand why the others were so stupid and why they resisted all her attempts to organise them.

Subject [6]

She was very much a leader in class. She always wanted to be in control. She had a strong belief in the worth of her own ideas and her competence was respected by other pupils who accepted her leadership in class, where project work was concerned. Her teacher tried to lessen her dominance. In the yard, she was usually left out of organised activity.

Subject [8]:

This pupil was accepted as a leader at school. Although she was quite popular, she was often left out of organised activities in the yard. She was conscious of differences in her lifestyle and reading habits which set her apart.

Subject [10]:

This child was quite popular, but her attempts to join games in the yard were resisted. She had a very different concept of what constituted a game and when she tried to convert others to her way of thinking, they fought her all the way, apparently because her games were so complicated that they could not follow her rules.

Subject [12]:

This girl tended to take control of every situation and could be very persuasive. In school she picked the teams or as another child put it : "She's the boss in the yard". She seemed to be popular, but in at least one case friendship was conditional on her picking the "friend" for teams. At home there was a concerted campaign to exclude her from playing with others, which she felt might be linked with jealousy over her lifestyle and her success.

Subject [14]:

This child showed great physical endurance and was very ambitious in competitive sports. By sheer determination she had got a place on the football team where she was the only girl. When she appeared in the yard, if the game in progress was one in which she excelled, it was immediately changed. She could not understand why her classmates still wanted to play with dolls.

Subject [20]:

This girl also had organisational ability. She was single-minded where academic achievement was concerned and this love of learning had alienated her from other children. In an anti-intellectual school setting she was labelled as a

"knowall" picked on in the yard, bullied and, with her friend, excluded from activities. She was described by her teacher as a loner. Her teacher tried to minimize the damage by not giving her more difficult books, although a gifted boy in the same class who also had similar problems was allowed to work on a different mathematics book.

Three of those whose neighbours attended different schools seemed to treat the class as a place to make and keep friends. They were not regarded as leaders and did not try to dominate others. These three had no noticeable peer problems.

Conclusion

It seems that popularity with peers is dependant upon social solidarity criteria. Problems often arose as a result of differences in the way gifted children thought and the inability of others to follow their reasoning processes. Differences in interests and lifestyles also contributed to difficulties in blending in with peer groups. Only six children in the whole sample had daily contact at school with children who shared the same interests. Six had more interests in common with other family members than anyone else. Girls had more friendship nominations on an individual basis and in all but one case at least one of the nominations came from a child with a Raven's score of at least the 75th percentile. However any attempt to step outside the passive pupil or the submissive girl role by outperforming the others, competing with the boys in traditional male areas or taking control of people or

situations was only tolerated where there was some mutual benefit to be gained (e.g. teacher approval or best group prize), but was more often resisted. For boys, becoming involved in intellectual pursuits, but not in competitive physical ones reduced one's acceptability to peers.

It appears that leaders are only acceptable if by virtue of their leading, others can share in the success. Competitive sports seem to meet this requirement. However, few girls schools seem to provide this type of activity and many boys are not interested. Project work would seem to have benefits in this regard, since a gifted child who is regarded as competent can take care of the overall organisation while each individual can contribute according to ability and all can share in the project's success. Individual successes in a competitive setting, for example coming first in the class inevitably results in everyone else coming in an inferior position and can lead to jealousy and resentment. Some of the more ambitious achieving children were very aware of this.

It might reasonably be assumed that these were very unhappy children. This was not always the case. Only three had very low scores on the happiness dimension. (One other child's score was suspect as explained earlier). These three also had the lowest overall scores. One of these was undergoing a radical reappraisal of his self-concept. What differentiated between the remaining two and other children who considered themselves unpopular but not unhappy was that they were not engaged in any out of school activity. Those

children who had other stages on which to operate where they could meet with other achievement-oriented children on roughly equal terms, not necessarily in a competitive setting, seemed to have a greater level of self-acceptance and be better able to cope with the isolation which can result from being outstanding.

THINKING STYLE

Twenty one of the twenty two children filled in a Style of Learning and Thinking form (see Appendix B). This is a series of paired statements, each pair describing one activity which is commonly associated with use of the right hemisphere of the brain and one which is associated with the left. Children tick either or both items. Their choices are designed to show hemispheric preference. Results show that only five children showed a preference for left-brain activity, two having a left-dominant pattern. Four of these topped the class regularly. The fifth had a peer acceptance problem which interfered with her performance. Both of the left-dominants were high achievers and both suffered problems from their peers on this account. Three children had a distinct preference for ticking both options. The manual describes these as "Whole Brain Dominant". These three liked school. (Two of them professed to love it). Their teachers held them in high regard. In class their behaviour appeared to be exemplary. They also appeared to be able to enjoy their own company and concentrate for long periods.

Children who made more right-brain choices suffered more inappropriate and restless behaviour. There were twelve of these of whom six had a dominant right-brain pattern (i.e. scored at or above the 84th percentile by comparison with grade norms). Teacher descriptions of them were as follows (* indicates right-brain preference; ** indicates a dominant right-brain pattern; \$\$ indicates a whole brain style of thinking)

Teachers' Descriptions of Pupils' School Behaviour

Boys

* Good. Previous teacher: Distractible, lacks concentration, engages in silly pranks

* A little nervous, finds it hard to be enthusiastic to be enthusiastic over subjects he does not like.

No problems, one of the most popular without pushing himself.

* Lacks concentration, fidgeting, withdrawn.

\$\$ Very well behaved, liked by staff, selected for responsible jobs.

* Excellent, inclined to be a bit timid (last teacher: restless)

Very good, inclined to act the "funny man" at times.

Very good

\$\$ Very good, does not like being criticised.

Good in class, group work usually ends in a row.

* Well behaved, self-motivated, self-disciplined, somewhat timid

** Very precocious, disruptive, lazy, passive.

Girls

** Hyperactive, giddy, talkative, distracts others.

* Co-operative if interested, anxious to be best, friendly with adults, bossy with children (group work ends in a row).

** Co-operative if interested, can be disruptive, attention-seeking (tummy pains), likes to take control.

** Refuses to accept failure. This causes sickness. Leader.

No problems, respectful, leader.

** Good behaviour, reliable, has leadership potential.

Non-communicative to adults, dominant among group of friends, competitive in sport,

** Hyperactive, anxious to get everything right, works hard, talks all the time except during class discussion)

\$\$ Excellent.

Very good, often seeking attention (dramatic pains) alienated from class by love of learning.

Perhaps the preponderance of convergent thinking tasks being set for these children at school contributed to the restlessness of the right-dominant children. The right side of the brain is usually associated with tasks involving the kind of parallel processing required in divergent thinking while the left side is more commonly associated with the sequential processing required by convergent tasks. Since none of these children appeared to be setting out deliberately to cause disruption, and since most of the behaviour described, seemed to involve involuntary movements or a need to communicate perhaps these children needed just that - more scope to move around and to share ideas. In fact two of the children's behaviour improved when these conditions were present. Reported timidity and withdrawal is

more difficult to explain, especially since two of the children thus described were veterans of public performances, and one was by far the most entertaining, outgoing child interviewed. The child described as "passive" was a dynamic organiser of activities in the park. Had they just switched off school entirely?

ATTITUDES TO SCHOOL

Nine of the twenty-two children hated school. Six of these were 3-8 months younger than the class average. One was of average age and two slightly above. Six of the total were boys. Only two were junior pupils and these were from classes where no provision whatever was made for the brighter pupils. All the children who believed that their parents expected too much of them hated school as did those who were heavily involved in music (either performances or competition). Four of the subjects loved school, six liked it on the whole and three were unenthusiastic.

Children's Attitudes to Achievement

Almost all the children enjoyed challenge and liked difficult work. Most of the younger ones, given the choice in a test would choose two more difficult questions rather than four easy ones. Most older children, while preferring more difficult work, would choose the easier questions in a test situation to ensure getting full marks or because less thinking meant quicker completion in a situation where time mattered. This was particularly true in the schools which

were streamed and where children were aware of their class ranking. These were mostly examination classes where children had obviously learned that results are paramount. Younger children were more prepared to take the risk of being wrong than of being bored.

All but five of the children would be disappointed, dissatisfied, upset or just plain mad if they got much lower marks than expected. At least three would repeat work again and again to get it exactly right. Four of the five were children who believed that their parents expected a lot of them. Perhaps they were working to please their parents and thus would not take failure as something in which they should be emotionally involved.

Seven children were reported by parents to react very badly to failure. Failure in this context often meant not getting full marks, falling below a previous high mark or not keeping one's place in the class. These children were very conscious of their academic reputations and worked hard to live up to them. Four of the girls were reported by their teachers to be over-anxious to achieve and in two cases this resulted in tummyaches, real or imagined.

All but one of the twenty-two children in the study would attribute unexpected failure to themselves - eight to not working hard enough, seven to rushing or carelessness, and six to not paying attention. Only one, knowing that she always works hard, would say that someone had distracted her.

Actual Achievement

Information on academic achievement was gathered from scores on the Drumcondra Achievement Tests (see APPENDIX B), end of year reports, school test results and teacher comments.

Results on the Drumcondra tests were available for seven pupils. Four of these scored above the 95th percentile in both English and Mathematics. (Three of these hated school). All four were achievers in out of school settings as well.

A fifth child scored at the 90th and 88th percentile in English and Mathematics respectively. Her end of term report showed excellent and very good for these subjects. She suffered acute test anxiety which probably lowered her results. The sixth, a boy, scored very highly on the Drumcondra mathematics test (his English result was not available), but his teacher felt that he was underachieving. Both of the latter children held national awards for computer problem solving. The last child in this group was felt by teachers to be underachieving, even though he scored at the 80th and 94th percentile in English and mathematics respectively. He was an accomplished musician out of school. In common with the other child whom teachers felt was underachieving, he felt that parents expected a lot of him. Both hated school.

Five of the remaining children scored first in the class, four others had a score almost identical to the leader in one of the two subjects and came within six percent of her/his score on the other. Two of these were

nevertheless believed by their teachers to be underachieving. All but three of this group had major interests outside of school (two captaining football teams, three music, one of these being a national prizewinner and one gymnastics, also a national prizewinner).

The remaining group of six contained one boy and five girls. Three of these had been under considerable emotional pressure. The first of these, a boy, scored 69% and 89% in English and mathematics, and even though these may appear perfectly respectable results, they still only earned him a placing in the middle of the class. He found great difficulty in keeping his mind on schoolwork, but was a mine of information on subjects which interested him. The second, a girl, was bullied at school, and felt nobody liked her and her performance had dropped from a previous all-A rating to A and B. The third, a girl was suffering from peer acceptance problems and high perceived parental demand. Her performance had been average but was improving dramatically with a change in these circumstances.

The last three children were girls. One, in a small sixth class with at least two other very bright children did not consider herself very clever. Her parents expected a lot of her in academic and other areas. She usually scored 80-90% in class tests, but her teacher still felt that she was underachieving.

The second of the three suffered acute failure anxiety in subjects where she felt she did not excel e.g. mathematics. She still scored 88% in English and 81% in mathematics in

end of term tests, but parents and teachers felt she could do better. Her teacher considered her artistically gifted. The third girl was, according to her teacher giddy, and under pressure to achieve. Her results were normally just under the "A" grade. By her own account she worked hard and equated work with success. She was an accomplished dancer and had won many prizes for this.

All but one of the twenty-two children could be considered high achievers by normal class standards. No child scored below 69% in anything. The child who was performing worst by class standards was on medication which affected his performance.

Teachers had originally been asked to nominate children in various categories of achievement or ability. Thirteen of the twenty-two children had been nominated among the four most intelligent children in the class. Five had been nominated as children the teacher suspected were intelligent, although not performing as such in class. Four of these were under some emotional pressure at the time, and although not nominated by their teachers as being among the most intelligent were believed to be gifted by their parents (Four had psychologists reports to prove it). Three of the five suffered from asthma (two of these cases being of recent origin), and one from hayfever. Three of the five showed improved behaviour and performance over the course of the study due to increased teacher acceptance and/or reduction in the factors causing stress.

Four pupils had not been nominated in any ability or achievement category. One of these was suffering peer

rejection and her achievement levels were slipping. Her teacher did however remark on her high achievement motivation, and her incisive manner of questioning. The second unnominated child was in an accelerated high-ability class. His motivation was reduced due to sudden failure in Irish tests, but this recovered again after remedial intervention by the mother. The third unrecognised child talked all the time but did not contribute to class discussion. Her teacher did not consider her outstanding. The fourth child did his best to make himself invisible in class and his disengagement from class activity resulted in non-recognition of his ability. His teacher believed that the mother had unrealistic expectations of the child.

Conclusion

High achievement did not necessarily result in liking school. Some high achievers hated it and pursued their interests elsewhere. For these, most of what went on in school was irrelevant. They tolerated it because they believed it was necessary to keep open the contingent paths to a "good" secondary school, college or an interesting well-paid job or because their parents expected it. Only four of the children had expressed any real enthusiasm for the place.

While these children were high achievers in terms of other classmates, they may in fact have been under-achievers. None of the four children doing accelerated work complained of its difficulty, only its volume. The fact

that children who regularly turned in high scores became so upset at the possibility of failure or at minor downward variations in their scores would lead one to believe that they equated success with coming first or gaining 100%. Because these children were so rarely exposed to failure they understood it as a personal affront, and not as a learning experience. The fact that so much of the work prescribed for them in mathematics and English had one right answer may have contributed to this effect. Inability to cope with failure in a constructive manner can lead to crippling drops in motivation when a really difficult task is encountered. This very effect was remarked upon by Carol Mc Carthy, Director of the Programme for Talented Youth at Kalamanzoo College in a recent talk to the Irish Association for Gifted Children (21st August, 1991).

PROFILES

There is always a danger in extracting statistics from data dealing with children that one may end up depersonalising the children. The inability of the data to make seemingly reasonable connections in places, for example between perceived unpopularity and perceived unhappiness, arises because each child is a complex adaptive system. In order to fully understand how each child selectively perceives the factors which impinge on her/his behaviour, motivation and achievement, it is always necessary to keep the whole person in mind, individual and unique as s/he is. For this reason a separate profile has been drawn up for each child in the study. These describe the factors which seem most relevant

at the time of study for that particular child's achievement-related behaviour and highlight any areas of concern where appropriate.

This thesis has attempted to explore the achievement-related behaviour of a group of twenty-two gifted children. Achievement motivation has been understood to result from a complex interaction between the child and the environment. Many environmental factors are implicated in motivation and achievement. Among these are the availability of models of achievement behaviour, the level of stimulation and challenge encountered, the amount of training available to access and use information, the degree of freedom allowed in choosing one's activities, the time allocated for work, the nature of feedback on performance available, the goals and standards set, as well as the degree of acceptance and emotional back-up for one's achievement efforts. The child's perceptions of her/his action potential with regard to environmental challenge and her/his understanding of the affective consequences of success or failure are also major factors in determining her/his achievement orientation.

The children in this study have been described in terms of their ability, self-concept, preferred thinking styles, academic and out of school achievement, attitudes to school and peer relationships. The home and school have been examined in terms of their ability to function as facilitators of achievement behaviour.

General trends and patterns have been extracted from the data. Profiles of individual children have also been drawn up indicating which factors appear to have most influence on particular children's achievement-related behaviour, highlighting areas of individual concern where appropriate.

SUMMARY OF MAIN FINDINGS

The Home

The parents of the children studied provided models of involvement, interest, caring, learning, commitment and responsibility. They viewed learning as a life-long pursuit, at least one parent in all but one of the twenty-one homes having undertaken an apprenticeship or further course of study after leaving full-time education. These parents pursued a wide variety of interests. The mothers, in particular, were models of caring, leadership and responsibility. Fourteen of them i.e. all of those with spare time during the day, were in positions of leadership, trust or responsibility in some charitable, community or educational organisation. Seventeen were involved in direct caring activities. Commitment to the family was not at risk as these activities were generally scheduled in such a way as to cause minimal disruption to family life and ensure that the children were almost always in the care of a near relative

In all but two of these families, the father was the sole breadwinner, but during the study the jobs of five of these were either threatened or lost and in four cases the mother found employment to supplement the income. Fifteen of the twenty available fathers (one was abroad) took part in the household chores. Family networks were also strong. In all but three cases a grandparent, aunt or uncle had taken a constructive interest in the child. There was a strong sense of the family acting as a unit. Eighteen of the families had regular outings together. Even those who did not shared interests in common. Consultation and negotiation were also the norm in most families.

Independence training has been linked to achievement motivation. Almost all parents placed restrictions on their children's movements, but most children were given reasonable freedom of movement and association commensurate with age. 30% of children's school achievement has been linked to parents' attitudes and 20% to their material circumstances (Plowden, 1967). Parents in this study took a keen interest in their children's education. At least fifteen had chosen the school on academic criteria. They had high aspirations for their children's future, almost all aspiring to third level education. Many had already made financial provision for this yet only four put any sort of direct pressure on the child to achieve academically and two of these were careful not to exert too much pressure.

Only four sets of parents encouraged competition without any reservations, although many of the children were very competitive and needed no encouragement. Children were generally allowed to develop their talents naturally. Parents were concerned with the school progress of their children, but rarely intervened directly in day to day schoolwork. Four were given schoolwork during holidays, but in three cases the amount was small. Parents were more concerned with complementing the work of the school by concentrating on their children's social, musical and physical development. Seventeen children took part in organised out of school physical activities. All but two had had the opportunity to learn a musical instrument. Two thirds were engaged in club type activities. Parents provided the transport, the time and the money for these activities as well as rearranging the household schedule around them. This willingness by parents to assist their child's achievement efforts was found by Bloom (1985) to be an important factor in talent development.

Most parents appeared to be emotionally tuned to their children, calming them down when they became emotional, and monitoring situations which might cause undue pressure. This overall sense of cohesiveness of the family unit was also found by Cornell (1981) in a study of families with gifted children. These families fit the description of families of successful younger students of the Early Entrance Programme at John Hopkins University. These were described by Stanley (1981) as those which encourage

academic excellence and which show combined purposiveness, respect and support for their child's efforts. Parental harmony was also found to be an essential requirement, freeing students to concentrate on academic challenge. Early stimulation and the ready availability of books was found by Clark (1976) to lead to early reading ability and this was true also of the homes covered in the present study.

Bandura (1969) believed that much behaviour was learned by modelling. These children grew up in homes where parents took pleasure in intellectual pursuits and where showing leadership and responsibility were considered normal. It is not surprising then that so many of them took an early interest in reading and music and that so many showed tendencies to lead and organise.

Bloom's (1985) study of highly talented individuals shows that parents' values and behaviours had a 'large deterministic effect' on whether children were encouraged in sports, music, the arts or intellectual activities, but that the area in which the child eventually achieved had to do with availability of resources, and parental support. Parents in this study, even though for many finances were scarce, allocated their resources in such a way that children were not deprived of anything materially beneficial to their progress in any area in which they were determined to achieve

It seems that as a group, these parents were providing a home background favourable to the development of gifts and talents.

Personal and Social Factors

These children, as a group, had very high overall self-concepts. Two, however, scored very low and one barely average. Seven of the children had low self-concepts of popularity, six of these scoring at below the 16th percentile on this dimension. Six boys and seven girls had difficulties in being accepted by peers. These were manifested in bullying, name calling, being picked on or excluded from activities in the yard. These difficulties appeared to be related to difference in thinking ability, interests and lifestyles, non-conformity with sex-role stereotypes and a tendency to lead and organise. Social acceptability was enhanced where the child was an achiever in a social-solidarity goal situation where success could be shared. Peer non-acceptance was not constant across situations and children neglected or rejected in one area often sought out other areas of achievement activity where their talents were valued e.g. organising younger children into successful teams.

Only three children scored below the 30th percentile on the happiness dimension of the self-concept scale. These also scored very low on the overall self-concept. Two of these were not engaged in any organised activity outside of

school where they could meet intellectual peers. They also believed themselves to be unpopular.

Hollingworth as far back as 1942 showed that some children with IQs of above 180 had difficulties of this kind. The Raven's scores do not make fine distinctions possible at such a high level. High IQ alone may not have been the only factor involved. Many of the children were three months or more below the average class age, which could put them at a physical disadvantage in class sports. Those children fortunate enough to have found others who shared their abilities or interests in the areas in which they wished to achieve managed to maintain reasonably high self-concept levels. Unfortunately these opportunities often have to be paid for.

Interestingly enough, although many children had difficulties in being accepted into any group at school, as far as could be ascertained every child had at least one friend somewhere. Girls were generally nominated as friends by other bright girls. However, many children appeared to have difficulty retaining friends. Only six had daily contact at school with children who shared their out of school interests. The need for 'belongingness' is considered by Maslow (1986) to be one of the lower needs which must be satisfied before higher needs such as self-actualisation become motivating factors.

It would seem desirable that some provision be made at school or between schools for children to spend at least part of the week in the company of their intellectual peers and/or other children who share their achievement interests. A half-day pull-out class or club one day per week serving several schools in an area, bringing together pupils of similar interest and ability and run by a competent enthusiastic teacher might serve this purpose.

In actual academic achievement only one child was a low scorer by class standards and this one was on medication which would slow down performance on tests. Besides this child, four others were believed by teachers to be underachieving and four were not believed to be exceptional. Among this group of eight were the children of the four self-admitted 'pushers' for achievement, one child who had a heavy burden of chores, and one whose teacher believed his parents had unrealistic expectations of him. Pringle (1970) found that unrealistic parental expectations were linked to under-achievement. Six of these nine children not recognised or believed to be under-achieving were also having difficulties fitting in with peer groups at school.

The children's preferred style of thinking was also examined using Lorraine, McCarthy and Smith's S.O.L.A.T. instrument (See Appendix B). Three were shown to have a whole-brain dominant pattern, two left-brain dominant and six right-brain dominant.

The whole-brain dominant children appeared to approximate the ideal pupil, achieving well, liking school and held in high regard by adults. The left-dominants came regularly at the top of the class. Okabayashi and Lorraine (1984) found that under-achieving pupils had higher right-brain scores than achievers. Twelve of the children made more right than left brain choices. Seven of these were included in the group of nine children unrecognised or believed to be under-achieving by their parents. All twelve showed inappropriate classroom behaviour e.g. were restless, timid, disruptive, talkative or lacking concentration.

Stellern Marlow & Cossart (1988) found similar links between predominantly right-hemisphere children and acting out, distractibility and total scores on a list for identifying problem behaviour. They felt that this might be a consequence of predominantly left-brain teaching which was unsuited to their preferred thinking styles.

Torrance (1988) has linked right-hemisphere processing to creativity. Analysis of the type of written English questions set for these children has shown that there is very little scope for creative response. It would seem that more schoolwork which allows for creative response is required by these children.

Health

The children's health status was a matter of some concern. Nine had chronic or occasional attacks of asthma; five currently had skin problems e.g. eczema; three suffered from hayfever; three from breathing complaints other than asthma, four from miscellaneous allergies other than hayfever and one from epilepsy. Some children featured in several categories. Two had current eye problems. Many of the above complaints are commonly believed to be linked to the auto-immune system and triggered by stress. The group of nine children unrecognised or believed under-achieving contained five asthma sufferers, one child with epilepsy, one who was extremely short-sighted and one who had a serious congenital condition which had been operated on.

Poor health in itself did not cause under-achievement, since others with similar conditions were doing extremely well. It may, however, be that it is the accumulation of factors such as high parental demand, lack of a genuine peer group, having a thinking style inappropriate to convergent school-type tasks, as well as poor health which leads to under-achievement. The child is after all a complex adaptive system. It is likely that one or two unfavorable circumstances can be compensated for in some way, and that the adaptive system only breaks down when over-loaded.

Children's Attitudes to School

Almost all children showed positive attitudes to learning per se and enjoyed intellectual challenge. Nine of the twenty-two hated school. All the children who believed their parents expected a lot or too much of them hated school or just could not see the point in going and four of these said they would not be upset by unexpected failure. Parents seem to tread a fine line here. Judging by the children's performance on the W.I.S.C.-R or the Raven's test most of them could reasonably be expected to be performing better. However, achievement does not take place in a vacuum. The schools may not have been providing suitable conditions for high achievement to happen even where children were highly motivated. This kind of frustration could very easily produce symptoms of ill health and hatred for school.

The Schools

The schools were also looked at in terms of their ability to provide an environment which facilitates giftedness.

The curricular provision being made by the schools was compared with the children's real interests. Many of the children's achievement activities took place out of school and with the exception of football, had to be paid for. This led to tiredness in school, difficulty in concentrating on homework, and lack of time for normal

social intercourse Many of the high out of school achievers were also performing at the top of the class in school. Much of both schoolwork and homework simply represented 'busy-work' for them It would seem sensible to reassess the value of homework simply given to reinforce schoolwork which the child has already mastered leaving these children time for the intensive practice demanded by their talent-field, and also spare time for normal informal play. Many children were interested in music, art or P.E. Development in these areas tended to be erratic with progress from year to year often being dependent on the skills and enthusiasms of the class teacher and these classes sometimes being treated as optional or used as 'treats' for good behaviour More teachers would need to be trained in these areas, and an annual school plan should specify how human resources are to be deployed so that continuity of progress is assured. Many children engaged in creative writing out of school 'just for fun'. Often this was not possible at school because written work had a set time allocated which did not allow for the proper development of themes or the writing of long pieces of work. Time slots do however, appear necessary for effective school management It would seem that some area should be set aside where children can have long enough uninterrupted periods of time to do creative work. This might be a resource room supervised by a trained parent.

Some children showed an interest in computer work and two had gained awards for this, but only two schools gave children access to a computer and in only one was training provided. Computers are expensive items, but are more and more essential to many normal jobs. Computer courses centrally located and available to a number of schools in rotation may be worthy of consideration. Some children showed very specialised interests such as astronomy, photography, ornithology which are not catered for at all. Some were extremely knowledgeable in their areas of interest. At least five were doing private research. Many children were avid readers and able to concentrate for long periods. It would not be reasonable to expect that the curriculum should deal in depth with all these specialised areas. These children will frequently be dependant on themselves to find out what they want to know. Ambach (1982) considers that 'a major objective for the schools must be to help students learn how to learn by themselves'. Renzulli (1986) agrees, saying that transforming children from consumers of knowledge dependant on the teacher into first hand enquirers and producers of knowledge should be the end-product of education for the gifted. This research shows that many teachers were not equipping children to be independent learners. Only four teachers regularly allowed children have an input into setting goals for learning. Only six out of eleven classes were taught to use a library catalogue and only one a telephone directory. Scientific observation was engaged in by only two of the eleven classes. In only seven was questioning encouraged. Less

than half the teachers interviewed encouraged criticism or argument or taught children how to analyse results. Higher order thinking skills are necessary if children are to cope with large volumes of complex information. Higher levels of Bloom's Taxonomy of Cognitive Abilities (1956) are often used as the basis of programmes for the gifted (Wallace, 1983).

Teachers were asked what kind of thinking skills were involved in the tasks they set for their pupils. Results show that only about half of the eleven teachers interviewed set tasks requiring analysis of situations, justification of decisions, application of knowledge to new situations or evaluation. Bille Wallace (1983) believes that questioning is the key skill in eliciting certain kinds of responses and promoting higher order thinking skills. Analysis of the written English questions set for the senior classes in this study over a two week period revealed that 87% of them involved basic comprehension and making simple inferences; only 5% required creative response and two classes accounted for almost all of these. 5% required the child to find the information out from another source. Only 3% involved evaluating alternatives and justifying decisions. Kerry (1982) found similar results in a study of thirty-six teachers in England. Information accessing or processing skills cannot develop in a vacuum. They must be applied. Project work is the generally accepted vehicle for this. Simply looking up encyclopaedias and summarising the contents is not the

objective. Renzulli (1985) describing his Type III enrichment activities proposes that children should take an active part in formulating the problem, designing the research methods and planning the final product with the teacher acting as guide and facilitator.

This study shows that many of the teachers considered project work to be a low priority item, often to be deferred to the last term or in one case avoided altogether. Scarcity of reference materials may have been a factor as most classes had none of these in evidence unless provided by pupils or teachers themselves. Libraries were typically unmanned for most of the day and contained one encyclopaedia for the whole school. Having all pupils doing project work in class at the same time is therefore difficult. A Special Resource Room is needed, manned by trained parents or teachers, where children can have access to information, advice on locating and using it and long enough periods of uninterrupted time to produce really worthwhile work. Most of the subjects in this study showed that they have the reading ability, the powers of concentration and the interest to pursue this type of activity; what they need is systematic training in the necessary skills. There is no reason why the curriculum should not specify a taxonomy of skills for accessing and handling information, beginning with the simple things like using a contents page and index. These skills could then be taught in a systematic way to all pupils according to ability.

Children were questioned about their understanding of world problems. All showed an awareness of these and had given some thought to their solution. However, only five out of eleven teachers interviewed gave any serious amount of time to current affairs and only five dealt with environmental issues. It seems that children were largely dependant on the media for their information. Many were said by parents to be concerned for their future world. Information without understanding can be anxiety-creating. Media studies should be introduced to give children some insight into such topics as agenda-setting, bias and fact v opinion. They need help in interpreting the vast array of information with which they are daily bombarded.

In this age of rapid change, of new ideas like Thatcherism and Perestroika and new inventions like laser technology which are changing our world, one would expect that these would somewhere feature on the curriculum. Maker & Schiever (1984) believe that 'significant ideas, concepts and underlying principles are the substance of activities designed to develop 'higher order' intellectual skills'. None of the teachers in this study bothered with great ideas or inventions. It would seem logical to allow teachers more scope to introduce into the curriculum the significant ideas which shape our age. Examination pressure in the higher classes probably accounts for the fact that they have not already done so.

Leaving aside the curriculum content for a moment we must ask ourselves what else the schools are doing or could do to promote excellence. Defining what is required, the U.S. National Commission for Excellence in Education (U.S. Gov., 1983) states 'At the level of the individual learner, it means performing at the boundary of individual ability in ways that push back personal limits..' (p.12). Only two classes of the thirteen studied offered accelerated work. None of the four children from these classes complained of the difficulty of this work and only two complained of the volume. No other child was in a situation where superior ability or effort would have resulted in being asked to do work suited for a higher class. Fourteen children in all complained that the work was too easy. Thirteen complained of lack of ability to progress. Many were bored, including some who were regularly at the top of the class. Some kind of acceleration is obviously required for these children. Screen (1982) has pointed out that 'even the very brightest children... should at times experience failure. Until they know what they cannot do they cannot reasonably be said to know what they can do'. At John Hopkins University, Baltimore, a Study of Mathematically Precocious Youth has resulted in programmes for developing mathematical talent that have been widely replicated. Children here are tested for mathematical ability and then taken to a central location, typically a third level college, where in three hour long weekly sessions they are expected to cover a normal two year curriculum in one year. A facility such as this in the area of a child's outstanding ability would

provide intellectual challenge as well as introducing the child to a genuine peer group. Another measure which could be tried to alleviate boredom is 'curriculum compacting' recommended by Renzulli (1986). This involves cutting out work already mastered cutting down on the number of examples to be worked, and laying aside low level basic comprehension type tasks to buy time to do independent research work in a resource room, or to do higher level work with an accelerated group. Textbooks are also a problem for these children because many of them are just too easy. The National Commission for Excellence in Education (U.S. Gov. 1983) recommended texts which present more complex and abstract materials and which challenge the children intellectually. While some extension readers and workbooks in mathematics which present more difficult problems exist and were in use in some classrooms, there is a need for even more advanced texts for the gifted, which would take into account their advanced reading ages and interests.

Feedback on performance has been shown by Bloom (1985) to be of major importance to the development of talent. Examination of the feedback on written English being given to these children showed that only one child was getting constructive feedback on the actual content of the work while spelling grammar and punctuation errors were regularly corrected.

To conclude then, the schools did not appear to be meeting adequately the needs of these children for intellectual challenge, for skills to access and deal with information, for help in interpreting their world, for informational feedback on work content and for opportunities to produce significant creative work. The fact that so many did 'schoolwork' at home for fun or did their own private research shows a hunger for learning.

The recommendations which are summarised here should go some way to satisfying it.

- Systematic training in skills for accessing, processing and presenting information for all children according to ability.
- More project work for gifted children with choice of topic, planning and execution being largely the responsibility of the child under teacher guidance.
- Teacher training in the arts of (a) questioning to elicit creative response and the use of higher order thinking skills, and (b) giving constructive informational feedback on work content.
- Textbooks which deal with more complex and abstract material and which take into account the advanced reading ages and interests of gifted children.

- A wider curriculum to deal with current affairs, environmental issues and great ideas and inventions which shape our world.
- Media studies to help children interpret what they see and hear in newspapers and on radio and television.
- A School Resource Centre, manned all day by a competent person, containing suitable reference material and a quiet area where long-term projects and creative work can be done
- Reassessment of the usefulness of homework which is merely reinforcing work already mastered.
- Use of curriculum compacting to buy time for serious long-term or advanced work.
- Children grouped by ability and interest for at least part of the week, preferably in the charge of an enthusiastic adult who shared their interests.
- A facility to progress to higher levels of achievement in the child's area of high ability.
- Better human resource management to ensure that children are taught music, art and P.E. by competent and enthusiastic teachers and that continuity of progress is maintained from year to year.
- More tasks which can be tackled at a variety of levels and allow for creative response on the child's part.

APPENDIX A: PROFILES OF INDIVIDUAL CHILDREN

(To protect confidentiality, names have been altered).

[1]

BEN

Ben, aged ten years, ten months was in sixth class. He read well before school without formal teaching. Early schooling was traumatic. He was disruptive at school and often threw tantrums at home. More stimulation was recommended and a combination of more difficult schoolwork, less homework and lots of out-of-school enrichment activities eased the situation. By fifth class he combined outstanding ability and clarity of thought with engaging in silly pranks and generally immature behaviour. He was a self-confessed "messenger", telling questionable jokes and distracting other children. When first encountered he was sitting in front of the blackboard where teacher could keep an eye on him. He didn't exactly hate school all the time, but certain aspects did frustrate him. The inability of other children to combine ideas annoyed him. He was a perfectionist and hated messy sums like long division. Repetition, being forced to work at the same pace as everyone else, questions requiring long answers, mathematics roughwork and anything else that wasted his time was resented. He equated speed with success. He could not bear piano practise. At school he often had difficulty keeping his mind on the task in hand - one of his teachers thought him distractable and lacking concentration, hence his seat at the top of the class from where extraneous stimuli and

communication with classmates were less readily available. He loved a challenge and wanted to succeed. He was not as fast as the others in finishing essays. Being a perfectionist, he liked to think up good ideas first. "Thinking takes time". While he was developing and perfecting his ideas, others were writing and in order to finish in time he often had to rush and this resulted in censure because of messy handwriting. He would have preferred his own time-scale. At home he walked and talked in his sleep and found getting to sleep in the first place difficult because he was "thinking about so many things".

He had very little interest in recreational reading, but loved doing his own research on projects in the library. He had won prizes for these. He wanted to be a scientist. His special areas of interest were archeology and ornithology and he was very knowledgeable on these topics. He was conscious of the fact that his ideas were different from those of his classmates. He sang in a choir, often taking a solo part and had taken important parts in school concerts. In games and sports he would have liked to be an organiser, but his classmates thought him too bossy. He organised a group of younger children out of school instead. The childish pranks he engaged in were probably a combination of attention seeking and trying to be accepted as one of the boys.

During the study Ben changed classes. A much smaller class meant that the teacher could give more individual attention. In common with three or four of the brighter children he was occasionally given mathematics problems to

solve. (He had been highly placed in a national problem-solving competition). He was given responsibility for the library and access to the school computer. The greater volume of pupil-teacher interaction meant less need for attention-seeking tactics. He still regarded himself as a bit of a "messenger" and could not resist telling the odd risqué joke to make the class laugh. He was not sure why he behaved as he did. Perhaps old habits die hard. In any case the teacher had no real complaints. Greater teacher acceptance was accompanied by greater acceptance of his ideas by other children. The fact that this was an examination class probably increased his status as a brainy child and he got on well with his friends. At home he was given a reasonable degree of freedom to go to parties and discos and visit friends on his bike.

Ben had a great need for stimulation and communication which appeared in the classroom as distractability. The extra responsibilities and greater freedom of the present class was much less frustrating for him. Little failures still annoyed him. Perhaps exposure to greater challenge where success was less predictable would help him see failure as a learning experience rather than as a personal stigma.

Sarah, aged twelve, was in sixth class. Her parents believed in investing time and money in their children's early learning experiences. They were models of the work ethic and Sarah shared their views on hard work being the basis of achievement. She would have loved to be an important person and said that, while a dreamer at home, she did not daydream at school. "You have to force yourself to work or you won't get anywhere". She was facing entrance, scholarship, bible and music examinations all in the same year. She stuck at music even though she often wanted to give up, because adults she respected assured her that it would be worth it in the end. She worked hard for a scholarship examination. "Even if I do not get it, I will have done my best". While performing well, she did not qualify for the scholarship. The news was greeted with mixed feelings. To have won would have meant parting from her friends who meant a lot to her.

At school she preferred difficult problems and would stick at them because she hated being beaten. She would be disappointed at less than 80%. "I know I can do it". The time spent on slow learners, on homework and on mechanical sums annoyed her. Her handwriting was a constant source of trouble. She hated slowing down to write and wanted to finish fast to get on to more interesting things like projects, art or P.E. Homework was a pet hate and she would rather come to school at seven in the morning than face it after school. She slept poorly ("I'm not really tired

enough to sleep") but then sometimes awoke tired. Her relations with the teacher were good. Sarah described "chatting" with her as distinct from "talking" to her predecessors. Nevertheless she was described as hyperactive, talkative and distracting others, but outstanding in intelligence, reasoning and memory. Her behaviour was improving since she moved into a smaller class which allowed for a freer atmosphere and more movement. Peer relations were good. She had one or two friends at home and hung around with what she described as "a gang of messers, but good workers" at school. She was cooperative by nature and the gang usually came up with ideas as a group. She would have preferred to work in a group in school and to compare answers (not copy), but this was not allowed.

Perhaps cutting down on the quantity and improving the quality of written work would have made school life less frustrating. Allowing accelerated progress for the small number of very bright children in the class might have left her with more high-level cognitive tasks and less spare resources for distracting other children. More project work might have channeled her natural desire to communicate into a more constructive and less disruptive pattern.

Colin, aged twelve and a half was in a very high ability fifth class which was doing sixth class standard work in some subjects. His interests were varied. He played four instruments and enjoyed swimming, art, nature and comics. He worked hard at school and had given up music classes because they interfered with his lessons. His teacher said that he was a little behind in schoolwork and seemed a little nervous. He liked mathematics best, but worried a lot about Irish tests. Even the child who came first in the class found it difficult to cope with the amount of verbs to be learned every night. While his mathematics results were almost 100%, his Irish result was nearer 30%. Irish verbs were a particular source of anxiety and he got so upset over the last test that his mother had to reassure him that it did not matter now. He talked Irish in his sleep. His confidence was shattered and according to his mother he wanted to leave school. He was very emotional and had to be taught to give expression to his feelings. Half an hour's tutoring by the mother per day improved the situation. He worried about not having time to complete his schoolwork. Homework took two hours per night and was tackled immediately after school. Sometimes there was weekend work as well. Colin found the disciplinary regime particularly restrictive - double work if it was not done right the first time, lines and detention for minor infringements of the rules. He perceived school as a high demand/ low acceptance situation. He would have preferred

learning to be more fun, to have more prizes and more teacher encouragement. His teacher realised that more unconditional praise would probably be beneficial. Tests were marked out of 100, which meant that quickly found out their children's place in the class and the parents compared notes. Under these conditions a low mark, even though the class was working at a higher overall level could seem like failure and a low placing in such a high ability class could result from very little difference in marks. In such a situation a bright hard-working child could appear to be an underachieving failure.

Teresa aged nine and three months was in third class. Her mother described her as a deep thinker, asking impossible questions, always requiring exact information and not easily fobbed off. She was very imaginative and creative and often wrote stories and poems for the family. She loved being the centre of attention and had even given talks at her club for children three years older. She got very enthusiastic about new things like learning piano or dancing, but rapidly became bored. Her teacher described her as loving to "question everything, often in a negative way, at times looking towards a positive answer". She was highly motivated when her questions were answered and loved to be praised for her excellent beautifully presented work. Wanting to be always first was a cause of anxiety. She was friendly with adults, often coming up to chat to the teacher in the mornings.

At school she worked hard when she was interested. "I'm bored at home, more bored at school, when you're finished, it's just more work". She found it very hard not to daydream during mathematics class. She hated having to write down problems when she could do them faster in her head. She would stick at a problem until she got it right. She claimed not to know whether she was good at mathematics even though she usually got all her sums right. She found the questions in English stupid and wondered why they could not be blended together. Having to write the question as well as the answer really annoyed her. She said that there

were no really hard English questions. She hated simple ones and really difficult ones. Given the choice, and for the same total mark, she would choose two difficult questions over four easy ones, because she liked to get things done fast. She raced another child for second finished, but took care because she wanted to get everything right. If she got things wrong, especially in examinations, she would be disappointed and cry. "I want someone to be proud of me".

Peer relations were very difficult for this child. When group work was involved, she always thought her ideas were best and tried to be leader. This led to rows. Her teacher had tried putting her in various different classroom locations, but found constant disagreements. She was currently sitting at the back of the class with the only child she seemed to be happy with. Her ideas for play were also different from the others. As a small child she had often played quite happily on her own. Now she was most unhappy. She thought the other children's games were stupid: "They want to play fairies". She believed that her ideas were good, but that the others didn't think so. They thought she was cranky and bossy. She was excluded from the activities in the yard, she was called names and at one point there were organised name-calling sessions at the school gate. At home things were not much better. Apart from one girl from another school she was totally friendless. She came from a large family with considerable sibling rivalry and sometimes the other children, when they wanted to annoy her, took their cue from her schoolmates and

also called her names. She cried a lot and felt victimized and unloved. Her mother tried to praise and encourage her, but seemed unaware of the school situation.

The fact that almost half of this class scored at or below the twenty-fifth percentile on the Raven's test may go some way towards explaining the difficulties this child had in getting others to see her point of view and accept her ideas for work or play. This child badly needed to be among a group of other gifted children where she could question, discuss and argue ideas freely without being seen as bossy or disruptive. Meeting other children with better ideas than hers would also give her an insight into the difficulties her classmates were having in accepting her.

Bart, aged twelve and a half was in fifth class, but the whole class was accelerated in some areas. He was popular and respected by his peers. He often topped the class for achievement and rarely came below fourth. He guarded his reputation for high achievement and felt his parents would be disappointed if it was not maintained. He believed that effort led to success and worked hard never coming to school without all his homework done, even if this meant getting up early. He was a sports enthusiast, spending about seven hours out of school and four-five in school on these activities. This included coming in one hour early, and playing through part of lunchtime every day. He was captain of his school team and held various medals and trophies. He was well thought of by the teacher and often selected to run messages or mind the class. He was accepted as a leader by his peers. At home he had no responsibilities, apart from washing the dishes.

He worried about tests. Weekly Irish tests were a particular cause of concern. He really had to slog at Irish verbs because of the sheer number of these to be learned each night. He did not give up easily and would stay at a problem all night to get it right. However he would prefer easy English questions because they took less time. He was not a great recreational reader but would look for specific information and research projects thoroughly. He was described by his mother as "always happy". Apart from the Irish verbs, which appeared to be a temporary phase the

teacher was going through in preparation for impending entrance examinations, schoolwork was not a cause for complaint and was generally interesting. Test anxiety was real, but not handicapping. The child's main problem was trying to perform superbly in both academic and sporting pursuits and managing to fit homework into a tight and demanding schedule.

Bernadette, aged eleven and a half, was in fifth class. She read before the age of four and was writing stories by five. She was a bit anti-social in the early years, showing more interest in her books. Often she felt that other children were stupid. She came from a close-knit family of very high ability children. The parents believed in exposing them to a wide variety of activities to widen their horizons. Bernadette was fiercely loyal to her family. She was very conscious that their standards differed from those of others and often felt left out at school when other children were discussing late night adult T.V. shows which she considered "thick" and in any case she was not allowed to watch. She avoided some of the local children who were on the streets until all hours and considered them "yobs", although she did play on the street occasionally.

Bernadette was very determined. She had plans for her career and at school she did not bother with subjects which held no interest or in which she felt she could not excel - mainly mathematics and Irish- but she still managed to score 80% in these in end of term tests. The only items which stimulated her were projects and she excelled at these. She had harder books than the other children and she was frequently asked to tell the class about these. She hated school. Homework was especially irksome : "We never get to work out new things". She found her class readers uninteresting and in any case had read them all before. She had a tendency to wander round the classroom. She was not

found very reliable when given responsibilities at school. She often complained of tummyaches which her teacher interpreted as attention-seeking.

Her abiding passions were writing, art and drama and every spare minute was devoted to these. With her sister, she wrote plays, designed costumes and sets, acted and put on performances at every possible opportunity. She liked to organise and take control of situations, and received the most nominations for class leader. This created a problem because she was very aware of the fact that the others would think her bossy, and might resent her. The teacher, presumably for the same reason, did not always choose her even when she was first finished and had her hand up to volunteer. She concluded that the teacher did not like her. Tests were a cause of worry, because of her need to live up to her excellent academic record. Being a slow runner, she designed games for the yard which did not involve speed and managed to get the others involved. Her classmates respected her competence. In choices for model-making and member of the quiz team she was nominated by seven and fourteen children respectively out of a total of twenty-four. For "the child I most like playing with" and "the child I would like to sit beside" she got one each and only one of these choices was mutual. She was very sensitive. Violence on T.V. (real, not imaginary) upset her. Injustice or bullying to members of her family made her fly off the handle. She often had to be calmed down.

Bernadette was a very determined child, focussed on her long-term ambition of being an important

authoress/illustrator Her tendency to take the initiative and organise activities had social consequences in increased respect and decreased popularity On the Piers-Harris scale her overall score and happiness score were high, but her perception of her popularity was low. It seemed that she was happy that she was the kind of person she wanted to be, even if there were a price to be paid.

Eamon was aged 10 years.9months at the time of the first interview and was in fifth class. His Piers-Harris self-concept score was average. He had been a very bright baby, passing all the usual developmental milestones early. Before his third birthday, he was becoming so bored that he was sent to Montessori preschool to mix with other children. At 8 years of age he was referred by the school doctor for psychological assessment because he was reported to be disruptive in class. His I.Q. score on the W.I.S.C.-R was in excess of 140. His teacher was aware that he had been professionally assessed. "I know that he is supposed to be gifted, but I can't see it. He does not show any unusual talents". Both parent and teacher did however tell the child that he had "brains to burn" and the child agreed. Apart from problem work in mathematics and presentation of written English, he had been given a straight A score by his three previous teachers. All his teacher ratings dropped to mainly Bs in this class, even though he managed to score above the 90th percentile on the Drumcondra tests for mathematics and English. His teacher found him withdrawn, showing a lack of commitment, often having to repeat work and distracting others by talking during class. He was seated "right under the teacher's nose" because "he could not work unsupervised". (When an opportunity arose to check with his teacher the following year. The same lack of concentration was reported, and his English score had dropped to the 80th percentile).

What had caused the deterioration in the teacher's ratings of the child's performance?

Apparently the mother had told the psychologist that the child lacked concentration and she was told to "keep him busy". She had interpreted this quite literally. The child's schedule at the time of interview was nothing short of mind-boggling. Every week-day he played in a band for several hours. Aside from his musical activities, he attended a youth club, scouts and karate lessons, as well as spending ten hours at homework per week. All this totaled twenty-five hours per week, not counting travelling time. He also occasionally had to attend a church service very early in the morning. The child stated that the mother expected too much of him. He complained that he had not enough time to eat and that his tummy rumbled. He said the teacher understood when he was half-asleep in class and often repeated things for him. The band was the mother's idea and even though he liked music, he wished that he had never seen the instrument. He felt cheated of his social life, unpopular and left out because he had no time to play with friends. On the academic front, he was also under pressure to be the best in the class, which would have been difficult enough under the circumstances, but was also made more difficult by the fact that there were other extremely bright children to compete against.

Eamon was not without ambition and had set his heart on entering one of the caring professions. He preferred the questions in his schoolbooks that had to be figured out. "I

like to use my brains", he said. He classified himself as a slow careful thinker because he wanted to get things right. "I get mad if I get things wrong; I get embarrassed". He loved doing English essays and liked the teacher's system of giving bonus points for doing extra or better quality work. He would "throw Irish out the window" and substitute history. He could not really see that school was good for anything except getting a job.

All this perceived demand might have been tolerable if it had been accompanied with emotional support. However the child must have been aware that the mother was disappointed and felt let down by his results. She believed that he was deliberately underachieving. "Some gifted children do that", she remarked. She was planning on sending him to a private secondary school on the other side of the city, even though it involved a long journey. She hoped that it might "sharpen him up". Eamon was not consulted when family decisions were being taken, and obedience was insisted on without negotiation or discussion. To make life more difficult, his father, with whom he shared many interests, had emigrated in search of work, a few years previously, and even though good contact was maintained and the child had visited him several times, the day-to-day emotional support that he had provided was now lacking.

The teacher had reported what he interpreted as attention-seeking behaviour. On first interview, conducted in private, this subject had presented as mature and articulate. At the time of the interview with the mother,

he engaged in silly pranks which seemed designed to trap her attention. He was described by her as a "manipulative brat", although she said that she would hate anything to happen to him. Finally, Eamon was subjected to constant jeering at school, on account of a minor physical irregularity, and he felt that this was facilitated by the teacher's frequent absence from the classroom, telephoning parents etc. On the peer nomination form he obtained a total of twenty-two mentions. Four of these were from a newcomer to the class. Seventeen were in reply to the item: "If we were going on a school tour, and there were three children too many for the bus, the ones I would leave behind are. ." This might seem to indicate large-scale rejection of the child, but further enquiries showed that at least some of the children had made this choice on the basis that the child was widely travelled already. Physical support was probably also lacking. Because the mother worked outside the home, the child had to get himself ready for school.

It would appear that this subject started his career, as an active achieving youngster, but that through a combination of parental demand on his physical and cognitive resources and a lack of emotional support from parents and peers, he was handicapped in his attempts to realise his potential to the full.

His lack of concentration in the classroom was probably mainly caused by sheer physical tiredness, and his attention-getting behaviour by a desperate attempt to gain acceptance and approval.

[8]

KATHERINE

Katherine, aged nine years and two months was in third class. She came from a home where the children were encouraged to try different experiences- swimming, gymnastics, dancing, instrumental music etc.- but were under no pressure to compete. There were at least two other gifted children in the family and each tried to achieve as highly as the other. The pace of activity and the volume of conversation in the household was far above that encountered in the other homes studied.

Katherine was an avid reader, reading up to two books per day, early in the morning, late at night and in spare moments at school. She also wrote a lot of stories. She was taking lessons in two instruments and saving up to buy a third. Swimming, drama computer and tennis were among her other interests. She was by nature gregarious and anxious to please. She often played on the street although she was subjected at times to name-calling from a few "nasty" girls. She had one good pal locally, but her best friend was an older gifted sister whose lead she followed and whose interests she shared. There was often friction between her and a younger sibling who "pestered her" and caused her to fly off the handle.

At school she was very anxious to be the best. In her previous class she had often been sick in school and her teacher attributed this to achievement anxiety. Although her school report for the year showed "excellent" for English and mathematics this year and 99% and 95% last year, she was nervous at tests "in case I get anything wrong".

She found it hard to sleep worrying about things she had not learned and afraid she would get into trouble - even though she thought the homework easy. She often forgot the things she learned "because there is so much going on". She awoke tired in the morning. The actual schoolwork was described as easy and she was one of the first finished. She liked solving problems and had been highly placed in a computer problem-solving competition, but she said that there were not many hard problems at school, even though she was working with a higher level group. Given a choice she would opt for more difficult questions "because they give the brain something to work on. In English she preferred the questions requiring a creative response or asking her opinion, and the teacher set plenty of these. The things she enjoyed best were going to gym or "doing something special, like library". She felt different to others. "I read - they do things like running - not exciting".

Her teachers regarded her as a leader, although she was often last to be chosen for games both at home and school. She was in charge of the library. She often volunteered to go messages to other classes because it made her feel important. Being Minister for Education was her current ambition. Her peers gave her more leadership nominations than any other child and she was also selected as a suitable quiz team member by many of them. She was popular with the others. Her acceptance was possibly due to the fact that, being herself led by an older sister whose talents she respected, she knew how to be a follower as well as a leader and did not try to control the classroom situation.

Thomas, aged twelve and a half, was in sixth class. He had been reading books by age four. He had developed an interest in music and could ask for composers by name before he could walk. This enthusiasm had persisted until the present. He played four instruments and was a mine of information on the minutiae of his chosen period of music. He listened to music for fourteen hours per week and practised for about twenty. His academic record showed straight As for four years. He was also talented in art and creative writing. His headmaster considered him exceptional. He did his work carefully because he liked to get things right, but flew through homework. He volunteered for everything because he liked to get involved and was often chosen for responsible tasks. Co-editing the school magazine was his latest project. This involved liaising with the principal and staff and missing a lot of lessons. He quite happily worked through break but was worried because others were jealous and teased him. He appeared to have a special relationship with his teacher who often listened to his suggestions. He worked hard and would have been ashamed if his music homework was not done to his teacher's satisfaction. Tests were not really a source of worry, but examinations made him panic. Failure to reach his self-imposed high achievement standards had been a source of anxiety and frustration, even before school age. At school he would control this frustration, but often let off steam at home, pacing up and down and having to be

reassured and told it did not matter. According to his own description he was always focussed on his work. He liked to keep another gifted child under observation. School sports like football were regarded with active dislike - "because they're competitive and you can't relax like at tennis or snooker". While Thomas had more freedom and responsibility than any child in the study, being able to skip classes without apparent ill effects, there was a price to pay. His very success in eliciting freedom from adults and his easy rapport with them risked distancing him from some of his peers. He was however lucky to have two very bright friends with whom he worked well. He thought school was "brilliant". Many extras were provided and he availed of swimming, French, instrumental music and art.

Thomas tended to see a lot of his activities in achievement terms. The dual burden of very high personal standards in music and schoolwork meant that there was very little margin for error if disappointment was to be avoided. His mother suggested that some non-competitive physical activity would help relax him, but, apart from the weekly swimming session, the school had no facilities for this.

Lena was in fourth class. She liked school, but found the pace slow. There were about seven very bright children in the class and the same number of very slow ones. They were taught mathematics concepts as a group and Lena often fiddled around while things were explained again and again. Once the initial concept had been grasped, the class was divided into two groups and Lena's group used "Figure it Out" to supplement the ordinary textbook. She enjoyed mathematics. She also worked hard at English. She was a voracious reader, having her own library which she went through at the rate of a book a day, often rising early to do this. Her school results in Mathematics, English and Irish were excellent (92-97% on last report). She found it hard to pay attention to Irish, history and geography which she considered boring. The ambience of the classroom was congenial and she liked the fact that the teacher treated everyone as if they were important. Her teacher thought she was a leader and sometimes she was asked to mind the class. She had three good friends in school.

Playtime in the yard caused problems, however and she often felt lonely and left out. At home, she was extremely busy, organising activities for the local children although they sometimes had difficulty following her rules. She lived in an isolated area and thought that her classmates knew all the rules of the games while she did not. This sounded plausible enough, until she mentioned skipping and a common chasing game as being among those she did not understand. When she suggested alternative activities, the others showed

initial interest, but could not follow her complex rules. If there was disagreement they would "fight her to the last". She said "I think my ideas are brilliant, but others don't like them. My games are different to other people's, they're all complicated". Her problem may have been that anything not complicated did not rate as a game to her, and that she felt that if people were playing "chasing" there must be more to it than meets the eye; otherwise why would anyone be bothered? Alternatively the others may simply have resented attempts to organise their free time.

She was teased a lot and lost her temper easily. She was conscious of the need not to stand out of the crowd. With some prompting she admitted being one of the cleverest in the class "but I wouldn't say that to anyone". Her overall Piers-Harris score was barely average. This on the one hand may have reflected a reluctance to admit to anything which might tend to make her seem exceptional. It could also reflect the fact that almost uniquely among the subjects of this study there was no out-of-school forum where she could gain recognition for her ability or be part of a group where skills were developed and excellence was expected and normal.

By May the class had done no projects at school, so the opportunities she might have had to trade ideas on subjects of interest and become part of a team had never materialized. This was a child who would probably have benefited greatly from an organisation such as an Explorer Club where high-ability children can meet their intellectual peers in a fun atmosphere.

Bertie, aged eleven years and four months, was in a fifth class which was often doing sixth class work. He was a very articulate, humourous child, never showing any signs of stress. He was very creative and this manifested itself in poetry, model making and creative essays. He often wrote fantasy essays at home but was afraid the teacher might laugh at them. Talented in music, he played four instruments and in competitions and feiseanna generally walked away with the top prize. He joined a band and was promoted almost immediately to the senior section. His ambition was to be an engineer and, judging by his complex models, this was a realistic choice. He was a keen reader, having learned before school and often read a book per day. He had lots of friends who visited frequently, but he rarely played locally.

At school he was given responsibility for money, office keys etc. He was delighted to be doing advanced work and resented anything or anyone who wasted time. "Messers", revision of very early work and homework were complained of. Homework took three hours and left no time to play before dark in the winter. He also felt that school was okay, that the teacher was interesting and good at explaining, but that the school day was too long.

He was very competitive, but felt that his parents expected too much- good marks- good place in secondary school- good job- rich wife. Being packed off to bed when interesting adults came to visit was a particularly sore

point. When his older siblings' friends came he got involved and was accepted by them even though there was an age difference of at least six years.

He placed himself about fifth or sixth in the class and wished he was better at mathematics. He "only got 95%" in the previous test. For subjects other than English, at which he excelled, he often reported getting "bad grades-eight out of ten when others got more".

All things considered this was a happy, well adjusted child, who enjoyed his many interests and took a mature but humorous view of life. He liked the accelerated classwork and the responsibility given him and, since others also enjoyed these, peer jealousy did not arise. They did not regard him as a leader. He liked to keep a low profile and stay out of trouble. The number of hours spent at school and homework did pose a problem which was probably aggravated by the need to find time for his music. A simple adjustment to the homework, omitting the revision element, might have solved this problem.

Elaine, aged nine, was very self-confident. She was used to a lot of attention from adults and liked being praised for her good looks and ability. She could "wrap adults around her little finger" in the nicest possible way, being well behaved, diplomatic and polite, but she could still throw a tantrum if necessary to achieve her purposes. ("I love to go wild")

The lowest mark she had ever received in a school test was 79% and she liked to please her parents and keep up this record. She often did extra mathematics and writing just for fun. She enjoyed "knuckling down to work". She was frequently asked to teach the class mathematics and her teacher found her very reliable when given responsibility. School was very easy for her. She rarely got a difficult question. Computation and things which "do not exercise the brain" she considered a waste of time. Spending a long time at any one subject also annoyed her, since this left less time for crafts at which she also excelled. She felt her teacher was under a certain amount of strain. Since this was a large class where almost half of the pupils had scored at or below the 25th percentile on the Raven's test, this would not have been surprising. Elaine almost always got full marks. She felt that "school is just a big building ..I don't know why we have to go there", and she just wanted a "free life".

Although she had suffered a lot of ill-health, she had become a champion gymnast, having received awards at

regional and national level. Winning came easily and she did not have to practise much. She was a "bundle of energy" and would stay up all night if let. She was always up early and planned her activities. She managed to fit a foreign language, a sport and swimming into her busy schedule.

Her overall self-concept score on the Piers-Harris scale was extremely high. Peer relations however were somewhat strained. Although involved in everything at school, and always picked for games where a winner was required on the team, she appeared to be subject to a fair degree of psychological pressure from one of the other children. At home there was an orchestrated effort by one child to deprive her of friends. Often when she appeared on the street the other children were "swept", as if by some secret signal, into another house. This situation continued for months, with previous friends not speaking and rows ensued. Often she just stayed in and played with her computer or minded younger children.

The reason for this child's problems with peer friendships was not immediately obvious. Elaine was extremely successful. Her very success however meant that she was invariably a leader in any situation. This experience, combined with her independence of mind and refusal to be a follower presented difficulty in play situations where social solidarity rather than achievement was the objective. There may also have been an element of jealousy, since other children in the neighbourhood did not have the same enrichment opportunities or the same levels of success.

Ronan, aged ten years and nine months, was in fifth class. He lived in a deprived suburb of the city, but went to school in an affluent middle-class area. His mother was very conscious of her own lack of education. She mothered her son and monitored his movements closely, although he was allowed considerable freedom. Accountability was the keynote here. His siblings were very high achievers. He was very competitive, and though his school performance was consistently good, he worried that it might fall below his own previous levels of achievement. He felt that his parents expected a lot - 100% in tests. He worked hard at school. He was tenacious, especially where football was concerned. He often picked the school team and liked to organise the play. His ambition was to be a professional footballer. The fact that he suffered from asthma which was induced by exercise did not inhibit him in the least. He was co-operative by nature and preferred group work because everyone could add ideas. A "reading fanatic" according to his mother, he loved doing research and treated the library as a second home. He read approximately fifteen books per month - a mixture of fiction and non-fiction. He was also involved in craft work, scientific experiments and private historical research. His Drumcondra mathematics score stood at the ninety-sixth percentile. Possibly because he was working for some of the time at the level of a higher class, he found the school day long and tiring.

Generally he was one of the first finished in the class, and not being allowed to go on caused frustration. The amount of homework (one-two hours) was found to be excessive at times, especially since he had swimming and football sessions after school. His mother, however, kept a close eye on this and, with the teacher's agreement, modified the amount if she judged it to be too much. In common with other boys in the study, he found the disciplinary regime annoying. All sorts of chasing and fast movement were banned in the schoolyard and, worst of all, everyone got extra homework if some pupils talked while teacher was out of the room.

This was a very well-adjusted child who had learned to cope with his physical ailment and who enjoyed the friendship of many other children. The parents' high academic expectations were tempered with good sense, and their insistence on accountability, balanced by a fair measure of freedom. He enjoyed doing more difficult work with the higher class and would have liked more project work where he could combine his cooperative instincts and his love for ferreting out information.

Jane was aged ten and was the oldest child in the family. She was in fourth class in a co-educational school. Being a first child, she was given a lot of attention. Both parents had been involved in youth work before marriage, and were favourably disposed towards children. Lots of educational toys were purchased, regardless of expense. Puzzles were plentiful and parents played board games with the child. Both parents were avid readers and read to the child from an early age. She showed great interest and asked lots of questions. There were, and still are frequent family outings to places of interest, often involving whole days in the outdoors, with picnics. The whole family gets involved in identification and classification of plants and nature books are available for reference. The father often brings the child to see him at work, and she shows great interest in this. There is no pressure on the child to succeed academically. According to her father she needs no guidelines and works to her own perfectionist standards. "We provide the infra-structure". She is consulted in decisions that affect her.

Jane could read before school. The mother recalls how she read a whole book one day without any formal teaching, having had it read to her as a bedtime story the previous night. She attended playschool for almost two years, and while clingy at first, settled in and started to thrive. Problems began with school, as she did not mix with other children. She would not join in drama or other activities,

even though she would act out the parts at home. Playtime was spent alone in the corner with her teddy. Two other children started to bully her. The child became disobedient and was obviously regressing. The teacher sorted out the bullies and suggested assessment. The assessment was a fiasco. The child had asthma which went away when she left the teacher she did not like. The next teacher set very high goals and paid great attention to the achievers, and this child who was not achieving felt neglected. Being left-handed, she had great difficulty producing handwriting to the teacher's specifications. This was not due to a coordination problem as her ability for accurate colouring at age four was impressive. According to the child it was always "too big or too small". The unhappy school situation continued right up until the time the researcher first met the child. She was very reluctant to go anywhere without a parent, was deeply suspicious of adults, especially teachers, would not read aloud in class and when interviewed the first time gave yes/no answers to almost every question. The teacher went to great lengths to boost her self-confidence and the help of other teachers in the school had been enlisted, with the result that some progress had been made.

Her father had a record of achievement in sport and was still very involved. The mother was totally devoted to home and family and did not get involved in interests of her own, although she was an avid reader, like her husband, and the house possessed a wide range of well-read books. The mother been given household responsibilities very young and

appeared to consider the heavy load of home duties (up to two hours, when needed) which she imposed on the child to be normal for a child of that age, although no other child in the study appeared to have so much demanded of her/him. She nagged the child constantly to do the work. Pocket money was dependant on doing chores. Nevertheless the child enjoyed the actual work and took a pride in a job well done, but her enthusiasm for it waxed and waned.

Possibly because she connected the mother with home duties, work and being tied down to routine, the child seemed to have adopted the father as a role model. She got involved in the father's hobbies and showed great commitment to getting jobs finished and done well. She became very interested in sport and was very competitive. She did however need initial confidence to get involved in activities. The parents would seek out activities in which she might become interested. At school she played boys' games like football and cricket and could not understand why the other girls wanted to stand around and play with stupid dolls. She was jeered at in the beginning, but overcame that with sheer determination and became the only girl on the boys' team, gaining acceptance because of her competence and general grasp of the rules and her mastery of strategy. She refused to dress up in fashionable girls' clothes, showed no colour sense, and was much happier in a tracksuit. This was a source of argument at home.

At school, she sat at a table with a group of girls who 'used' her to provide right answers for their sums. Some

of these children's Raven's scores were among the lowest in the entire study at around the fifth percentile. Meanwhile she used a very bright boy who sat at another table as a marker and tried to keep up with him. This was very difficult, since the other children were always trying to see into her copy, which she thought was all wrong, and concentration was an effort. She would however often do extra work at home and kept well ahead of the class in mathematics. She became very annoyed if the teacher skipped pages in the book and upset her private arrangement. While using her for their purposes, the same children, in the school yard, excluded her at every opportunity. By her own account, when she appeared in the yard, if the game being played was one at which she excelled, it was instantly changed to one in which she had no interest. The result was that she had no one to play with. She used to organise games for small boys on the street.

The second interview with this child differed markedly from the first. From being almost totally unemotional and suspicious and uncommunicative, the child had been changed into a lively, attentive humorous one. Both parents and teacher expressed delight and amazement at the new turn of events. The interviewer had gone to great lengths at the first interview to show acceptance for of the child, but this could not have accounted for the total transformation which had taken place in the intervening months. So what had happened?

The child had been moved to a new table where she sat beside the boy whom she had used as a marker for her

academic progress. This may have been because the teacher was now in possession of the Ravens' results. She had said that she had not expected the child to do so well (75th percentile). The child stepped up her work and at one stage was reading a book per day, to keep up with this boy. Her place on the boys' team was accepted and the fact that her teacher was a sports enthusiast who obviously encouraged this activity can only have helped. A girls' football team had started in the locality and this contributed to making her feel more socially acceptable. She no longer needed the reassurance of a parent's presence at her various activities, and her mother who had been reluctant to allow her go as far as the park unsupervised now gave her considerable freedom. This was made easier by the fact that she had acquired a boyfriend, another football enthusiast, whose mother supervised the activities in the park unobtrusively from a distance. She had negotiated weekends free from housework. Her parents were delighted with the change in her. According to her father she was "radiant, bursting with enthusiasm" and had begun to live again.

Jane still disliked school, but went very early in the morning for games. Schoolwork was too easy. She "liked real hard maths. problems, but they're usually real easy". The teacher skipped the English questions in the reader which required higher order thinking skills or creative response. She got "excellent" in all her tests and her mother was delighted, as was her teacher. To the question "Do you think that what you do in school really matters?" she

replied: "No, it's not a real test or anything - like exams." She said she would not miss it if she did not have to go.

Her Raven's score when tested at school was at the 75th percentile, not high enough to meet the criteria for inclusion in the study, but she had been retained on account of the mother's belief in her giftedness, and when the unfavourable school situation came to light, she was tested again at home many months later and scored at the 97th percentile, without any apparent effort. This was after the favourable changes in her social and academic life had taken place

Several themes emerge here. A combination of demand that she engage in "women's work" at home and lack of acceptance at school had resulted in depression, isolation and underachievement. This child has suffered greatly from role strain - being unwilling or unable to play the role of good little girl in frilly dresses playing with dolls. While there was some pressure from home to conform in dress, at least, the greatest pressure came, not as one might have expected, from boys, but from other girls, who bullied by exclusion. Secondly, while the school was making strenuous efforts to develop the child socially, the fact that she was spending most of her day beside children of vastly inferior ability seemingly had not been noticed, and even when this was corrected, the fact that she was getting extremely high marks was greeted with relief and pleasure, but not as an indicator that work of even greater challenge might be in order.

Brendan, aged ten was in sixth class. This was the best sixth class in a large school, although in truth it contained children of every ability level. Brendan worked hard, putting in two and a half hours per night at homework and doing extra at weekends in preparation for the entrance examination. The actual schoolwork bored him although he was grateful that the teacher tried to inject humour into the proceedings. The class contained a few "messers" who wasted time and Brendan resented the fact that the teacher often had to explain things again and again because these were not paying attention in the first place. He picked a seat at the back and day dreamed when things got really boring. The fact that they all worked as a class meant that speeding up was impossible. He would have preferred group work where consultation would be allowed, but by the end of the first term none had been done. His school performance was very good but unspectacular, averaging 95% in mathematics and 70% in English (probably reflecting his disinterest in reading). He had no specific class responsibilities although he often volunteered e.g. to go on messages, to get a break from the classroom. He learned music at school, sang and played an instrument. The musical group of which he was a member held an All-Ireland trophy.

Unlike most of the children in the study he rarely read a book. He listened to music in bed for hours and often was still awake at midnight. Getting up for school was thoroughly disagreeable, although he did come in early to

indulge his other passion, football. He wanted to be a professional footballer and had overcome a serious medical disability to become Player of the Year .

At school he seemed popular with most boys. He had no local friends as his home bordered on a rough neighbourhood and he avoided bad company. His mother saw that the children had plenty to occupy them at home. All had chores for which they were paid and the money was used to purchase expensive leisure items. Friends from school were always welcome, but one of his brothers seemed to be his best friend.

This child was an achiever in fields where his interests lay. The problem was, that although he knew that school mattered for getting a job, try as he might, he could generate no enthusiasm for most of the subjects. Being paced by the class, which was of very mixed ability was a constant annoyance. The fact that fifty percent of the pupils were disadvantaged and that the area suffered from appalling social problems made the teacher's task very difficult. The lack of inter-pupil consultation during class time added to the boredom. The teacher had no groups "because the class is streamed already". He did however introduce extra material and harder problems to keep the cleverer ones interested. Availability to the teacher of more precise assessment techniques might have resulted in this pupil being assigned more complex work. The teacher seems not to have been aware of the enormous range of abilities of his pupils.

Tanya, aged ten years and four months, was in fourth class. She came from a family of high achievers. Her house was stuffed with medals and trophies. Her older siblings had won awards at regional and national level. Her mother felt very strongly about the value of a good education and the need to plan ahead for it. She encouraged her children to do their best and aim high ; "If she says she wants to be a nurse, I say 'why not be a doctor' - people will put you down enough". She taught Tanya to read before school. However there was no direct pressure to spend hours slaving over lessons and in fact the child shot through her homework, often having most of it completed during free time at school or in the car coming home. She was not a committed reader - at most one book per week. She spent most of her free time at home watching television or creating fantasy worlds for her dolls.

At school she was often first finished. She work very hard and her results always hovered between A- and B+ in mathematics and English and she obtained "very good" for everything else except gym. To her teacher she seemed hyperactive and under extreme pressure to get everything right. She felt that the child was too insecure to be outstanding. There was speculation that the pressure to achieve might be coming from the home. Even though there was no evidence of direct pressure a bright child in a family of high achievers, was bound to absorb the expectation that she also should produce good results. The

fact that some of the others were sitting state examinations meant that family conversation inevitably revolved around the points system and subject choice. She sometimes tried to compete with her older sister in Irish. She was also the youngest and regarded (jokingly?) as the "great white hope" of the family. She talked constantly at school, even when the teacher was telling a story, although she rarely contributed to class discussions and her general knowledge seemed limited to what she picked up at school. Not being allowed to talk about anything except work during class was a trial to her. She had been a chatterbox as an infant and she was sent to school at four partly for that very reason. The street where she lived presented serious traffic hazards, so school served a dual purpose as a place for learning and socializing. While not regarded as a leader by them, she was not unpopular among her peers.

She had won some important dancing trophies and several evenings per week and most Sundays were devoted to this activity. She also swam, but not competitively. According to her mother, "she never does anything unless she does it well".

She liked school. The children were taken out on lots of trips. The teacher explained things well and did not ask too many questions- just let them get on with the work. She preferred more difficult questions, and while she got a lot of these in Irish, mathematics was mostly sums. Her Piers-Harris score was extremely high and she did not see herself as particularly anxious. A high need to achieve does not necessarily cause anxiety, but when taken together with her

constant chatter, the teacher may have wrongly interpreted it as such. If anxiety were indeed a problem, spending so much time in activities which she regarded in achievement terms and where a family record of success was at stake would probably account for this. Tiredness could also be a factor. More time spent in less highly structured situations with other high-ability children where ideas could be freely discussed and friendships developed, might have been beneficial

Michael aged twelve years and nine months was in sixth class. He lived in a no go area of the city where mugging and "joy-riding" were rampant and where children from the local school were almost as likely to end up in jail as in a job. Nevertheless he had got small paying jobs from time to time and had gained access to a private library. His was an atypical family. His parents, both from large families, had no secondary education, but his mother in particular took an active interest in the child's schooling. They could not help out with sums etc. but made up for this by simply enjoying their child's progress: "He's interested and interesting- you could sit back and listen to him". He was very conscious of the fact that he came from a different home background and not letting himself or his parents down mattered more to him than anything else. He worked hard at school where he was popular and seen as a leader. He preferred hard questions because he liked a challenge. These were rare however. Often he was in danger of dozing off when the teacher was explaining the same sum over and over. He usually knew the answer before the sum was even written on the blackboard. Tests were a source of tension but the teacher tried to ease this by cracking jokes. His mother calmed him down before exams, telling him not to worry. He was confident of his ability, coming first in the class overall, but was also conscious of the possibility of letting himself and his parents down. Homework posed a huge problem for him. The teacher demanded a high standard and

"would try to catch you out all day if it wasn't right- though sometimes he turned a blind eye". He took two and a half to three hours to complete his homework in the months before the examinations. Being a perfectionist he would often tear out a page and start again if there was one mistake. He was very involved in sport, being the captain of a football team. He played two matches on weekends for different clubs and trained most days after school for the school team. School rules decreed that if chosen for the school team training was compulsory. This effectively meant being at school until 4 p.m. several times a week and longer if there was a match. He also came in early in the morning because the ambitious footballers liked to have a game then. This was serious football- he would have preferred some fun. He was very popular and worried that he would be letting his friends down if he failed to turn up for the morning session. This type of games-cum-homework schedule combined with his commitment to two other clubs meant that often his reading had to be curtailed and he had no time for just fooling around and playing impromptu games on the street. He was often cranky after a match and lost his temper easily. He felt guilty about this because he dearly loved his family. Often he did not finish homework until 8.30 p.m. because he was too tired to think straight, and after a match he often awoke feeling sore and in was bad humour all day.

Apart from homework he loved school a lot but was in a certain amount of awe of the teacher. The strict discipline required in this school meant that pupils were very

conscious of teacher surveillance. He said that he could work faster if his teacher was out of the room or if he was told that he could go on with no set limit. This was rarely allowed. Group work was also discouraged although he would have liked to work with a partner. This child according to his mother was "a terror for the library" according to his mother and after the entrance examination had done private research on two of his favourite topics - football and the environment. These were not for school but just because he "wanted to know".

This child suffered because he saw the two main areas of his life in achievement terms. He had a high reputation to maintain in both and was not prepared to sacrifice either. The interaction between the demands of both areas was the point of stress. The timing of examinations and Confirmation in the same year exacerbated the situation. If he did not have to spend so much time at homework which was mostly high-volume routine work, he could have enjoyed his football more. Allowing him to proceed faster in school would probably have eliminated the need for homework in the first place. Project work on a cooperative basis would have reduced the feeling of constant surveillance, but examination pressure left the teacher with little discretion in the matter.

Louise, aged twelve years and nine months, was in sixth class. She spoke clearly at an early age and could recognise words before school. In the Infants class she watched but did not mix. She was bullied at various times in the early years. She lived in a rough inner-city area and was often called names and had stones thrown at her. Her parents were horrified at the way in which local children were left out on the streets from the time they could toddle. By contrast with the general mayhem which prevailed on the street, this home was a secure haven. The parents enjoyed listening to their children from babyhood, took them on interesting trips and made time at bedtime to discuss school and problems. Social life centered on the school and on two clubs from which the children were always escorted home.

Louise attended a non-local school. The atmosphere was congenial and parent-teacher co-operation was the norm. Pupils often worked with partners or with small self-chosen groups. Louise was obliging and cooperative by nature and chose her workmates on the basis of shared interests, not necessarily similar ability. The subjects she enjoyed most were art, music and drama. The teacher sometimes gave them difficult mathematics problems. She often volunteered to do these and enjoyed getting them right because "it makes you feel good". Schoolwork presented no problems. She did however find it hard sometimes to think of any ideas for essays, but remarked that if she was interested she could do

it fast. Her work was done carefully and she took a pride in doing it well. She was an avid reader and this was actively encouraged in school. In the classroom she had no special responsibilities as these were shared, but lately at home she could take charge and serve up dinner when her mother was absent for short periods. She suffered from headaches on the way home from school, but this may have been caused by worry about bullying gangs nearer home.

She did not want to be important and had modest ambitions - maybe a hairdresser or a chef. Her teacher felt she was "university material". She needed a push to get involved in activities, but then gave it her all. She had won several best all-rounder prizes in club competitions. Overall this was a happy, well adjusted child, performing at a high but not exceptional level at school and contented at home. Later, in secondary school, she was still performing well and had been placed in the "A" class on the basis of her results in science.

Karl, aged ten years and five months was in fourth class. He had been reading and writing by the age of four. Now at age ten he read one or two books every day and had his own library. He had exhausted the school library and in spite of his teacher's disapproval would sneak back into school to borrow books and tapes from a previous teacher who had encouraged him and who followed his progress.

He spoke of writing a very long story: "The teacher didn't bother to read the whole story, just two pages and then she ticked the rest - I don't mind - I couldn't leave it without a proper ending". His school reports were excellent. He had been given a special mathematics book at his mother's suggestion and the teacher corrected the work. He rushed everything and often made silly mistakes. Being finished first meant being sent on messages. He also had a regular weekly responsible task to perform. At school he was regarded as bossy and a boaster, and was subject to bullying and exclusion tactics. He had one friend and they were both excluded from all activities in the yard. He was often complained to the teacher for things he had not done and given lines as a result. Harrassment on the way home was common. He was now careful to avoid confrontation even though he had taken self-defence lessons. He did not play on the streets because there were always fights. He was also wary of appearing to boast and required reassurance before the first interview that if he told the truth his answers would not be interpreted in this way.

Activities outside of school included Explorers, Cubs, band, self-defence, drama and basketball. One of his suggestions for an environmental project had been acted on by his scout group. He showed promise at swimming and was invited to join a club for competition purposes. He had taken a star part in an amateur musical which involved solo singing. Generally he was successful in everything he undertook with the exception of ball games which did not interest him as he was not a fast runner.

His unpopularity at school seemed to be due largely to cultural differences. In an area where long-term unemployment was the norm and the value of education not immediately apparent, a highly motivated, achieving child who had enrichment opportunities not commonly available was bound to stand out. His very success and his tendency to want to organise and take the lead met with jealousy and a resistance which seemed aimed at cutting him down to size. He was not desperately unhappy however, and, apart from perceiving himself as unpopular at school, his self-concept was above average. His various extra-curricular activities provided enough outlets for his talents and opportunities to mix with others in circumstances where skills were fostered and achievement recognised. The Explorer Club gave him the companionship of his intellectual peers.

Nora aged nine years, nine months, was in fourth class. She came from a close-knit family with roots in rural Ireland and imbued with a love for Irish language and culture. She received constant stimulation from an early age. She played the piano and enjoyed classical music. She loved the Irish language and history, an enthusiasm fuelled by her grandparents. The ethos of the family contrasted sharply with that of the neighbourhood where unemployment was rampant and the crime-rate high. She was conscious of the cultural divide. While other children were still swinging off lampposts after dark, she was tucked up in bed reading books of Irish interest. At school they shared jokes about late-night television programmes from which she was excluded. She was isolated in the yard, the others claiming that her games were "stupid". Her only friend was a newcomer to the area. She did however play three organised ball games after school and thoroughly enjoyed them.

Nora thought that school was "the best thing that ever happened" because it led to a good job and she could evaluate the various subjects in terms of their usefulness in this regard. She worked hard. Because she always got "A"s she worried about tests in case her standards would slip and had been known to cry her eyes out because her marks did not reach her expectations - even though she came first in the class! The teacher taught everyone as a class, but those who were finished were allowed to go on to "

Composition and Grammar" questions or to "Figure it Out". They were not allowed to go on to work suitable for a higher class or to a different topic. Nora's love of learning had alienated her from the class. She was often bullied and teased as a knowall. She scored highest in the class in mathematics. Her teacher was afraid of alienating her further by giving her more advanced work or more responsibilities, even though a gifted boy who was also bullied used a more difficult mathematics book. She was aware that this was unfair, but saw it in the light of a damage-limitation exercise while she tried to think of a way round the problem. Nora understood her teacher's dilemma. She liked her teacher because she had control, had turned "dosseys" into workers, always gave more work when needed and had a sense of humour. The problem of lack of progress remained and Nora compensated by doing extra writing at home, both in Irish and in English. This work was of a very high standard both in content and presentation and was often shown to her teacher and to a former teacher who had encouraged her and who usually made a big fuss about it. She was also researching her own science project. Her mother described how, once having made up her mind to do something she would "plan and execute". While being a very affectionate child, she was also extremely stubborn when her ideas were called into question and would only respond to logical negotiation. From an early age she had always wanted exact information which she would then check out for herself. This type of attitude probably accounted for her love of research. Since having been assessed as gifted she

had joined an Explorer club for children of similar ability which she enjoyed.

Cathal, aged twelve, was in sixth class. He was reading Ladybird books and could write his own name by two and a half to three years. Another gifted child in the same class described him as a genius. His academic record was near perfect and he had won a prestigious scholarship. Both his mother and his teacher described him as self-motivated and his schoolmates marvelled at the disciplined way in which his daily timetable was organised. This was necessary because he was deeply involved in music. He played in a band which required ten hours practise per week as well as public appearances and occasional trips away. He had reached Grade 4 in a second instrument and played a third in school. He also sang in concerts. He worried about getting his music exactly right although he had won a top award for this.

School work was a doddle by comparison. He had all the books read before the year started. Although a star pupil he hated school. He had to stay on the same page as everybody else and often lost concentration through daydreaming. English and mathematics were especially boring since he knew it all before. When asked whether he would stick at a really difficult problem he said he would "give it a few minutes" -presumably that was all that was needed!

He had a particular interest in nature and the environment and spent his money on books relating to these. He invariably listened to the news and had a good grasp of general knowledge. He was captain of a quiz team. Although

a reader, he did not like writing essays and claimed to have difficulty thinking up ideas for them. Perhaps this was because of his preference for fact over fiction. Questions demanding long answers were also unacceptable -he did not like writing anyway.

He was given a fair share of responsibility e.g. minding the house. He was also given freedom to go on field trips to study nature with a friend. While he played with local children during the holidays and got involved in non-team sports like golf and tennis, school friendships were a matter of some anxiety. He was teased and had tricks played on him. He felt this might be because he had no commonsense and was awkward in ordinary social situations or because he did things differently to others. His teacher described him as timid and reported him as having a long history of being bullied. He was second youngest in the class (six months younger than average) and the youngest, another gifted child had a similar experience. Now, in sixth class, the bullying appeared to have eased off somewhat. This improved situation was attributed to the fact that classmates respected his superior intelligence and that he had become involved in football and P.E. although "not the athletic type". Presumably intelligence had become more salient as a desirable asset as examinations loomed. From a class of forty-two he received sixteen nominations for leader and thirty one for quiz team membership. His mother did not seem to be aware that bullying had taken place, but felt that he was innocent and easily led into mischief. He had two friends who shared his interest in nature, but

nevertheless saw himself as well below average in popularity.

Cathal was indeed self-motivated. He had two ambitions, to become a concert pianist or Taoiseach. He was well on the way to fulfilling his first one but the second was more problematic. Although very well versed in current affairs, his music schedule combined with school and homework meant that normal social contacts were at a minimum during school term. Failure to get involved early on in sports created a further social barrier. For this child, allowing him to progress at his own rate in school, introducing more complex material and possibly even accelerating him would probably make school less tedious. Making homework voluntary might give him time to follow his musical career with all the dedication it required and still have time for the normal rough and tumble of social intercourse.

David, aged ten, was in fourth class. He could read, count and add before school. At playschool he was disruptive and the pattern continued at primary school. He was frustrated could not relax and had to be taken for relaxation therapy. His mother described the last four years as "hell". He suffered from hayfever and asthma, was bullied and teased at school. He often sought attention at home because his younger sibling who had a severe medical problem took up most of the mother's time and energy.

This year was the first to show any real improvement. The younger child had become more manageable. He had a new teacher. He had taken up football and drama. Within a year of joining a local soccer club he had become "Clubman of the Year". He wanted to be a football star and played the game with a vengeance. He gave up swimming because it interfered with training. Winning was very important to him. At school he was always pushed to the back when teams were being picked. He loved to organise and control things and was always inventing clubs for people to join. Taking his cue from his father, who was training a team, he started his own rugby leagues for younger children from the street. His teacher reported that he had an encyclopaedic knowledge of football as well as of many other areas of interest. He had also taken up drama very enthusiastically and had won a medal for singing. He had joined an Explorer club but found that the activities were too structured - too much like school.

At school he showed an initial interest in a new topic,

but enthusiasm soon waned. He was best at English essays and showed definite style. He also wrote at home for fun. His teacher encouraged him to read out his essays and discussion and literary criticism followed. Although his overall results were good, he came about mid-way down the class in English and mathematics. He said he often slept through mathematics while the teacher explained again and again. The teacher got annoyed if a child tried to go on while the basic concept was being explained as then the weaker ones did not listen. The brighter children did however have an extra "Have a Go" mathematics book. The whole class was working on the same English reader, although this child had finished four workbooks by the end of the year. He liked making choices, - questions like "What happened next"-but, said that his teacher skipped most of that type of question. Most of the answers involved just copying out of the book. Homework was based on schoolwork and therefore did not contain anything new. It was supposed to take an hour, but, because his medicine made his hand shake, it often took longer. He often came home depressed, especially since homework was also set at weekends and this cut into football time. He just wanted to be free. He was sleepy at school on Mondays. He rarely slept before midnight anyway, but he had football training and drama on Saturday and a match on Sunday.

His present teacher was described as tolerant by the mother. He praised the child's efforts a lot and tried to build positive self concepts. He shared the child's interest in football and history. The child liked his

teacher because "he doesn't let us get away with it" and "he makes everybody laugh". He felt it was important to show the teacher that he wanted to work. His teacher felt he was capable of great things, although this was not reflected in his school achievement. He wondered whether David would ever harness himself in any particular direction. David actually had his own vision of the future. "I'll probably get married and have two girls and two boys".

David's behaviour appeared as disruptive and hyperactive at school. He was described as lacking concentration and easily distracted. However he was quite capable of focussing his attention to good effect when the topic was of concern to him. His broad and deep knowledge of many subjects showed that he actively sought out many and varied stimuli and organised them purposfully. His problem probably was that school could not possibly provide the richness of experience that he required. More complex subject matter was needed and greater freedom to access information as required. The teacher had in fact gone to some trouble to equip the class with reference books at his own expense. However, as was common in many of the classrooms studied, project work took place later in the year. The time spent by the brighter children on extra workbooks might have been more fruitfully spent on researching subjects of interest to themselves. This solution would have created other problems as this particular classroom was very cramped and had poor sound insulation, so noise and freedom of movement had to be closely monitored.

APPENDIX B

PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

This is a 80-item self-report questionnaire suitable for individual or group administration. It is designed to provide a measure of self-concept defined as a "relatively stable set of self-attitudes reflecting both a description and an evaluation of one's own behaviour and attributes" (Piers, 1984). It consists of 80 statements (e.g. I wish I were different) to be answered yes or no depending on how the child really feels about her/himself. A mixture of negatively and positively worded items is used. The responses are scored to evaluate both general and specific dimensions of self-concept. The score reflects the number of items answered in the direction of positive self-concept. Overall global self-concept can be represented by a total raw score, a percentile score and an overall stanine score. Six "Cluster Scales" derived through extensive factor analysis are available reflecting self-concept on the following dimensions: Behaviour, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity and Happiness and Satisfaction. According to the Manual these scores may be used to generate clinical hypotheses and identify areas of strength and vulnerability in individual children. The Revised Manual (Piers, 1984) reports relatively high internal consistency for the test as a whole and test-retest reliabilities from .62 to .92 with test-retest intervals ranging from a few weeks to six months. Correlations of .77 and .78 with two widely used

self-concept measures are reported. Conflicting results have been reported for discriminant validity studies. The factorial composition of the cluster scales has been found to be unstable in several studies. The scale was standardised in 1966 on a group of Pennsylvania schoolchildren. A variety of other studies report higher means and lower standard deviations for different populations (Piers, 1984). In spite of these problems the scale does give a direct measure of how children perceive themselves. The Manual suggests that it be used as a screening device for social and emotional functioning. It can also to be used in conjunction with clinical data from other sources to generate hypotheses on a child's self confidence and ability to function. (Cosden, 1985).

N.B. For the purposes of this study, the items were presented in the same order but in an interview format, and the child was invited to comment on the reasons for her/his choices.

WECHSLER INTELLIGENCE SCALE for CHILDREN - REVISED
(W.I.S.C.-R).

The W.I.S.C. is one of the most widely used tests of intelligence. It consists of six verbal and six performance sub-tests, two of which are optional, and provides verbal, performance and full-scale I.Q. scores. It is based on the notion that intelligence is a composite entity. A Full-Scale I.Q. of 130 represents a score at the 98th percentile.

The manual reports satisfactory reliability co-efficients, averaging 0.94, 0.90 and 0.96 for Verbal, Performance and Full-Scale I.Q.s across all ages. Reliability and stability of the Full-Scale scores are considered to be as high or higher than those of other tests of intelligence (Vernon,1985). Average correlations between Stanford-Binet I.Qs and W.I.S.C.-R Verbal, Performance and Full-Scale I.Qs were .71, .60 and .73 respectively are reported in the manual (Wechsler, 1974). Some studies have reported relatively good validity for predicting scholastic performance. (Vernon,1985).

STYLE OF LEARNING AND THINKING (S.O.L.A.T.)

The S.O.L.A.T. was designed as a simple instrument which could be group administered and self-scored and which would provide information about a child's thinking style. It is based on the notion that people have different preferred thinking styles and that knowledge about these can facilitate learning. According to the manual the left cerebral hemisphere is assumed to be specialized for analytical, logical and propositional thought and the right hemisphere for non-verbal, visuo-spatial and appositional thought. The left is associated with sequential and the right with holistic processing of information. The Elementary Form of the S.O.L.A.T. (Torrance, Mc Carthy,& Smith,1988) used in this study contains 25 items, each containing two statements, one reflecting a preference for

right-brain processing and the other for right although not always in the same order e. g. Item number 3:

- I like to daydream about things to do
- I like to plan real things to do.

The child may check one, both or neither response. Answers are scored by checking the number of right, left and whole-brained (both checked) responses. These raw scores may then be converted into percentiles.

While validity studies are underway for the Elementary form of S.O.L.A.T. at present its validity rests on the validity available for forms A, B, C, and CC. The items basically came from the same pool and were derived from the same research findings on hemispheric functioning yielded by a review of the pertinent literature. Evidence of construct validity of the basic forms A.B. and C. is given in the manual showing positive and mainly significant correlations between scores on the right scale and scores on a battery of creativity tests, and negative correlations between scores on the left scale and scores on the same battery. The manual also reports satisfactory test-retest reliability for the Elementary Form (Torrance, 1988).

DRUMCONDRA ATTAINMENT TESTS

The Drumcondra Attainment Tests are a set of standardised measures of attainment in English, Irish and Mathematics developed specifically for Irish Schools and

based on the national syllabus. They are set out in a multiple-choice format and are suitable for group administration. Raw scores can be converted into standard scores or percentiles. National norms are available.

THE STANDARD PROGRESSIVE MATRICES (S.P.M.).

The Standard Progressive Matrices (S.P.M.) is a British test developed by Raven and published in 1938. It provides a reliable estimate of a person's capacity for observation and clear thinking. According to the manual "The S.P.M. is a test of a person's capacity at the time of the test to apprehend meaningless figures presented for his observation, see relations between them, conceive the nature of the figure completing each system of relations and by so doing develop a systematic method of reasoning". The Raven's test is widely used because it is believed to be "culture-fair". Only 9% of the within-age variance is explained by social background. The test works -"scales"- in the same way for children from different socio-economic backgrounds. (Raven, 1983). It is a test of productive rather than reproductive thought. Retest reliability in groups of older children range between .70 and .90. Correlations with both verbal and intelligence tests vary between .4 and .75 (Anastasi, 1982) It is widely believed to be the best available measure of "g". "Several factorial analyses suggest that the Progressive Matrices are heavily loaded with a factor common to most intelligence tests (identified with Spearman's "g" by British psychologists), but that

spatial aptitude, inductive reasoning, perceptual accuracy and other group factors influence performance". (Anastasi, 1982). The matrices are grouped in five series of increasing difficulty. There is no time-limit and it is suitable for individual or group administration.

Both British and Irish norms are available. The Irish norms are lower because the Irish standardization sample they omitted the 4% of children in private schools most of which have entrance tests and thereby "cream off" the children who are performing best at school. The British norms are also more recent (1979 v 1973). For this reason, the British norms are used in this study.

The decision to use this test was taken as a result of findings from the Gulbenkian Research Project carried out by Joan Freeman (Freeman, 1979). In "The I.Q. as a measure of intellectual giftedness" (Freeman, 1984) she analyses the data from children who scored at the 99th percentile on the S.P.M. but who were also tested with the Stanford-Binet. She concluded that "The I.Q. is an unsuitable measure of intellectual giftedness as it is progressively more contaminated with environmental influences particularly from I.Q. 130 upwards" and that "Non-verbal tests are the fairest and best measures of innate ability."

STYLE of LEARNING and THINKING - SCORES

Numbers in the left margin represent Subjects.

Other numbers represent Right, Left and Whole-Brain responses to the items on the questionnaire.

	Right	Left	Whole-Brain
1	8	6	8
2	18	7	0
3	12	4	7
4	10	7	5
5	6	9	8
6	17	2	5
7	14	7	4
8	13	5	7
9	2	9	13
10	3	9	2
11	12	5	8
12	13	5	7
13	-	-	-
14	4	11	8
15	9	9	7
16	14	9	2
17	3	11	11
18	6	6	13
19	5	13	6
20	9	13	3
21	13	8	4
23	16	8	0

RAVEN'S STANDARD PROGRESSIVE MATRICES - SCORES

Figures in the left margin represent subjects.

Other figures represent percentile scores on the S.P.M. with scores on the W.I.S.C.-R in brackets where these were available.

	S.P.M.	W.I.S.C.-R.
1	98	(Very Superior, i.e.130+)
2	99	
3	99	
4	99	
5	99	
6	99	
7	86	(Very Superior)
8	97	
9	97	
10	97	
11	99	
12	98	
13	99	
14	97	
15	97	
16	97	
17	97	
18	99	
19	94	(Very Superior)
20	99	(Very Superior)
21	97	
23	99	(Very Superior)

PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE - SCORES

Figures in the left margin represent Subjects.
 All other figures represent percentile scores.
 Column 1 = Behaviour
 Column 2 = Intellectual and School Status.
 Column 3 = Physical Appearance and Attributes.
 Column 4 = Anxiety
 Column 5 = Popularity.
 Column 6 = Happiness and Satisfaction.
 Column 7 = Total Score.

	Column:	1	2	3	4	5	6	7
1		6	24	48	70	38	20	27
2		65	70	73	81	69	90	87
3		95	90	91	70	69	90	95
4		32	38	25	3	2	4	18
5		95	98	97	70	86	90	99
6		95	90	73	37	27	90	79
7		32	60	73	70	9	90	60
8		81	70	73	37	38	72	71
9		95	98	84	97	52	90	97
10		40	30	25	26	13	20	31
11		51	49	73	81	38	90	79
12		81	90	97	81	52	90	94
13		81	60	36	48	69	39	69
14		95	38	36	70	79	39	71
15		65	60	91	70	97	90	79
16		95	98	84	90	69	72	98
17		65	81	91	70	86	72	85
18		95	38	97	70	83	90	93
19		95	90	36	97	9	72	74
20		95	81	60	58	5	72	74
21		95	49	17	37	13	39	38
23		81	81	97	70	38	72	87

PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

1	My classmates make fun of me	yes	no	21	I am good in my school work	yes	no
2	I am a happy person	yes	no	22	I do many bad things	yes	no
3	It is hard for me to make friends	yes	no	23	I can draw well	yes	no
4	I am often sad	yes	no	24	I am good in music	yes	no
5	I am smart	yes	no	25	I behave badly at home	yes	no
6	I am shy	yes	no	26	I am slow in finishing my school work	yes	no
7	I get nervous when the teacher calls on me	yes	no	27	I am an important member of my class	yes	no
8	My looks bother me	yes	no	28	I am nervous	yes	no
9	When I grow up I will be an important person	yes	no	29	I have pretty eyes	yes	no
10	I get worried when we have tests in school	yes	no	30	I can give a good report in front of the class	yes	no
11	I am unpopular	yes	no	31	In school I am a dreamer	yes	no
12	I am well behaved in school	yes	no	32	I pick on my brother(s) and sister(s)	yes	no
13	It is usually my fault when something goes wrong	yes	no	33	My friends like my ideas	yes	no
14	I cause trouble to my family	yes	no	34	I often get into trouble	yes	no
15	I am strong	yes	no	35	I am obedient at home	yes	no
16	I have good ideas	yes	no	36	I am lucky	yes	no
17	I am an important member of my family	yes	no	37	I worry a lot	yes	no
18	I usually want my own way	yes	no	38	My parents expect too much of me	yes	no
19	I am good at making things with my hands	yes	no	39	I like being the way I am	yes	no
20	I give up easily	yes	no	40	I feel left out of things	yes	no

SAMPLE

41 I have nice hair	yes	no	61 When I try to make something everything seems to go wrong	yes	no
42 I often volunteer in school	yes	no	62 I am picked on at home	yes	no
43 I wish I were different	yes	no	63 I am a leader in games and sports	yes	no
44 I sleep well at night	yes	no	64 I am clumsy	yes	no
45 I hate school	yes	no	65 In games and sports I watch instead of play	yes	no
46 I am among the last to be chosen for games	yes	no	66 I forget what I learn	yes	no
47 I am sick a lot	yes	no	67 I am easy to get along with	yes	no
48 I am often mean to other people	yes	no	68 I lose my temper easily	yes	no
49 My classmates in school think I have good ideas	yes	no	69 I am popular with girls	yes	no
50 I am unhappy	yes	no	70 I am a good reader	yes	no
51 I have many friends	yes	no	71 I would rather work alone than with a group	yes	no
52 I am cheerful	yes	no	72 I like my brother (sister)	yes	no
53 I am dumb about most things	yes	no	73 I have a good figure	yes	no
54 I am good-looking	yes	no	74 I am often afraid	yes	no
55 I have lots of pep	yes	no	75 I am always dropping or breaking things	yes	no
56 I get into a lot of fights	yes	no	76 I can be trusted	yes	no
57 I am popular with boys	yes	no	77 I am different from other people	yes	no
58 People pick on me	yes	no	78 I think bad thoughts	yes	no
59 My family is disappointed in me	yes	no	79 I cry easily	yes	no
60 I have a pleasant face	yes	no	80 I am a good person	yes	no

Style of Learning and Thinking (SOLAT)

Elementary Form

By Torrance, McCarthy, & Smith

Name _____ Age _____ Grade _____

School _____

Directions Place a check mark in the blank if the statement is true for you. You may check one or both of the statements in a pair or none--whatever fits you.

- 1 I like make-believe stories
 I like stories about real people and things
- 2 I remember things I've tried to learn
 I remember lots of things I've never studied
- 3 I like to daydream about things to do
 I like to plan real things to do
- 4 At times I like music when I read or study.
 At times I need total quiet when I read or study.
5. In school, I frequently look out the window or at other things when the teacher is talking
 In school, I always listen carefully to the teacher and other children.
6. I keep my crayons in lots of different size pieces with the paper wrappings off so I can use the tops, bottoms, and sides of them
 I keep my crayons lined up in my crayon box with all their wrappers on them
7. I like to work in my own way
 I like someone to tell me how to do my work.
- 8 I easily change from happy to sad or sad to happy.
 I usually stay happy or sad for a long time.
- 9 I like to be silly and play around
 I like to get to work and not be silly.

- 10 ___ I frequently forget things I am supposed to do
 ___ I almost always remember the things I am supposed to do
- 11 ___ I think well lying down on my back.
 ___ I think well when I sit up straight
- 12 ___ I like school work which lets me do it the way I want.
 ___ I like school work which has one right way to be done
- 13 ___ I like to work on lots of things at one time.
 ___ I like to work on only one thing at a time
- 14 ___ I am good at remembering people's names
 ___ I am good at remembering people's faces
- 15 ___ I put things neatly in order
 ___ I group things that are alike
- 16 ___ Thinking of new ideas is fun
 ___ Finding out the reasons for things is fun.
- 17 ___ I like school work that has one right answer
 ___ I like school work that lets me give my own ideas
- 18 ___ I like classes where I do things on my own
 ___ I like classes where I listen to the teacher do most
 of the talking
- 19 ___ I like to do the same things at the same time every day.
 ___ I like for things to change each day
- 20 ___ I like to learn from pictures
 ___ I like to learn from words
- 21 ___ I like to learn by trying things out.
 ___ I like to learn by reading or talking about it.
- 22 ___ I sometimes use things in the kitchen in other ways
 than what they were made for
 ___ I don't like to make do by using something for which it
 was not made for
23. ___ I like games that come with the rules already made up
 ___ I like games that let me make up my own rules
- 24 ___ I like to read and listen.
 ___ I like to see things and imagine.
- 25 ___ I can usually tell what people are thinking.
 ___ I can't usually tell what people are thinking.

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