THE RELATIONSHIP BETWEEN ACADEMIC SELF-CONCEPT, ATTAINMENT AND PERSONALITY IN 16-19 YEAR OLD STUDENTS IN A SIXTH FORM COLLEGE

BY

E. MARGARET SUMMERFIELD, B.A., M.PHIL.

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ABSTRACT

The research examines a cohort of 364 16-17 year old students entering a sixth form college. The focus of the research is an examination of the relationship between academic self-concept, attainment and personality. Issues of gender and ethnicity were also examined. Data was obtained by the use of personality measures, students' self-estimates of success, examination results and information obtained from application forms, academic reports and Record of Achievement profiles. The students completed two personality measures on entry. The Student Self-Perception Scale was devised specifically for this research and was piloted on students from two sixth form colleges prior to use with the research sample. The Nowicki-Strickland Locus of Control Scale was also used as a validity measure. Basic statistics were obtained using a Pearson Product Moment correlation analysis and a frequency and cross-tabulation programme. A specific residual was generated using multiple linear regression analysis and used as a variable to indicate positive or negative attainment change.

A classification of students into identifiable types was carried out using cluster analysis by relocation methods. Differences between the groups were verified by discriminant function analysis. Profiles were constructed to describe typical group members in detail and to examine outliers who failed to qualify for group membership.

The hypothesis of a positive relationship between mastery and academic attainment was not sustained. Previous attainment would seem to be the major factor determining future attainment. Gender differences emerged on both the personality

and attainment measures. It was found that personality measures exerted a substantial effect on performance independent of ability. Cluster analysis revealed identifiable groups of students exhibiting varying patterns of relationship between personality, self-concept and attainment, which stood up well in terms of construct validity against previous studies. The findings have implications for all providers of education for 16-19 year old students

CHAPTER 1

INTRODUCTION

1.1 Statement of the Problem

Since the incorporation of post-16 education into a new Further Education sector by the Further and Higher Education Act 1992, the focus on this sector of the Secretary of State for Education and of the DFE has been intensified in terms of expected outcomes and improved qualifications for these students.

Whilst the instigation of this research pre-dates the 1992 Act, recent developments in the post-16 sector have made its purpose more acutely relevant.

For most students, opting back into the educational system on a voluntary basis at the age of sixteen - either of their own volition or because of a lack of viable alternatives - an experience of success is vitally important. On the threshold of adulthood, some will have achieved success already in their GCSE examinations and will be embarking on their chosen A-level studies. Others will have failed to realise their potential in year eleven of secondary school and, realising that they could have achieved more success, will be seeking to add to their qualifications towards entry to more advanced courses in the next academic year. Yet others will be returning for a year of further personal development, to take a work-related course or to improve on some vital basic skills.

National statistics published by the DFE (Statistical Bulletin: Issue No. 16/93, June 1993) have shown that the overall proportion of sixteen year olds in full or part-time education has risen over the previous five years from 65% to 80%. The proportion of sixteen year olds in full-time education has risen by twenty three percentage points in the last five years from 48% to 71%. This includes a 16% increase in the last three years.

The growth has occurred across the range of courses, apart from GCSE repeat courses which accounted for about a quarter of the total at the beginning of this period but only one seventh in 1993.

Further discussion of the statistical background to the study would lack relevance in this context as, although Sixth Form Colleges entered the Further Education sector in 1993, for purposes of comparison they are shown in current DFE Bulletins as having belonged there since 1979.

For these increasing numbers of students the question must be asked as to how trainers and educators can manage the transfer into a new educational sector, a new institution and new modes of learning most effectively? What do the students require of the new systems and structures which are in place to facilitate the learning process and fulfil their expectations of the offered provision?

Cotterell (1990) quotes large scale studies undertaken in Southern Australia (Power 1984) and in New South Wales (Sheret, Foreman and Ainley, 1988) which explore

the factors shaping the decision of the individual student to stay on at school after the statutory leaving age.

Many of the students in the studies had had positive experience of good achievement, satisfaction with school and parental encouragement. These students also have primarily academic interests. They enter the new sector with high expectations and positive attitudes.

Others, now entering post-16 education in increasing numbers, will have gained little satisfaction from school and would prefer to leave, but "through circumstances in the workforce beyond the control of the students and their families, they are forced to remain at school" (Power, 1984).

The beliefs about themselves that these students bring with them into the new situation will provide a challenge of a different nature to that of the academically orientated student.

There is a scarcity of studies on transfer at 16+, and one of the purposes of this research is to examine the progress of groups of students in the post-16 phase. Studies on children experiencing transfer from primary to secondary schools, however, show that information passed on from previous schools gives little immediate guidance about prospects of success in the new situation. In their major study on transfer from primary to secondary school, Nisbet and Entwistle (1969) indicated that the children who were most successful at secondary school were not

always those who had done well at primary school. They go on to say that there is a marked improvement in the validity of estimates (predicting performance) after the children have transferred to secondary school. This, they state, is a familiar finding in follow-up studies: performance at the initial stage of a course of study or training gives a better prognosis than any assessments prior to entrance to the course. The same authors found that current attainment was in fact the best predictor of future attainment.

Post-16, there exists for each student a set of externally assessed results. What is the status of the information passed on to the institution in this way? These results will be both a consequence and reinforcement of a student's perception of himself as a learner. Will Nisbet and Entwistle's findings still apply? What indicators of performance can we use to create a predictive map of a student's educational future? What will be the role of motivation and aspiration? What are the possibilities of changing attitude to maximise potential? Experience of working with one-year students in a Sixth Form College indicates that many year eleven pupils are grossly underachieving. Experience also indicates that most of these students wish for a fresh start and another opportunity to succeed. Unless the institution can assess and tap into the latent potential of these students, they will merely repeat old patterns of underachievement and failure and reject the new environment.

The present study wishes to address this issue and to seek ways of identifying student need on entry to a new course.

To this end, the primary focus of the study will be to examine the concept of self-perception, self-worth, in the context of a given educational experience. An instrument will be devised to assess the student's self-view in relation to parental view, siblings, peers, tutors and his own vocational aspirations. The study will look at the student's perceptions of the task in hand and how this affects the way in which it is tackled and the eventual outcomes. What is the level of commitment of a student on a given course? What effort will he make in order to attain his goal? What guarantees of success does he require? Will lack of immediate success or gratification lead to a rejection of the system or merely a demand for greater satisfaction?

The theoretical starting point for the examination of the relationship between the student's self-view and eventual outcomes is the work of Bandura (1989).

He states that:

> "Among the mechanisms of agency, none is more central or pervasive than peoples' beliefs about their capabilities to exercise control over events that affect their lives. Self beliefs of efficacy influence how people feel, think and act."

He goes on to ask:

> "Do self-efficacy beliefs operate as causal factors in human functioning?"

The research will attempt to address this issue and to identify mechanisms which will enhance self-beliefs of efficacy.

1.2 Background of the Research

With these questions in mind, the research was undertaken as a study of the whole year twelve intake of 1990 into a 16-19 Sixth Form College. The college is located in an inner-city area, on the edge of a working class estate. The intake to the college, whilst based on a historic relationship with eight "feeder" secondary schools, now draws students from a wide area encompassing both city and county schools - currently numbering 55 - and consisting of 92% of students from LEA secondary schools, 6% from Independent schools and 2% from other backgrounds. There are no adults.

The college is comprehensive in its intake, providing a range of A-level, GCSE and Vocational courses. In terms of ethnic mix, the college had in 1990 approximately 86% of white students, 7.4% of Asian students, 5.2% of Afro-Caribbean students and 1.1% of other nationalities including a number of Chinese students. Almost 10% of the students have English as their second language.

The college has a strong pastoral and guidance system, with the students organised into tutor groups with a personal tutor, a Group Tutor and two senior members of staff with a guidance brief.

The study has taken place over a period of two years on a sample of 364 lower sixth students on a range of courses. A Student Self-Perception Scale was devised specifically for the study, having been previously piloted on the previous year's intake

and the students of a neighbouring Sixth Form College. The scale was administered to the students in November of 1990. Other measures used were GCSE and other year eleven examination results, college reports, student and staff predictions of success at the end of the course and final examination results.

The advantages of the conditions of the study were multiple - relatively easy access to the students and to their personal details, co-operation from experienced colleagues in the administering of the Student Self-Perception Scale and the minimising of missing data. The disadvantages were also significant - over involvement in the situation, the danger of making subjective judgements about students and situations on occasions where these were inappropriate, and the essentially unrepresentative character of one institution within the system.

Reference must be made at this point to the fact that the college itself underwent a major change in its status and management during the course of the research. From being a Sixth Form College under LEA control, it became incorporated into the new Further Education sector created by the Further and Higher Education Act 1992. The college is now managed by the Principal and a Corporation consisting of nineteen other members - nine independent members representing local trade and industry; five nominees representing college staff and parents; three co-opted members representing local educational institutions and the Local Authority; one student member; and the Clerk to the Corporation.

Funding for the college is now provided by the Further Education Funding Council

who are imposing new criteria for success and cost effectiveness.

Monitoring will consist of the use of performance indicators such as statistics, ratios, costs and other related forms of information including percentage growth in student enrolments, student continuation rates, the percentage of students achieving primary learning goals and the number of students achieving qualifications related to national targets. Such performance indicators must illustrate measured progress by the college in achieving its mission and the corresponding aims and objectives. The indicators are intended to be used as an aid to, not a substitute for, quality assessment and sound judgement. The Funding Council will operate through a Inspectorate which will:

> "Assess standards and trends, advise the Council, prepare and publish reports, identify and make known good practice, provide advice and assistance to institutions, keep abreast of international developments in post-school education and training"
>
> (*FEFC Circular 93/28*)

The implications for student recruitment, guidance and support are spelled out by the Funding Council, emphasis being placed on appropriate assessment and accreditation of prior learning, effective induction programmes for new students, access to effective tutorial support, personal counselling and guidance and careers education and guidance.

Colleges will be funded according to a formula which takes into account student numbers On Entry, On Programme and On Exit.

The implication for the Sixth Form College is clear - students who do not complete

their courses and fail to achieve their primary learning goal will provoke a financial penalty for the institution.

> "The achievement element is to be defined as the achievement by the student of the primary learning goal planned in the student's learning programme.
> Achievement is to be broadly defined but will exclude obtaining a job without achieving the primary learning goal. Key aims for the government are to promote increased education and training achievements and improve the qualifications of the workforce. To reward leaving a programme early to take a job without achieving the qualification aim would be counter to these aims."
> *(FEFC Circular 93/20)*

1.3 Aims of the Research

The aim of the study is to measure a student's determination to succeed in the context of a given educational course or experience. The study constitutes a search for tools which will facilitate the process of transfer at 16+ and aid the achievement of the student's primary goal - the successful completion of his or her course of study.

The study, then, will search for the indications and the nature of coping behaviour. Is it possible to identify students who have little confidence in their ability to cope? What is the relationship between the ability to cope and previous and current attainment? Do self-efficacy beliefs operate as causal factors in human functioning, as Bandura (1989) suggests, and if so, is it possible to manage a given programme of study in such a way that it will create and strengthen expectations of personal efficacy?

Bandura would argue that by identifying and providing reinforcing experiences a student's enhanced belief in his or her capability to exercise control over events could induce positive change in attitudes and outcomes.

Bandura (1989), argues for a unifying theory of behavioural change by drawing together two divergent approaches:

> "...on the one hand, the mechanisms by which human behaviour is acquired and regulated are increasingly formulated in terms of cognitive processes...on the other hand, it is performance based procedures that are proving to be the most powerful for effecting psychological change."

Bandura hypothesises that successful performance is replacing symbolically based experience as the principal vehicle of change - although cognitive processes can be said to mediate change, cognitive events are induced and altered most readily by experience of mastery arising from effective performance.

A further question concerns the nature of the relationship between perceived self-efficacy and ability. What can be said of perceived self-efficacy as measured by both the Student Self-Perception Scale (SSPS) and the Nowicki-Strickland Locus of Control Scale and the ability variables within the research? Does the experience of academic success in year eleven correspond to a high rating on the Mastery scale of the SSPS, or are there as many students who would attribute their success to luck or pure ability as to effort and control?

Finally, does perceived self-efficacy exert a substantial effect on performance independent of ability? Are higher levels of perceived self-efficacy accompanied by higher performance attainments and do they also contribute significantly to the level of motivation? The Student Self-Perception Scale was devised to try to answer these questions and to examine the level of commitment a student will offer in terms of time and effort to achieve perceived goals. If coping skills are found to be weak, how can coping behaviour be initiated, enhanced and sustained to ensure successful outcomes and the strengthening of expectations of personal efficacy?

CHAPTER 2

REVIEW OF THE LITERATURE

2.1 Introduction

Central to this study is the concept of personality and its relationship to self-concept and attainment. Personality refers to the characteristic patterns of thought, emotion and behaviour that define an individual's personal style and influence his or her interactions with the environment.

Allport defines personality as:

> "...the dynamic organisation within the individual of those psycho-physical systems that determine his or her unique adjustments to the environment."

Personality theorists study the whole person as a sum of the separate processes of feelings, thoughts and actions. There are four main theoretical approaches, as described by Zimbardo (1988).

Psychodynamic Theories

The psychoanalytical theories of Freud (1914) have undergone considerable modification by Jung, Adler, Horney, Fromm, Erikson and others by moving away from the structural and psychosexual theories of development, whilst retaining regard for Freud's psychodynamic theory - particularly those aspects relating to anxiety and the mechanisms of defence. The main criticism of Freud's work has been the difficulty of scientific evaluation; research that has attempted to isolate predictor

variables derived from Freud's theory has encountered problems of validity of the dependent measures of psychoanalytical constructs (Silverman, 1976).

Humanistic Theories

The humanistic school of personality theory, incorporating the work of Rogers (1947) and Maslow (1970) has also been criticised for lack of scientific rigour. Accusations of vagueness and oversimplification have been levelled against their emphasis on the growth potential of the individual. A major drawback to this holistic, existential approach is also its inability to make predictions about human behaviour.

Trait Theories

Personality theorists who do attempt to predict behaviour belong to the newly invigorated trait school with their belief that traits, that is underlying, continuous dimensions of personality, are qualities or attributes which influence our behaviour because they act as "generalised action tendencies". Current theory, as summarised by Deary and Matthews (1993), identifies five major dimensions of personality which incorporate most previous systems of personality traits (Allport, 1937; Cattell, 1973; Eysenk & Eysenk, 1979) - neuroticism, extraversion, open-ness, agreeableness and conscientiousness. These dimensions, in that they are consistent across situations, help to explain or predict what a person may do. As with psychoanalytical and humanistic theories, trait theories have been criticised for failing to explain how behaviour is caused but merely to identify and describe characteristics that are supposedly correlated with behaviour. Mischel (1968) is one of the strongest critics of trait theory, finding low correlations of 0.30 between a given predictor trait and

a predicted dependent variable. Mischel asserts that consistency across situations is at best modest, the low relationships meaning that knowing a person's trait score is little help in predicting his or her behaviour. Mischel concludes that behaviour is specific to the demands of each situation.

Trait theorists counter-attack with criticisms of Mischel's methodology (Eysenk & Eysenk, 1980) saying that behaviour may be more consistent across situations when the unit of analysis is psychologically meaningful, rather than a specific act. Funder and Colvin (1991) show cross-situational correlations of 0.40 - 0.60 for behaviours coded by meaning. Kerrick and Funder (1988) show trait-behaviour correlations above 0.30, and say that even modest correlations may be theoretically and practically important.

Cognitive Social-Learning Theories

The fourth major approach to the study of personality centres on learning theory, ranging from the strict behaviourist approach of Skinner (1953) with its focus on environmental contingencies, or reinforcing circumstances, that control behaviour, through cognitive theories which stress the processes through which people turn their sensations and perceptions into organised impressions of reality, to the cognitive social-learning theories of Mischel (1968) and Bandura (1977a). Critics of the strict behaviourist approach would argue that by placing such emphasis on the environment, contact had been lost with the person and that the role of aspiration in human development had been discounted. Social learning theorists have responded to such criticisms by including cognitive processes along with behavioural ones and

recognising that there are important individual differences in the way that people think about and define any external situation. Individuals participate in creating their own personalities by choosing environments and selecting settings in which they act and are acted upon.

2.2 The Measurement of Personality

Psychological assessments of the attributes of individuals, including personality, take place in many situations and settings. The purpose of psychological measurement and assessment is to describe or classify individuals in ways which will be useful for, in the context of this research, prediction of attainment. The use of objective assessment procedures can hopefully avoid bias and aid diagnosis, although the development of tests to measure individual differences gives rise to fundamental issues of what is being tested and to what personal or social use the knowledge will be put.

Personality measurement and assessment seeks to determine and describe the attributes which make one person different from another. Tests are designed to ascertain the nature of these attributes, how they fit together in particular individual cases and on what dimensions of personality individuals differ.

Personality is assessed both by objective instruments and projective devices, with tests developed either empirically, as with the Minnesota Multiphasic Personality Inventory (MMPI), (Dahlstrom et al., 1975), or by factor analysis as used by Cattell in the construction of the Sixteen Personality Factor Questionnaire (16PF), (1972).

An alternative approach is the use of projective tests such as the Thematic Apperception Test (TAT), (Murray, 1938), which allows for the projection of fantasies and thoughts by the individual.

A relatively new approach is that of behaviour assessment as used in relation to behaviour therapy, where specific behaviours are observed in a natural setting. The emphasis here is on behaviour that in the view of the therapist will be amenable to change. Other formal assessments are carried out through interviews and life history and archival data. Alternatively, self-report measures coming from an individual or others will provide information in response to questions.

In order to be useful, an assessment tool must be reliable in that it gives consistent results on different testings, valid in that it assesses the attributes for which it was designed, and standardised. Standardisation involves the establishing of certain procedures of administration and scoring and the obtaining of norms by administration to large numbers of people for whom the measure is intended.

Certain arguments surround the ethics of personality assessment. Some psychologists would say that in order to better understand human functioning such activities are legitimate, particularly if they permit prediction of certain behaviours in certain situations. If, however, such information were used to limit an individual's opportunities for development and change, then there must be grave ethical and political doubts as to the usefulness of classifying and labelling individuals in this way. Bentall (in Deary and Matthews, 1993) in his discussion of the "big five" dimensions of personality described above feels that their interpretations have been tainted by investigators' value systems, and implies that a liberal society should not tolerate this approach to classifying. He concludes:

"...it is not yet clear whether personality research can contribute to the

> greater good. Certainly, a greater sensitivity to the ethical and political implications of personality research seems necessary."

For Bentall, the most important task facing clinical and other kinds of applied psychologists when encountering a client is to construct a formulation of the client's problem which will lead to an appropriate intervention. Personality research as it stands at present is unlikely, he feels, to be of use to those who wish to apply psychology to help solve pressing human problems. He holds out some hope, however:

> "It may be that these objections are not fatal. I look forward to a science of personality which is value-free, and which makes specific and useful predictions about how particular individuals will respond in particular circumstances."

Bentall's cautionary statement and the ethical implications of the use of acquired information will be borne in mind in this research.

2.3 Social Learning Theory

Modern social learning theorists, - evolving from the behaviourist school which believes that personality, including thoughts and values, can be studied according to learning principles without relying on internal mental processes or biology, - whilst still believing that personality consists of learned patterns have added cognitive factors and social learning principles such as observational learning and self-reinforcement. Observational, or vicarious learning, consists of watching what is done by others and what happens to them by doing it; self-reinforcement consists of rewarding oneself for reaching a goal or punishing oneself for failing to do so.

From the social learning perspective, personality depends on the interaction between aspects of the individual and of the environment, and the nature of that interaction. The emphasis is still on the importance of the environment for shaping behaviour, but also important is how people interpret their environment, focusing on cognitive phenomena such as perceptions, symbols and beliefs. As Bandura (1986) comments:

> "If actions were determined solely by external rewards and punishments, people would behave like weathervanes, constantly shifting direction to conform to whatever momentary influence happened to impinge on them."

To social learning theorists such as Bandura, the fact that people do not always act in this way means that much of human behaviour is self-regulated, shaped by thoughts, values, self-reflections and intentions.

Social learning theorists have identified qualities of the person that they believe influence behaviour across many situations. The way people differ in each of these spheres contributes to their recognisable personalities.

Mischel (1968, 1981) defines these qualities as inherited temperaments; skills and talents; perceptions; expectations; and plans of action. All these aspects of the individual depend on specific situations which either permit us to express aspects of our personalities or prevent us from doing so.

For Rotter (1954, 1955, 1960, 1976), the major early proponent of social learning theory, the first assumption is that "the unit of investigation for the study of personality is the interaction of the individual and his meaningful environment." Rotter views personality not as a set of internal characteristics which the individual carries with him from one situation to another, but rather as a set of potentials for responding to particular kinds of social situations. Rotter does subscribe to a certain unity of personality, inasmuch as a person's experience and interactions with his environment influence each other - although unity as defined in terms of stability and interdependence, not in terms of core personality. He also acknowledges a certain stability of personality for although the individual is constantly encountering new experiences, as he becomes more experienced his personality becomes more stable. By constantly selecting new experiences and conceptualisations, this selectivity leads to increasing generality and stability of behaviour. As the study of personality for Rotter is the study of learned behaviour, behaviour is therefore deemed to be modifiable - a central concept in relation to his research. Rotter's approach is historical - the individual's behaviour in the present is seen as influenced or shaped by the experiences of his personal past. Rotter's theory contains no assumptions regarding genetic or constitutional determinants of behaviour - the use of the empirical law of effect provides the motivational basis for social learning theory, that

is, that any stimulus complex has reinforcing properties to the extent that it influences movement towards or away from a goal. Rotter assumes that there is a purposeful quality to human behaviour - that it is goal directed. The occurrence of a behaviour of a person is determined not only by the nature and importance of goals or reinforcements but also by the person's anticipation or expectancy that these goals will occur.

Phares (1976) summarises Rotter's major constructs and their role in predicting potential behaviours. Choices are made by individuals from the variety of potential behaviours available to them. Usually the task of prediction involves ordering the potential behaviours in some way to determine which is potentially the strongest and thus the most likely to occur. To determine which behaviour has the strongest potential for occurrence, one must consider first of all expectancy - the probability held by the individual that a particular reinforcement will occur as a function of a specific behaviour in a specific situation or situations; secondly is reinforcement value, which is anything which has an effect on the occurrence, direction or kind of behaviour and the degree of preference for any reinforcement to occur if the possibilities of their occurring were all equal; and finally the psychological situation, which may have specific or general effects. Prediction of specific behaviours in specific situations and prediction of more general classes of behaviours in a set of related situations are equally feasible using the basic predictive formulas (Rotter, 1972).

Prediction is thus based on the nature of the given situation in which the individual

is participating, as well as his past experience. An individual's behaviour potential changes through encountering new experiences, and that in turn leads to changes in his expectancies or in the value he or she ascribes to reinforcements. Generalised expectancies in terms of probability for success are created from past related situations. Phares (1976) points to a special and important example of such generalised expectancy in the degree to which people believe an internal or external control of reinforcement - whether they believe what happens to them is dependent on their own behaviour, and is thus controllable by their actions, or is contingent upon luck, chance, fate or powerful others.

Before moving on to examine the generalised expectancy mentioned above - that of locus of control - two criticisms of social learning theory must be mentioned, both of which have been refuted by Rotter (1972). In response to criticisms that the empirical law of effect appears to be circular - that is, there is no definition of a reinforcement independent of behaviour - Rotter asserts that it is practically possible to identify specific events which have a known effect either for groups or individuals. Pragmatically, he states, so long as we can describe and objectively identify potential reinforcers in the majority of situations, there is no serious problem of circularity. Secondly, answering criticisms of the use of the concept of a psychological situation rather than a stimulus, in that it is difficult to identify a situation independently of behaviour, Rotter argues that in the case of social situations the level of discrimination is common sense based on cultural understanding. Specific situations can be identified and labelled - for example a school situation or a girl-friend situation - and for the purpose of generality, various kinds of psychological constructs can be

devised to arrive at broader classes of situations having similar meaning to the subject. The utility of such classes would have to be empirically determined depending on the subject's response.

Interestingly, despite the culture bound tone of Rotter's analysis, subsequent work undertaken by Parsons, Schneider and Hansen (1970), exploring the issue of whether Rotter's Internal-External Control Scale (1966) measures a generalised expectancy or is multi-dimensional, with groups of U.S. and Danish students, found significant differences on some of the five postulated categories within the scale, particularly when predicting locus of control in other societies. The proposed categories were general luck or fate; respect; politics; academics and leadership. The findings supported the assumption that categories on the locus of control scale are useful in examining cross-cultural differences and predicting national stereotypes. The general hypothesis that there is a relationship between ethnic group and locus of control may merit further attention within this research.

2.3 i) Locus of Control

One of the concepts central to this study and rooted in social learning theory is that of internal versus external control of reinforcement, or locus of control (Rotter, 1966). The importance of reinforcement or reward in determining future behaviour is acknowledged by most psychologists, but for Rotter the effect of reinforcement is not a simple stamping in process but it "depends on whether or not the person perceives a causal relationship between his own behaviour and the reward".

Rotter (1966, 1972) has presented considerable evidence that people learn differently in situations where rewards depend upon chance, luck or powerful others than they do in situations where they perceive that skill or their own characteristics determine whether or not reinforcements will occur.

Rotter states:

> "When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labelled this a belief in external control.
> If the person perceives that the event is contingent upon his own behaviour or his own relatively permanent characteristics, we have termed this a belief in internal control."

What is important is the EXPECTANCY that the behaviour will lead to the reinforcement. Rotter continues that if one individual is subjected to a series of

situations in which he has less control than another, then the expectancies for lack of control would become generalised to some degree. There are likely, therefore, to be significant and important individual differences in the way people see their lives as determined by their own behaviour - characteristics, or as controlled by luck, chance, fate or powerful others. Individual social learning histories will be the primary determinants of expectancies regarding locus of control.

Wooster (1974) states the situation clearly:

> "The locus of control is a position on a hypothetical dimension which reflects the degree to which a person believes that he possesses or lacks the power to control the recurrence of reinforcing events."

The implications for the learning process of the belief that a person's own efforts can produce changes gives fresh incentive to the devising and implementing of measures to enhance achievement. Phares (1976) points out that our ultimate goal is to learn how a generalised personality variable such as locus of control relates to important human activities in terms of helping us to predict social influence reactions, efforts at mastery or achievement needs. Rose and Medway (1981) endorse the view that the value of studying locus of control resides in its effects upon a person's actions. Social learning theorists, they emphasise, have found that behavioural predictions improve when the way by which persons typically explain the causal locus of an event are considered.

A number of measures have been devised since the pioneering work of Phares (1955, 1957) who executed a series of studies of learning under skill or chance conditions. Working closely with Rotter, the two researchers elaborate on their position thus:

> "...our basic hypothesis is that if a person perceives a reinforcement as contingent upon his own behaviour, then the occurrence of either a positive or a negative reinforcement will strengthen or weaken potential for that behaviour to recur in the same or similar situation. If he sees the reinforcement as being outside his own control or not contingent, that is depending upon chance, fate, powerful others, or unpredictable, then the preceding behaviour is less likely to be strengthened or weakened."

Phares found that reinforcements under skill conditions rather than chance conditions had a greater effect on raising or lowering expectancies for future reinforcements. He also found that subjects shifted or changed their expectancies more often under skill conditions. Finally, he showed that under chance conditions there was a strong trend towards unusual shifts in expectancies, that is, up after failure or down after success.

Further studies by Rotter, Liverant and Crowne (1961), Benion (1961) and James (1957) endorsed Phares' (1955, 1957) findings and led to the development of the Rotter I-E scale - a measure of Internal-External Control - comprising twenty nine forced choice items, including six filler items intended to make the purpose of the test more ambiguous. The items dealt with the subject's belief about the nature of the world - they are concerned with the subject's expectations about how reinforcement is controlled - making the test a measure of generalised expectancy. Rotter (1966) summarizes the studies based on the I-E scale as follows:

> "A series of studies provides strong support for the hypotheses that the individual who has a strong belief that he can control his own destiny is likely to (a) be more alert to those aspects of the environment which provide useful information for his future behaviour:
> (b) take steps to improve his environmental condition:

> (c) place greater value on skill or achievement reinforcements and be generally more concerned with his ability: and (d) be resistive to subtle attempts to influence him."

In an attempt to extend the investigation of the locus of control variable to children, as opposed to Rotter's adult scale, Nowicki and Strickland (1973) devised a 40 item scale to study the effects of a generalised locus of control of reinforcement that could be administered to a wide range of children. The Nowicki-Strickland Locus of Control Scale derives from work which began with a large number of items (N=102) constructed on the basis of Rotter's definition of the internal-external control of reinforcement dimension. The items describe reinforcement situations across interpersonal and motivational areas such as affiliation, achievement and dependency. The scale was refined by item analysis and teacher and pupil comment to forty items and administered to a large number of children ranging from the third to the twelfth grade. Nowicki and Strickland found that a generalised belief in internal control of reinforcement is related to a number of achievement and competence behaviours, with significant correlations between internality, higher academic achievement and persistence. Internals also had higher self-esteem, higher self-concept and lower anxiety. Previously Gurin et al. (1969) and Lao (1970) linked perception of control to level of aspiration, observing that students whose orientation was internal were characterised by higher educational expectations and aspirations than students whose orientation was external. Further, internals seem to adjust their aspirations upwards after success and downward after failure to a greater extent than do externals. Indeed, externals often adjust their expectancies up after failure and down after success (Feather, 1968). Both Battle and Rotter (1963) and Lefcourt and Ladwig (1965) also reported a greater incidence of atypical expectancy changes by external

subjects. As in the early work of Phares (1957), cited earlier, this possibly implies a failure on the part of the externals to make systematic use of their prior experience in preparing for the future. Furthermore, DuCette and Wolk (1972) found that externals are characterised by preference for extreme risks, low persistence and atypical shifts in level of aspiration. Obviously, they state, such reactions to success and failure are intimately related to various aspects of anxiety, defensiveness, anti-achievement and maladjustment. In contrast, internality has been found to be associated with such behaviours as consistency, warmth and nurturance (Phares, 1975).

Both Rotter (1966) and Nowicki and Strickland (1973) found that correlations between locus of control and intelligence were negligible, or at best low, and that no significant gender differences emerged. Nowicki and Duke (1974) report that the variables of gender, social desirability and intelligence have "minimal confounding effects" on locus of control scores and exhibit non-significant correlations. Locus of control does, however, have a consistent relationship with certain personality variables. Internality has been related to higher self-esteem, higher self-concept, higher moral development, greater popularity, more honesty, leadership, shorter delay of gratification, lower anxiety and less interpersonal distance.

In terms of race, it has been found that blacks score more externally than whites. Internals persist for longer on tasks than externals, and internality would seem to be associated with competence behaviours. For males, an internal score on the Nowicki-Strickland scale is significantly related to academic competence, to social maturity,

and appears to be a correlation of independent, striving, self-motivated behaviour. For both sexes, Nowicki and Strickland (1973) reported significant correlations between internality and higher academic achievement for grades 3 through to 12. These correlations apply not only to American children but also to Danish, Hungarian and Mexican Americans (Cervantes, 1976a, b). Bar-Tal, Kfir, Bar-Zohar and Chen (1980) in their extensive study of 2438 ninth grade Israel-Jewish students of African or Asian background and European, American or Israeli backgrounds found that in general internals tend to gain greater academic achievement, to express less anxiety and to have higher levels of aspiration. To test the reservation that the relationship between locus of control and academic achievement may be the result of their common relationship with socio-economic status, the influence of socio-economic status was held constant.

It is interesting to note that Butler and Orion (1990), using Connell's Multi-Dimensional Measure of Children's Perception of Control (1985), found only a tenuous relationship between internality as measured by the MMCPC and achievement at school, confirming similar findings by Harter and Connell (1984); Connell, (1985); David and Connell, (1985).

Finally, internality would seem to be associated with consistency, warmth and nurturance (Nowicki and Segal, 1974; Wichern and Nowicki, 1976; Gordon, 1977). An intended dimension of the Student Self Perception Scale (see Chapter Five) was that of deferred gratification and the willingness of the student to make present sacrifices for future benefits. Although the dimension failed to survive the item

analysis, with questions such as - "I am willing to go without things now so that I can get a good job in the future" being rejected, a look at the concept of deferred gratification still seems appropriate. An internal locus of control would be expected to relate to a greater willingness to delay gratification in the service of long term goals. Studies in fact show that whilst there is a definite basis now established for the relationship between locus of control and a readiness to delay gratification in the service of larger rewards later, the magnitude of this relationship depends upon specific considerations such as the population used, the nature of the experimenter and the method utilised. Despite Strickland's (1973) finding of a relationship between internality and shorter delay of gratification, Lefcourt (1972) had found that better educated, more achievement orientated, less deprived ethnic groups seem to be both more internal and more willing to delay gratification. Mischel, Zeiss and Zeiss (1974) confirmed these findings, but only when the subject's delay behaviour is designed to be instrumental in the attainment of desired but delayed contingent outcomes.

Although now outside the scope of this study, the concept of deferred gratification certainly merits further investigation as a significant dimension in post-16 education.

2.3 ii) Self-Efficacy Theory

Building on the work of Rotter (1966) and others of the Social Learning school, Bandura (1977, 1982, 1989) continued with the investigation of the mechanisms of potential for behavioural change implied in the locus of control studies. Bandura (1977) set out to present an integrative theoretical framework to explain and predict psychological changes achieved by different modes of treatment. He comments on the two major divergent trends in the field of behavioural change - the tendency to formulate the mechanisms by which human behaviour is acquired and regulated in terms of cognitive processes, whereas performance based procedures are proving to be most powerful in effecting psychological change. As a consequence, successful performance is replacing symbolically based experiences as the principle vehicle of change. Bandura argues that changes achieved by different methods derive from a common cognitive mechanism, and that:

> "...the apparent divergence of theory and practice can be reconciled by postulating that cognitive processes mediate change but that cognitive events are induced and altered most readily by experiences of mastery arising from effective performance."

In response to the question of how behaviour is acquired and regulated, Bandura adheres to the view that cognitive processes play a prominent role in the acquisition and retention of new behaviour patterns, in that transitory experiences are coded and retained symbolically in the memory. As acquisition of response information is a major aspect of learning, much human behaviour is developed through modelling - the observation of the behaviour of others and its consequences. Motivation, too, is partially rooted in cognitive activities - the capacity to represent future consequences in thought provides a cognitively based source of motivation, in that this activity can

generate current motivators of behaviour and stimulate goal setting and self-evaluative reactions (Bandura, 1976b, 1977).

Bandura placed the concept of self-efficacy at the centre of this theoretical framework for inducing behavioural change - initially in work related to fearful and avoidant behaviour (Bandura, 1977). The principal assumption of the theory is that psychological procedures, whatever their form, serve as a means of creating and strengthening expectations of personal efficacy. Bandura differentiates between efficacy expectations and response-outcomes expectations, the latter relating to judgements about the likely consequences of specific behaviours in a particular situation, and the former relating to the individual's belief that he or she is capable of achieving a certain level of performance in that situation. Bandura notes that:

> "the types of outcomes people anticipate depend largely on their judgements of how well they perform in given situations."

Perceived self-efficacy will affect whether or not a person will even try to cope in a given situation and thus influence choice of behavioural settings. Efficacy expectations will also determine how much effort people will expend and how long they will persist in the face of obstacles and aversive experiences. Bandura continues that efficacy expectations differ in magnitude, generality and strength and should be assessed alongside performance at significant stages in the change process to clarify the reciprocal effects upon each other. Mastery expectations, he asserts, influence performance and are in turn altered by the cumulative effects of one's efforts. Expectations of personal efficacy are based on four major sources of information - performance accomplishments, based on personal mastery experiences; vicarious

experience - seeing others perform activities which generate one's own expectations; verbal persuasion - a weaker source of information as it is not based on one's own accomplishments; and emotional arousal, the level of which indicates to us our anxiety and vulnerability, leading to low expectations of efficacy, or excitement, suggesting expectations of success. The more dependable the experiential sources, the greater the changes in perceived self-efficacy. Bandura explains that recent studies support the thesis that generalised, lasting changes in self-efficacy and behaviour can best be achieved by participant methods using powerful induction procedures initially to develop capabilities, then removing external aids to verify personal efficacy and finally using self-directed mastery to strengthen and generalise expectancies of personal efficacy (Bandura et al., 1975).

Given the common concept of expectancy within the theories of both Bandura and Rotter it is useful to note some differences. Rotter's (1966) theory of personality proposes that behaviour varies as a function of generalised expectancies that outcomes are determined by one's actions or by external forces beyond one's control - a product of one's history of reinforcement. His conceptual scheme is primarily concerned with causal beliefs about action-outcome contingencies rather than with personal efficacy. Bandura (1977) emphasises that perceived self-efficacy and beliefs about the locus of causality must be distinguished, because convictions that outcomes are determined by one's own actions can have any number of effects on self-efficacy and behaviour. People, for instance, who regard outcomes as personally determined but who lack the requisite skills would experience low self-efficacy and view activities with a sense of futility. While causal beliefs and self-efficacy refer to different

phenomena, causal ascriptions of behaviour to skill or chance can mediate the effects of performance attainments on self-efficacy. The theory of learned helplessness (Maier and Seligman, 1976) illustrates the conceptual difference between efficacy and outcome expectations in that it assumes that as a result of being subjected to uncontrollable aversive events, organisms acquire expectations that actions do not affect outcomes. Because they come to expect future responding to be futile, they no longer initiate behaviour in situations where outcomes are in fact controllable by responses. Although this theory postulates an expectancy mechanism of operation it focuses exclusively on response-outcome expectancies. People can give up trying because they lack a sense of efficacy in achieving the required behaviour, or they may be assured of their capabilities but give up trying because they expect their behaviour to have no effect on an unresponsive environment or to be consistently punished. The remedial implications of these two separate sources of futility are relevant to this study in terms of future practice. To alter efficacy based futility requires development of competencies and expectations of personal effectiveness. To change outcome based futility necessitates changes in prevailing environmental contingencies that restore the instrumental value of the competencies that people already possess. A differentiation between these two concepts will be sought in the data.

In further developing this theory of self-efficacy, Bandura (1989) examines in greater detail the issue of causality. Self-generated activities, he asserts, lie at the very heart of the causal processes, giving meaning and power to most external influences and functioning as important determinants of motivation and action.

> "People make causal contributions to their own psychosocial functioning through mechanisms of personal agency. Among the mechanisms of agency, none is more central or pervasive than peoples' beliefs about their capabilities to exercise control over events that effect their lives. Self-beliefs of efficacy influence how people feel, think and act."

Bandura poses the question of whether self-efficacy beliefs operate as causal factors in human functioning and he tests this by examining the dual-causal link in which instating conditions affect efficacy beliefs and efficacy beliefs in turn affect action. This is done either by providing mastery experience or modelling coping strategies or by controlling level of ability and varying perceived self-efficacy within each ability level. Bandura, Reese and Adams (1982); Collins (1982) showed that higher levels of perceived efficacy were accompanied by higher performance attainments, and that perceived self-efficacy exerted a substantial independent effect on performance. Other studies cited by Bandura (1989) on levels of motivation used self-appraisal, bogus feedback, bogus normative comparison and procedures which actually impair functioning yet raise perceived self-efficacy. Other causal tests conducted with different modes of efficacy induction, varied populations and many domains of functioning, provide supporting evidence that perceived self-efficacy contributes significantly to levels of motivation and performance accomplishments. Bandura concludes that evidence that divergent procedures produce convergent results add to the explanatory and predictive generality of the efficacy mediator. Changes in self-beliefs of efficacy affect motivation and action. In actual social practice, Bandura (1986, 1988a) states:

> "personal empowerment through mastery experiences is the most powerful means of creating a strong, resilient sense of efficacy."

This is achieved, he states, by equipping people with knowledge, subskills and the strong self-belief of efficacy needed to use one's skills effectively. Bandura (1989) analyses in detail the four major processes through which self-efficacy beliefs regulate human functioning, namely cognitive, motivational, affective and selection processes. In cognitive terms, the essential notion for this study and for subsequent educational practice rests in the statement that self-beliefs of efficacy affect thought patterns that can enhance or undermine performance. Human behaviour involves personal goal setting which is in turn influenced by self-appraisal of capabilities. The stronger the perceived self-efficacy, the higher the goals people set for themselves and the firmer their commitment to them, raising the level of motivation and performance attainments. Peoples' perceptions of their efficacy will affect their anticipatory scenarios and their ability to deal with these. Bandura (1986) describes a model of triadic reciprocal causation in which cognitive and other personal factors, behaviour and environmental events all operate as interacting determinants that influence each other bidirectionally. This interactional causal structure was tested in conjunction with experimentally varied organisational properties and belief systems that enhance or undermine the operation of self-regulatory determinants, in a study of complex organisational decision making (Wood and Bandura, 1989b). Of interest to this research is the examination of the belief system concerned with the conception of ability (Bandura and Dweck, 1988; Dweck and Elliott, 1983; Nicholls, 1984). Comparing people who regard ability as an acquirable skill and adopt appropriate learning goals with those who view ability as a more or less fixed capacity they found the former group manifested a highly resilient sense of personal efficacy, whereas the latter group were beset by increasing self doubts as they encountered problems.

Pokay and Blumenfield (1990), quoted Schunk (1990), found that efficacy measures - expectations for success - were significant predictors of grades and also related positively to the use of strategies for effort management.

Another belief system, also pertinent to the study, is that of the extent to which people feel that the environment is influenceable or controllable. Those who thought, in the Wood and Bandura study (1989b), that organisations were controllable, displayed a strong sense of managerial efficacy. In judging their efficacy and setting their personal goals, people initially rely on past performance, with more powerful self-perceptions of efficacy replacing this as experience is gained, affecting personal goal setting and analytical thinking. Motivational processes involve the exercise of forethought and the anticipation of likely outcomes of prospective actions, resulting in goal setting and planned courses of action to achieve valued goals.

Bandura (1989) describes three different forms of cognitive motivators around which theories have been built - causal attributions (attribution theory), outcome expectancies (expectancy-value theory) and cognised goals (goal theory), and confirms that the self-efficacy mechanism of personal agency operates to some extent in all these forms of cognitive motivation. Of particular relevance to this study is cognitive motivation based on goal intentions which involves both a personal standard of performance and a knowledge of performance level. Cognitive motivation based on goal intentions is mediated by three types of self-influences; affective self-evaluative reactions to one's performance, perceived self-efficacy for goal attainment and adjustment of personal standards in the light of one's attainments. Based on these

influences, people will choose what challenges to undertake, how much effort to expend and how long to persevere in the face of difficulties. Strong perseverance usually pays off in performance accomplishments. As demonstrated by Pintrich and De Groot and by Zimmerman and Martinez-Pons in Schunk (1990), motivation and efficacy are integral aspects of self-regulated learning which stresses learner responsibility and control. Bandura (1986) suggests that there is a growing body of evidence that human attainments and positive well-being require an optimistic sense of personal efficacy, founded on a "resiliency of self-belief". Indeed, Bandura suggests that people's tendencies to overestimate their capabilities may be a benefit rather than a cognitive failing to be eradicated, in helping to sustain the level of motivation needed for personal and social accomplishments. Examining the role of affective processes in regulation human functioning, Bandura examines studies which demonstrate that perceived coping efficacy operates as a cognitive mediator of anxiety and stress reactions. After perceived efficacy is strengthened to the maximum level by guided mastery, subjects displaying stress symptoms were able to return to normal function in the face of previously intimidating tasks. Anxiety arousal can also be affected by perceived efficacy to control distressing conditions - Bandura (1989) states that perceived self-efficacy in thought control is a key factor in the regulation of cognitively-generated arousal. He goes on to state that studies have shown that anxiety arousal and avoidant behaviour are largely co-effects of perceived coping inefficacy rather than causally linked - people take self protective action if they risk being unable to cope, regardless of their level of anxiety at the given moment. Perceived self-efficacy is a factor in depression, although studies exploring the role of negative discrepancies between attainments and standards show that these may for

some act as motivators, depending on beliefs of one's efficacy to achieve one's goals.

Finally, in this review of aspects of Bandura's work pertinent to the study is the point that people can exert some influence over their life paths by the environments they select and create. People choose social environments that they judge themselves to be capable of handling, thus limiting or enhancing their development in that the social influences operating in certain environments continue to promote certain competencies, values and interests long after the decisional determinant has rendered its inaugurating effect (Bandura, 1986; Snyder, 1986). Bandura concludes:

> "Social cognitive theory provides prescriptive specificity on how to empower people with the competencies, self-regulatory capabilities and resilient self-belief or efficacy that enables them to enhance their psychological well-being and accomplishments."

2.4 Self-Efficacy and Self-Concept

The self-concept construct at the centre of this study has been the focus of much attention in educational and psychological research. Self-concept is seen to influence behaviour in all major areas of a person's life, and it must be deemed critical to any discussion pertaining to behavioural change. Self-concept has been defined by Burns (1982) thus:

> "The self-concept is composed of all the beliefs and evaluations you have about yourself. These beliefs (self-images) and evaluations (self-esteem) actually determine not only who you are, but what you think you are, what you think you can do and what you think you can become".

Rogers (1951, 1959) would add to this the concept of the ideal self - the kind of person the individual hopes to be or would like to be - representing an aspirational dimension.

Burns (1982) maintains that the view of the self as a compound of two elements, - self-image and self-evaluation, - places the self-concept within the ambit of attitude study - "the set of attitudes a person holds towards himself." Most definitions, Burns comments, emphasise that an attitude contains three essential ingredients - a belief, which may or may not be valid; an emotional and evaluative connotation around that belief; and a consequent likelihood of responding or behaving in a particular way. Burns states that the basic components of an attitude are similarly revealed in self-attitudes so that the self-concept combines self-image - what the person sees when he looks at himself; affective intensity and evaluation - how strongly the person feels about these various facets and whether the person has a favourable or unfavourable

opinion of the various facets of that image; and behavioural possibilities - what the person is likely to do in response to his evaluation of himself.

Marks and Nurius (1986) propose that each of us has a self-schemata in which our self-knowledge is organised - it is a cognitive framework that guides the way we process information about ourselves. Self-schemas, they say, reflect all of our past relevant experiences; all of our current knowledge and existing memories about ourselves; and our conception of what we were like in the past, what we are like now and what we may be like in the future. A person's self-schema is the sum of everything that an individual knows or can imagine about him or herself. Higgins and Bargh (1987) suggest that if the self is the centre of our social universe and if our self-schemas are well developed, it follows that we should do a better job of processing information which is relevant to ourselves than other kinds of information. Self-relevant information should be more likely to capture our attention, to be entered into memory, and to be recalled. This tendency for information related to the self to be most readily processed and remembered is termed the "self-reference effect". Bandura (1989) draws our attention to the resurgence of interest in self-referent phenomena and takes from it his rationale for his self-efficacy theory previously outlined. Bandura (1989) states:

> "Self-generated activities lie at the very heart of causal processes. They not only give meaning and valence to most external influences, but they function as important proximal determinants of motivation and action. People make causal contributions to their own psychosocial functioning through mechanisms of personal agency. Among the mechanisms of agency, none is more central and pervasive than people's beliefs about their capabilities to exercise control over events that effect their lives. Self beliefs of efficacy influence how

people think, feel and act."

Shavelson et al. (1976), as reported by Marsh (1989), developed a theoretical model of self-concept as (a) multi-faceted; (b) hierarchically organised; and (c) becoming increasingly differentiated with age. He proposed a general self-concept at the apex of the hierarchy that was divided into academic and non-academic self-concepts; academic self-concept was further divided into subject specific facets of self (e.g. English and Mathematics); non-academic self-concept was divided into social, emotional and physical self-concepts that were further divided into more physical components such as appearance. This model was multi-dimensional and was subsequently supported by empirical research by Hartner (1982) and others (see Marsh, 1989).

Further research by Marsh (1992) extended previous research on the Marsh/Shavelson model of academic self-concept (Marsh, 1990d; Marsh, Byrne and Shavelson, 1988; Marsh and Shavelson, 1985). The findings (Marsh, 1992) indicate that components of academic self-concepts are more differentiated - less correlated - than are corresponding achievement scores and that relations between academic self-concepts and academic achievements are more context specific than previously assumed. For example, verbal and mathematical achievements typically are correlated at 0.5 to 0.8, whereas verbal and mathematical self-concepts are typically nearly uncorrelated. The explanation given by Marsh, using his internal/external frame of reference (I/E) model, is that students form their academic self-concept in any one subject area using both an external, normative basis of comparison ("How do my skills in this subject compare with those of other students?") and an internal, ipsative basis of comparison

("How do my skills in this subject compare with my skills in other subjects?"). Marsh continues:

> "... because of the internal, ipsative component of this model, academic self-concepts in different subjects are predicted to be substantially less correlated than the corresponding skill areas, and particularly high skill levels in any one subject result in lower self-concepts in other subject areas."

Marsh's findings thus indicate that academic self-concepts are affected by different processes than are the achievement scores.

Other research cited by Marsh shows that academic self-concept contributes, beyond what can be explained by prior achievement, to the prediction of subsequent achievement (Marsh 1990b), subsequent coursework selection (Marsh, 1989b), subsequent educational aspirations (Marsh, 1991) and, eventually, university attendance (Marsh, 1991). Marsh (1992) indicates that further research is needed to establish whether more content-specific measures for academic self-concept have even stronger influence on subsequent achievement, coursework selection and university attendance. He reinforces his position by noting the historical distinction between self-concept research and self-efficacy research in their respective emphases on global and specific measures. Marsh (1992) quotes Bandura (1986) as being particularly critical of an over-emphasis of global measures in self-concept research, arguing that this impairs the ability to understand and predict behaviour in particular situations and does not take into account the complexity and variation of self-perception.

The aspect of self-concept most crucial to this research is, as for Marsh, that of academic self-concept - how a person sees himself as a learner. Youngman's (1980)

definition of academic self-concept, endorsing Burns (1982), as "a dispositional variable relating to attitude and personality", places it firmly at the heart of this investigation into the relationship between academic self-concept, attainment and personality. The Student Self-Perception Scale designed for this research elicits information both on the dimension of academic self-image - the way in which students describe themselves, e.g. "I can cope with complicated tasks and ideas", and academic self-esteem, an evaluative dimension which involves a judgement of personal worth in the light of how one is perceived to be regarded by others, e.g. "Most of my teachers think that I am good at college work".

Gorrell (1990) provides a useful analysis, pertinent to this study, of current problems with self-concept theory, and he explores ways in which self-efficacy research can, in its findings and methodology, contribute to self-concept theory and rectify some of its proposed deficiencies. Despite coming from a different theoretical position and using different vocabulary, self-efficacy theory presents consistent findings which strengthen the association between self-concept and school achievement. Investigations of specific conditions for self-efficacy change offer the possibility of integrating those findings into self-concept theory. Gorrell continues that the research techniques of social learning theory can be combined successfully with self-concept theory to explore the ways in which people change their self-beliefs. He commences his argument by exploring the structure of self-concept and the conditions under which it changes. He is particularly interested in self-concept and self-efficacy research in relation to academic achievement. A significant influence in self-concept change is the individual's assessment of feedback and experiences in terms of self.

Gorrell quotes Combs, Richardson and Richardson (1976) who suggest that change in self-concept occurs only following some new experience of self, although unless the individual perceives feedback and successful experiences as being successful there will be no change in self-concept. Other studies indicate that changes in self-concept precede meaningful changes in behaviour and that by intervening to raise self-concept, positive changes in performance such as academic achievement will take place (Snygg and Combs, 1949).

Yet another approach reported by Gorrell (1990) emphasises that self-concept is mainly a by-product of experience, implying that efforts to enhance self-concept or school attainment should be focused on direct changes in the individual's behaviour.

Current studies confirm the hierarchical nature of self-concepts and support the assumptions that self-concept change occurs through the medium of specific experiences and is eventually related at a deeper level to more central beliefs about the self (Marsh, Smith and Barnes, 1983; Marsh and Shavelson, 1985; Shavelson and Bolus, 1982).

Gorrell (1990) notes that traditional self-concept theory generally adopts the model that emphasises that changes in self-concepts lead to important behaviour change. It is argued that if an individual's perceptions of the world determine their behaviour (Kelly, 1955; Combs and Snygg, 1959) and if individuals construct a set of beliefs about themselves out of their experience (Epstein, 1973) then, since their beliefs are also part of the world of their experiences, their perceptions of themselves will affect

their behaviour. Efforts to raise the self-concept of students by verbal encouragement, however, have shown little effect (Coopersmith and Feldman, 1974) and the process of self-concept change is held to be more problematical, based on the incorporation of new information about oneself based on others' reactions or upon the integration of self-perceptions into "a new constellation of significant beliefs" (Gorrell, 1990). A basic problem arising here is that of negative existing beliefs which may in fact lead the student to avoid the very experiences that might lead to success and positive self-concept.

Looking at self-concept change in a school setting, Gorrell points to research which suggests that the self-concept can be influenced significantly by teacher beliefs and behaviours, by successes and failures in achievement oriented tasks and by the quality of school life. However, he points out that experiments that attempt to measure changes in self-concept as a function of identifiable treatment effects have not supported the prevailing belief that change in self-concept will lead to changes in school performance. Self-concept theory, Gorrell states, has not succeeded in demonstrating the above relationship although recent research by Purkey and Novak (1984) has explored the identity of specific settings or behaviours that invite positive beliefs, participation and achievement. This demonstrates a move towards the consideration of environmental factors but the authors continue to use self-concept as a global construct whilst at the same time trying to assess specific treatment affects.

Gorrell (1990) notes the criticisms that, traditionally, self-concept theory still focuses upon the internal state of the individual rather than the environmental conditions that

may have contributed towards that internal state. Further criticisms of traditional theory have centred upon ill-defined terms, uncertain relationships between self-concept and various behaviour, confusion between self-concept and self-esteem, questionable validity of measures of self-concept and misconceptions about the nature of self-concept change, leading some researchers to reject the usefulness of self-concept theory for explaining improved academic performance (Scheirer and Kraut, 1979).

Gorrell (1990) responds to these criticisms by arguing that recent trends in self-efficiency theory provide evidence in favour of self-concept theory, resulting in a body of results that support the view of self-concept as a composition of specific beliefs about specific areas of one's life, as opposed to a global self-concept that changes with new experiences. Self-efficiency theory also, he maintains, supports the assumptions that changes in self-concept can be linked to changes in effort and achievement. As we have seen, perceived self-efficacy operates as a mediating influence on behaviour, affecting whether one attempts particular behaviour and how much effort and persistence is expended on that attempt. Referring to Bandura's (1977) four main sources of information - performance accomplishments, vicarious experiences, verbal persuasion and emotional arousal - and the effect these four areas of information have on the raising and lowering of a person's self-efficacy beliefs - Gorrell (1990) reminds us that the major goal of self-efficacy research has been the specification of the conditions under which self-efficacy beliefs alter - modelling, attributions and goal setting - and the exact results which occur following such changes. Research related to school failure and success has shown that students' self-

efficacy ratings tend to decrease following failure and to increase following success; self-efficacy is related positively to achievement; self-efficacy mediates performance; that there are definite links between self-efficacy and behavioural interventions, persistence and achievement. Other studies demonstrate the role of ability feedback and effort feedback in enhancing self-efficacy beliefs. As children get older the role of ability feedback becomes more significant in self-efficacy change, suggesting that there is movement towards more abstract conceptions of self and of performance with increasing age (Schunk, 1983).

The influence of modelling on self-efficacy beliefs and performance has been thoroughly investigated, a distinction being made between mastery models - those who demonstrate rapid and easy performance of a skill - and coping models - those who gradually acquire the desired skill through persistence. Other factors associated with academic achievement via self-efficacy change have been identified as self-monitoring (Schunk, 1982b, 1986), proximal goal setting (Schunk, 1983, 1985) and effective learning strategies (Richards and Wang, 1985). The introduction of some mechanism which allowed the subjects to control the learning process was found to more effectively enhance performance. The studies supported Bandura's (1977) contention regarding the effects of performance attainments on senses of personal efficacy, that attainment of short-term academic goals, monitoring progress towards goals and development of effective coping behaviour were found to function as success experiences for the learner.

With regard to sex differences in perceived self-efficacy, there would seem to be

differences between males and females in terms of motor-skills performance - females perceived efficacy decreasing with age whilst males became increasingly more confident, - and at a general level. Gorrell (1990) suggests that perceived self-efficacy - a learned behaviour - underlies many sex-typed attitudes and behaviours, especially affecting occupational choice, and that a person's sex-typed beliefs form a significant portion of personal identity and a powerful element in the sense of personal agency or control as evidenced by self-efficacy beliefs.

Gorrell maintains, then, that investigations of specific conditions for self-efficacy change offer the possibility of integrating those findings into self-concept theory. Raised self-efficacy beliefs lead to increases in persistence and task performance. The conditions that lead to changes in self-efficacy beliefs - feedback from others, self-monitoring, short-term goal selection and modelling of appropriate behaviour - directly influence self-beliefs and strengthen the association between self-concept and school achievement. Gorrell concludes:

> "Instead of referring to general conditions for change, such as teacher expectations, we can state more specifically that expectations expressed in terms of ability or effort attributions are effective in improving children's estimates of their own ability. Instead of stating that children need "success experiences" we can say that setting short-term (proximal) goals and monitoring their progress towards goals can improve perceived self-efficacy. Specification of conditions for perceptual change enables us to develop more precise and effective practical interventions in the classroom."

2.5 Personality and Attainment

The focus of much educational research is, inevitably, concerned with the enhancement of attainment and with its prediction. The reaching of a certain level of academic performance and the consequences for the individual of a given level of attainment has led to prolonged and detailed investigations into means of enhancing the academic potential of the individual to ensure successful outcomes. Having examined the issues surrounding the role of enhanced self-concept and its relationship with self-efficacy theory (Gorrell, 1990) we must finally turn to a summative evaluation of the factors which may affect academic attainment, particularly at the post-16 level. Many findings suggest that, in general, intellectual ability as measured by Intelligence Quotient score and previous attainment, usually in the form of examination performance, are the strongest indicators of academic attainment. In a longitudinal study of 138 secondary school pupils at transfer at 11+ Summerfield (1980) found, using multiple regression analysis, that the most effective independent predictor of attainment in both Maths and English over a three year period was previous attainment in the same subject. The next most independent predictor for Maths was ABIG - a general ability score - and for English was the Academic Self-Image Scale (Summerfield, 1980). This scale is a personality measure incorporating dimensions of positive and negative self-view; a view of self in relation to peers; expectations; and the teacher's view of the pupil as perceived by the pupil. The same procedure was then applied to Maths and English residual change scores computed using linear regression models which predict the difference between the expected final score, as predicted from the correlation between the residual score and the final score, and the actual final score. A positive residual means that the individual did

better than expected, and a negative one shows deterioration. The results were less positive when applied to the change scores, with only previous attainment in Maths showing any independent predictive quality for change measures at a significant level (Summerfield, 1980). For English, a non-significant drop in Multiple R indicates prior performance in English as the best indicator, with the Academic Self-Image Scale again following. Despite the apparently concrete evidence of studies such as the above, beliefs among teachers about the existence of a positive relationship between certain personality variables and academic performance persist and are subject to continuing investigation. Burns (1982) encourages action, stating:

> "We must, however, leave the safe refuge of anecdote and subjective opinion and seek out reliable evidence to support the belief that personality (particularly a persons' attitudes to himself, his feelings of competence and worth) influences school achievement".

The emergence of the Academic Self-Image Scale in the Summerfield (1980) study as a useful predictor of performance and change in English encourages further scrutiny of the role of personality variables in academic performance. The American studies discussed previously have produced substantiating evidence for this notion and there are some British studies which examine the role, for instance, of self concept (Burns, 1982), academic self-concept (Barker-Lunn, 1969), adjustment to school (Youngman, 1979b, 1980) and motivation (Entwistle et al., 1971). Many of these studies, however, have focused on primary or early secondary school age children, and whilst providing us with sound theoretical discussion and useful empirical evidence which acts as a stimulus for further investigation, do not specifically enlighten our understanding of the sixteen to nineteen age group.

Two particularly useful and relevant recent British studies have, however, currently emerged which will inform the results of this study and certainly merit discussion. Firstly, a study of 356 GCE A-level students entering Further Education and Sixth Form Colleges was undertaken by Clarke and Youngman (1987). Cluster analysis was used to identify student types based on selected dispositional characteristics which were felt to have a theoretical inter-relationship - these consisted of student scores on selected factors of the 16PF form (Cattell and Eber, 1967) which were further combined to produce an extroversion score, together with measures of open/ closed mindedness, self-esteem, stability of self-esteem, achievement motivation and locus of control. Collectively these variables reflected the differing levels and nature of students' social inhibition and self-confidence. Clarke and Youngman identified six clusters of students with small internal variation yet large separation. Clusters were characterised as social extroverts who were socially uninhibited and confident; reflexive extroverts whose sociability seemed to be more purposefully directed toward self-fulfilment and who showed low anxiety; surface extroverts whose surface sociability may conflict with perceptions they hold of themselves and lead to higher levels of anxiety; confident introverts who, though inhibited, were basically unemotional and in control; conforming introverts showing mild anxiety; and insular introverts who existed in a state of anxious social isolation. Using a comparison with the Rowntree Project (Entwistle and Brennan, 1971; Entwistle and Wilson, 1977) to establish construct validity, strong similarities were demonstrated between types of student identified within both studies. Within-cluster regression analysis was employed to determine the relative weight attached to the student dispositional characteristics in explaining their GCE O - and A-level performance. Results were

not significant, but there was a strong indication that the combined effect of the students' dispositional characteristics as measured in the study had, on average, almost equal influence to their measured intellectual ability in independently determining GCE O-level performance, and was considerably more influential at Advanced level. Clarke and Youngman (1987) conclude that when selecting students for A level courses "it would seem more useful to take account of other student factors, in particular their dispositional characteristics." Clarke and Youngman acknowledge that if we are to advance our understanding of the processes involved in attaining academic success, much further work is needed in this area, with careful selection of predictor variables which have a sound theoretical inter-link. They also call for the development of new instruments which are able to reflect more soundly the theory and practice of the educational process, in particular in respect of the constructs of anxiety and motivation.

A more broadly based study of the effects of a range of variables on educational attainment and socio-economic status over a seven year period was undertaken by Cassidy and Lynn (1991). Initial assessment took place at the age of sixteen, the measures including intelligence, personality, achievement motivation, personal data or socio-economic status and parental educational achievement, parental encouragement to study, a possessions index (indicating economic advantage/ disadvantage) and a crowding index. At twenty three years old follow-up measures consisted of a personal data form, an achievement motivation questionnaire and the Eysenck Personality questionnaire. The socio-economic implications are beyond the scope of this study, but it is of interest to note that IQ, school type and home

background emerged as important predictors of educational attainment, as did the achievement motivation dimensions of acquisitiveness, dominance and work ethic. Cassidy and Lynn (1991) conclude that factors such as intelligence, whilst playing an important role, do not provide the sole necessary precondition for educational attainment. From this study they conclude that achievement motivation is a better predictor of educational attainment than IQ, accounting in their study for almost three times as much of the variance. Looking at achievement motivation in more detail, a high work ethic score is best predicted by low psychoticism and neuroticism scores (Eysenck et al., 1985). A further direct predictor of educational attainment is dominance, which includes an aspiration to lead, and links with higher extroversion scores. Achievement motivation emerges in a central mediating role between home background, intelligence, personality, school type and educational attainment. The influence of both formal and informal socialisation, through family background and school, combines with the more stable and early developed characteristics of personality and intelligence to produce a particular achievement motivational style which in turn predicts educational attainment. Cassidy and Lynn (1991), turning to the implication of their findings for educators and parents, stress the multi-dimensional nature of the concept of achievement motivation, implying the use of profile analysis rather than an overall achievement motivation score. Individuals' scores on different dimensions should be looked at, as the direction of effect of the various factors is not the same.

It is evident from the recent studies discussed above that further research into the relationship between personality and academic attainment is imperative to further

unravel the complex patterns of relationships involved. The methodology suggested by both of these major British studies is pertinent to this research. Cluster analysis will take into account patterns of relationships within and between clusters of students exhibiting identifiable syndromes of personality and attainment variables, and examination of both cluster and individual profiles - typical cluster members and outliers - will help to augment our understanding of the relationship between personality and academic attainment. We can then examine the implications for educational practice.

CHAPTER 3

METHODOLOGY

3.1 Qualitative or Quantitative

The fundamental purpose of educational research is to reach an understanding of an educational issue or activity by adopting a systematic and structured approach to the collecting, scrutinising and interpreting of evidence.

As an applied discipline, educational research may cover the whole spectrum from the theoretical to the practical, drawing on theories deriving from sociology, philosophy, history or, as with the present study, psychology, whilst at the same time incorporating a more practical, developmental approach using fieldwork, questionnaires or testing.

Some research will address a specific question, whilst other approaches allow the focus of the study to be refined through a more prolonged process of data collection and analysis.

The methods of the natural sciences - the empirical approach resting on trial or experiment - have frequently been used in educational research, resulting in numerical data which may be subjected to statistical analysis. Emphasis is placed on the directly and physically observable, the assumption being made that cause and effect relationships must be logically analysed and a positivist stance taken that quantitative

methods be used wherever possible.

As Coolican (1990) clearly explains, by strict definition a variable can only be quantitative. As it changes it takes on different values. A positivist would argue that psychologists can only study variables because contrast and comparison can only be achieved where there is change; what changes is a variable and variables must be quantifiable.

Many researchers, however, doubt the value of the positivist approach with its attachment to the hypothetico-deductive method. Results and outcomes, they argue, may be narrow, artificial and of little use and could be said to have led to much irrelevance in, for instance, social psychological research (Harré, 1981). The traditional paradigm treats people as isolated from their social contexts and the experimental situation or survey interview can only permit the gathering of superficial information. Highly structured research methods predetermine the nature of the resulting information, and similarly highly structured coding and categorising systems lose sight of the wholeness of the individual. Further, they would argue, the relationship between experimenter and subject may be seen as dominating and elitist.

Atkins (1982) also raises the question as to whether the quantitative approach is the most appropriate model for understanding human behaviour - for the study of active human beings who have the capacity to act on and control both their internal and external environment, as opposed to the study of inert matter. Has there been an excess of emphasis on objective measurement and direct observation such that

important topics in education, not susceptible to this treatment, have been devalued? The debate illustrates a fundamental disagreement summed up by Reason and Rowan (1981):

> "There is too much measurement going on. Some things which are numerically precise are not true: and some things which are not numerical are true. Orthodox research produces results which are statistically significant but humanly insignificant: in human enquiry it is much better to be deeply interesting than accurately boring."

An attempt to move away from the hypothetico-deductive method as the dominant paradigm to a search for new paradigms which operate in a social, meaningful context and give us information about the subject's experiences has shifted the research focus on to qualitative and naturalistic methods of investigation. Qualitative data, used by the positivist in a subsidiary role to illuminate and give context to otherwise neutral and uninspiring statistics, leading to a hypothesis testable in quantitative terms, is seen by the qualitative researcher as meaningful and valued in its own right. The new paradigms concentrate on the meanings of actions in a social context, with the emphasis on interaction. Meanings and interactions belong to social situations and contexts and cannot be isolated from these.

The approach, therefore, emphasises meanings, experiences - often verbally described -and descriptions. Raw data consists of what people have said in interviews or recorded conversation, or a description of what has been observed. Order must, however, be imposed on the data in order to analyse and compare the various meanings produced in any one category, whilst preserving the richness of the unique qualities of category items. These loosely controlled methods will produce

unpredictable amounts of information which the researcher has to sift, organise and select for importance, whilst having more scope to decide which observations are worthwhile.

Decisions about analysis and presentation of qualitative data will be influenced by the theoretical background or model from which the researcher is working, including, for example, categories - both personal and indigenous, typologies and quotations - direct and summarised. The search is for some form of inductive analysis in which theories, models and hypotheses emerge from the data gathering process rather than being confirmed by it. Emergent categories and models are constantly refined in the light of incoming data, enabling categories, processes and even hypotheses to emerge which may not have been envisaged at the commencement of the research. Within this model a research cycle is established in which consultation with participants will take place as to the accuracy and acceptability of these emergent themes, models and categories. Patton (1980) states:

> "The cardinal principle of qualitative analysis is that causal relationships and theoretical statements be clearly emergent from and grounded in the phenomena studied. The theory emerges from the data; it is not imposed on the data."

Patton's statement links closely with the basic principles of the "grounded" theory advocated by Glaser and Strauss (1967). These researchers argue that observers should enter a research situation with no theoretical prior preconceptions and should create, refine and revise theory in the light of further data collected. The "grounded" hypotheses, generated through actual observation, would be more true to life than those deduced by prior commitment to a particular theory. The final qualitative

report would give an account of early hypotheses which were formed and the extent to which these guided or changed the direction of further enquiry.

The trend, then, is towards a more open style of research which embraces both major perspectives. Cronbach (1975) criticised the experimental design which characterised his own previous research:

> "Instead of making generalisation the ruling consideration in our research, I suggest that we reverse our priorities. An observer collecting data in one particular situation is in a position to appraise a practice or proposition in that setting, observing effects in context. In trying to describe and account for what happened, he will give attention to whatever variables were controlled but he will give equally careful attention to uncontrolled variables."

The present study acknowledges a positivist approach in terms of gathering of primarily quantifiable data. However, a qualitative dimension is evident in the use of documentary evidence generated within the institution, the analysis of negative ca ses, or outliers, and an attempt to triangulate the data, particularly in the area of staff and student prediction of results. Other essential elements of a qualitative approach, however, were not feasible within the scope of this study, particularly the implementation of a research cycle in which reference is made back to the participants to refine, deepen and clarify the findings.

In the spirit of the quotation from Cronbach, above, a multi-dimensional approach has been adopted in this study which aims to combine appropriate rigour whilst adhering to the concept of observing effects in context.

3.2. The Case Study Tradition

A second major methodological issue pertinent to this study is the role and status of the case study in educational research. Having established that this study aims at a multi-faceted approach, it still rests in the case study tradition by Youngman's (1979) definition:

> "A case study is... the name given to research procedures which attempt to establish the specific characteristics of an individual person, group, institution, community or event with a view to understanding the behaviour of that subject."

Also, as expressed by Adelman et al (1977):

> "Case study is an umbrella term for a family of research methods having in common the decision to focus an enquiry around an instance."

Adherents of the case study method would point to the intelligibility of its findings, the accessibility of results to a wider readership beyond the research circle and its three-dimensional reality. The case study also provides suggestions for intelligent interpretation of other similar cases and may identify a pattern of influences that is too infrequent to be discernible by the more traditional statistical analyses, (Nisbet and Watt, 1978). A further virtue is the accessibility of the method to the individual researcher who does not have the benefit of a research team.

Reservations about the case study method centre upon its inability to produce results which are generalisable and that the method may give rise to personal and subjective judgements which are less easily checked by systematic methods and are prone to a journalistic and anecdotal approach which is less than useful.

Progressive use of the case study method has allayed many of the fears about its applicability in educational research, as discussed by Atkins (1982). The work of the Manchester school of sociologists - Hargreaves (1967), Lacy (1970) and others using participant observation in a single school acted as a stimulus to further refinement of the method, particularly in terms of reliability and validity. Stenhouse (1980) developed the idea further in his argument for a case record of research similar to the evidence appealed to by historians. Techniques such as triangulation - looking at a situation or phenomenon from different viewpoints - and a focus on "negative cases" have increased confidence in the findings as different sources or types of information confirm each other, In practice, therefore, as Youngman (1979) points out, as long as the standard considerations of reliability and validity of measurement, replicability of procedure and analysis, and verifiability of interpretation are borne in mind, it should be possible to make a case study acceptably objective. Performed properly, a case study can serve many functions varying from curriculum evaluation to complementing statistical analysis by describing exceptional instances.

Looking at the extent to which this particular study fits the case study tradition, it lies within the focus upon one institution. The study derived from an open phase of observation of varying patterns of response among students to their personal experiences within the learning process. The focus was then sharpened to devise ways of measuring and characterising these patterns of response in ways which would illuminate our knowledge of the age group. A research design was drafted within the context of the institution to attempt to answer a range of questions and some triangulation was attempted to obtain confirmation within the data. Within the case

study tradition also is the examination of outliers - cases which do not fit into any syndrome of characteristics - and for whom an individual profile is constructed to illuminate and understand their particular differences.

In conclusion, the research must be said to deviate from the case study tradition in that hypotheses were constructed from theory (Bandura, 1977,1989; Rotter, 1966) and the final phase of the case study - the re-checking with participants to verify the findings, checking for accuracy and acceptability, - was not feasible.

The multi-dimensional approach of the research may be said to take us beyond the case study tradition but acknowledges its roots within it.

CHAPTER 4

HYPOTHESES AND RESEARCH DESIGN

4.1 Hypotheses

1. That there is a positive relationship between mastery as measured by the Student Self-Perception Scale and academic attainment, and that a high score on the mastery scale will be accompanied by positive change in attainment.

2. That there is a positive relationship between personality, confidence and academic attainment.

3. That the positive relationship between personality and academic attainment varies with gender and ethnic group.

4. That personality factors as measured by the Student Self-Perception Scale are effective predictors of academic attainment over a given course of study.

5. That personality factors as measured by the Student Self-Perception Scale exert a substantial effect on performance, independent of ability.

6. That identifiable clusters of students will emerge exhibiting varying patterns of relationship between personality, self-concept and attainment.

4.2 The Sample

The sample consists of entrants to year twelve in a Sixth Form College in September 1990. 433 students were admitted to the college, of whom 364 completed the initial assessment and comprise the sample and 339 remained to complete their courses. Of the 364 students, 253 were accepted on to a two or three A-level course, 71 on to GCSE Repeat courses and 40 on to Vocationally related courses.

The ages of the students in the sample ranged from 16.0 years to 18.6 years, the explanation being that not all students enter post-16 education immediately after leaving school. 73.4% of the sample fell within the 16-17 age range.

In terms of gender, 169 of the whole sample were male and 195 were female. There were slight differences in gender balance between the four courses, but none of significance.

In 1990 the new college intake had an ethnic minority population of 14%. Ethnic minority students provided 13.7% of the total sample, numbering 50. Of these 27 (7.4%) were Asian, 19 (5.2%) were Afro-Caribbean and 4 (1.1%) were Chinese or Vietnamese.

Analysis was not attempted in terms of social class, but the intake was mixed, ranging from inner-city working class estate schools to schools in the independent sector. Fifty-five schools were represented altogether.

4.3 Procedure

The purpose of the research was to take a whole year intake of students on entry to the tertiary phase of education and attempt to measure the student's own perception of his or her ability to succeed on a given course of study or educational experience. A total of 364 students were assessed over a period of two weeks in November 1990 using a test booklet specifically designed for the purpose. The booklet comprised the newly devised and piloted Student Self-Perception Scale and a Locus of Control Scale devised by Nowicki and Strickland at Emory University, Atlanta, Georgia. A standard introduction was given by the researcher and the students then completed the booklet in small groups under careful supervision. As the research demanded information which would produce a range of variables over areas of personality, attitude and attainment, in addition to completing the two scales students were asked to complete certain biographical details, to predict their own results at the end of the course and indicate a measure of their confidence to achieve their intended outcome on a scale of 1 (not at all confident) to 4 (very confident).

The piloting of the Student Self-Perception Scale took place in July 1990. An initial scale of 88 items were given to 152 year twelve students in two inner city Sixth Form Colleges. The results were submitted to oblique factor analysis (Kaiser and Rice, 1974; Youngman, 1976), and a four factor solution was selected which produced an overall IFS of 0.73. Fifteen items were rejected. Item analysis, using the alpha beta method, which seeks to maximise the internal consistency of the test, resulted in the acceptance of 64 items for the final measure, comprising four sub-scales.

Other data obtained for the research has consisted of December and March college reports for all students, predicted grades from tutors for summer examination results and external examination results on entry and at the end of a student's course.

After generation of basic statistics for the sample an additional variable was generated in the form of a residual change score for each student to detect positive or negative change in attainment as measured by external examination results. This residual change score became variable 21.

4.4 Details of Variables

Biographical Variables

The variables within this category are concerned primarily with background information about the student. Details of sex, age and course were obtained along with school of origin and ethnic grouping to enable comparisons between groups, particularly in terms of gender and ethnicity. Gender is coded M=1, F=2. In terms of gender, 169 of the sample were male and 195 female. Age, when coded in months, produced 25 codes, reflecting the range of student ages at the start of courses in a Sixth Form College. One student was in the youngest category of 192 months - 16 years old, and three students were in the oldest category of 224 months - 18 years 8 months old. 73.4% of the sample fell within the 16-17 age range. Given the nature of the sample, apart from a significant relationship between age and course - explained by the fact that a higher proportion of students on 3 A level courses had already spent time at this or other Further Education institutions qualifying for such courses, whereas most CPVE student had come directly from Year 11 - age was of no significant importance in subsequent analysis.

In terms of course, 11% of the sample were on CPVE courses, 19.5% were on GCSE repeat courses, 13.5% were on two A-level courses with one or two GCSE subjects and 56% were on 3 A-level courses. Ethnic minority representation was predominantly on the 3 A-level course. 18% of ethnic minority students were on CPVE courses, 36% were on GCSE repeat courses, 6% were on two A-level courses and 40% were on 3 A-level courses. Overall, 7.4% of the sample were Asian, 5.2% were Afro-Caribbean, 1.1% were Chinese/Vietnamese and 86.3% were

white.

Fifty-five schools were represented in the study, eight being the college's traditional "feeder" schools and the rest representing students from the county 11-18 schools who chose to come to the college as their sixth form. The school variable was ultimately excluded from the research as the data obtained was incomplete and inconsistent.

The Confidence variable was obtained on initial testing which explains its presence within this group of variables. Students were asked to indicate how confident they were in the accuracy of their own predictions of results, ticking one of four boxes marked Very Confident, Fairly Confident, Not Very Confident or Not at all Confident. This was subsequently used in the data as part of the set of personality variables.

Biographical information was obtained from on-entry testing, initial application forms and the college nominal role.

Attainment Variables

Within this category the following data was obtained. Firstly, a total GCSE score on entry was calculated on a points scale ranging from A=9 to G=3, N=2, U/Fail/ No result=1, Not taken=0. This total points score on entry could then be used in relation to a total points score on exit as an indicator of improvement or deterioration.

Secondly, a variable was created which quantified the number of GCSE subjects gained at grades A-C, indicating a level of attainment which would relate to admission to an A-level course. Thirdly, a course total for each student at the end of their initially agreed course was calculated, taking into account subjects that had been dropped. Fourthly, a total score on exit from the college was obtained, including points on entry and extra subjects acquired en route such as A-level General Studies, Further Maths or additional GCSE subjects such as Italian.

Total scores on entry for the whole sample (N=364) ranged from 9 points to 83 points, with a mean score of 54.3 and a standard deviation of 14.5. Total scores on exit ranged from 16 to 108 with a mean of 78.8 and a standard deviation of 7.8. C+ on entry ranged from no grade C's or above for 1.1% of the sample to five grade C's or above for 52.5% of the sample.

Prediction Variables

Students were asked at initial on-entry testing to predict the grades they expected to gain at the end of the course in their chosen subjects - or in the case of a discrete course such as CPVE to indicate pass/fail. Prior to final assessment or examination, tutors were also asked to predict grades for the Examination Boards. A predicted difference score was calculated using the student prediction as the base prediction and seeing to what extent the tutor prediction deviated in a positive or negative direction. In order to eliminate minus scores from the data the lowest score of - 06 was added to every other score to create a range of 0-42, with the score of 06 as the break-even point where tutor and student predictions matched. Student prediction was also

adjusted to take into account missing data from staff due to subjects dropped, already passed in November, or error, thus creating a match with final tutor predicted grades. For predictive purposes, intermediate gains on all courses were excluded.

A further predictive variable was generated by looking at the distance travelled by a given student in terms of attainment whilst in college. Progress may be indicated by looking at the point a student may be expected to reach after one or two years of further study. Using total on entry as the predictor and total on exit as the criterion a residual change score - a measure of improvement or deterioration - can be calculated and used alongside other variables.

Further discussion of residuals as variables can be found in Chapter Five.

Personality Variables

The Student Self-Perception Scale was devised for this research in an attempt to define the constructs which affect the way students see themselves as learners and to relate their perceptions to the way that they perform and achieve academically. The scale was piloted on a sample of sixteen and seventeen year old students (N=152) from two Sixth Form Colleges. After appropriate factor and item analysis the reliability and validity of the scales were checked and the scale was then administered to the main sample. The scales produced were Passivity, Mastery, Work Related Inadequacy, Extroversion and Social Dependence.

In order to demonstrate the validity of each of the SSPS scales, a further personality

measure was used - the Nowicki-Strickland Locus of Control Scale (Nowicki and Strickland, 1973). This scale was devised at Emory University, Atlanta, Georgia, and is a paper and pencil measure of the locus of control consisting of 40 questions that are answered by marking either the YES or NO place next to the question. The scale is based on Rotter's definition of the internal-external control of reinforcement dimension and the constructed items describe reinforcement situations across such areas as affiliation, achievement and dependency. The scale showed a test-retest reliability of 0.76 for twelfth grade students over five weeks (Nowicki and Roundtree, 1971).

[Details of the complete variables set and evidence of reliability and validity for these measures can be found in Chapter Five.]

4.5 Supplementary Data

In addition to the variables describe above, other data was collected to enable the elaboration of detail about individuals and groups.

Initial Application Forms and Interview Data

Details of the student's previous educational history and comment by secondary school staff on personality, character, attitude to academic work, sporting abilities, special circumstances - home, health etc., career aspirations and desired course of study.

College Reports

Each student received two progress reports each academic year, completed by all subject staff and with a general comment by the Personal Tutor.

Correspondence with Parents/Carers

Letters home, frequently as a follow-up to the reporting process, but also indicating missing coursework, unsatisfactory attendance or attitude.

Previous Achievements and Examination Results

Predicted and achieved GCSE O and A level grades, other forms of accreditation eg City and Guilds examinations, Duke of Edinburgh Award.

Student Profile

Completed by the student on entry giving details of interests, hobbies, part-time

work, plans for progression

Careers Information

Records of interviews with LEA Career Services, applications for Further and Higher Education and records of other destinations.

CHAPTER 5

MEASUREMENT TECHNIQUES

5.1 Details of Measures Used

Table 1 below gives details of the full variables set. The rationale for the inclusion of biographical, attainment and prediction variables was presented in Chapter 4, section 4.4. Particular reference will be made in this section to the personality measures. Section 5.2 will consist of statistical data relating to the construction of the Student Self-Perception Scale, including validation statistics in relation to the Nowicki-Strickland (1973) Locus of Control Scale. A discussion of the status of residual scores as variables will be presented in Section 5.3.

TABLE 1

List of Variables

Variable No	Code	Description	Category
0	ID	Identification 001 - 364	
1	SEX	M = 1; F = 2	
2	AGE	Age in months (192 - 224)	a)
3	COURSE	1 = CPVE; 2 = GCSE; 3 = 2 x A; 4 = 3 x A	Biographical including Confidence
4	CONF	Confidence in results:1 = not; 2 = not very; 3 = fairly; 4 = very	
5	ETHNIC	1 = Asian; 2 = A-C; 3 = Ch-V; 4 = White	
6	SCHOOL	Feeder schools 1-55	

7	CENTRY	C+ on entry	b) Attainment
8	TOTENT	Overall total on entry	
9	COURSEX	Total at end of given course	
10	TOTEX	Overall total on exit	
11	STUPRE	Student prediction on entry	c) Prediction
12	TUTPRE	Tutor prediction pre-exit	
13	PREDIF	Difference between 11 and 12	
14	PASSIV	SSPS Passivity	d) Personality/ Dispositional
15	MASTERY	SSPS Mastery	
16	INAD	SSPS Work Related Inadequacy	
17	EXTRA	SSPS Extroversion	
18	DEPEND	SSPS Social Dependence	
19	LOCUS	Locus of Control	
20	CLUSTER	Cluster membership 1-8	e) Generated
21	RESIDUAL	Residual change score (TOTENT-TOTEX)	

Personality Measures

Two measures of personality were used in this study. Firstly, the Nowicki-Strickland Locus of Control Scale (1973) was used. The search for an instrument against which to validate the Student Self-Perception Scale designed for this research led to the consideration of a number of existing scales. Problems of age range were encountered, along with the absence of an appropriate British measure. Consideration was given to the Perceived Competence Scale for Children (Harter, 1982), the IAR (Intellectual Achievement Responsibility) Scale (Crandall, Katkovsky and Crandall,

1965), and A New Multi-Dimensional Measure of Childrens' Perceptions of Control (Connell, 1985). The Harter (1982) scale and the Connell (1985) scale were both attempts to explore the multi-dimensional nature of the concepts of, in Harter's case perceived confidence, and in Connell's case children's perception of control.

Both researchers identified cognitive, social, physical and general domains, Harter focusing on a self-evaluative perspective and Connell identifying a third dimension of unknown perceived control. Using Connell's MMCPC (1985), Butler and Orion (1990) also found unknown control to be a significant construct which was particularly associated with poor achievement in school.

Two scales devised by Entwistle and colleagues were also given consideration, having the advantage of being designed for British students. These were the Student Attitude Inventory, focusing on student motivation, study methods and examination techniques (Entwistle, Nisbet, Entwistle and Cowell, 1971) and The Approaches to Studying Inventory which measures intrinsic and extrinsic motivation along with two other factors labelled "achieving" and "non-academic" (Entwistle and Ramsden, 1983). Both measures were rejected given the uncertainty surrounding their validity and reliability. Daines (1977) reported that full validation of the 1971 measure was not complete and Newstead (1992), commenting on the 1983 measure reported that the scales had only moderate levels of reliability with Cronbach's alpha ranging from 0.44 to 0.61 on three scales of the ASI. The Nowicki-Strickland scale (1973) was ultimately accepted as the most appropriate available instrument, given its relatively extensive age-range applicability and satisfactory validity and reliability. The scale's

generalised nature and the necessity to modify the wording for British students could be seen as a disadvantage but alterations were kept to a minimum and were not deemed to have affected the usefulness of the scale.

The scale was designed to assess the construct of locus of control of reinforcement as defined by Rotter (1966), as the perception of a connection between one's action and its consequences. Scales exist which will measure locus of control across the age-range, from pre-school to geriatric. The version used in this study is the Children's Internal-External control scale (CNSIE), appropriate for children from ages 9 through to 18. The score is the total number of items answered in an externally controlled direction. Nowicki and Strickland (1973) reported estimates of internal consistency via the split-half method, corrected by Spearman-Brown: r = 71 (Grade 10). Nowicki and Strickland assert that this reliability is satisfactory in the light of the fact that these items are not arranged according to difficulty. Since the test is additive and items are not comparable, the split-half reliabilities tend to underestimate the true internal consistency of the scale. (Further details of the Nowicki-Strickland Locus of Control Scale can be found in Appendix 1).

The second personality measure used in this study is that of the Student Self-Perception Scale devised specifically for this research. The scale was developed in an attempt to measure students' views of themselves within an educational context and to test this self-view in relation to given attainment, predictions of success from both students and tutors, and eventual outcomes at the end of a given course.

5.2 Student Self-Perception Scale - Item Selection and Analysis

The aim of the scale is to examine the students' perception of the value and purpose of the educational courses they are undertaking. To what extent are students prepared to commit themselves to the task in hand, how determined are they to succeed, how much time and effort are they prepared to expend in order to achieve their perceived goals and what, if any, guarantee of success do they require?

The Self-Perception Scale (SSPS) has been constructed incorporating dimensions contingent on a student's determination to succeed in the context of a given educational course or experience. Dimensions considered important to the SSPS are general categories of positive and negative self-view; view of self in relation to tutors, peers, siblings, parents and the college based work situation; academic and vocational aspirations and future employment.

Items for the scale were collected by reference to existing similar scales (Rotter, 1966; Crandall, Katowsky and Crandall, 1965; Nowicki and Strickland, 1973; Harter, 1982; Connell, 1985; Chapman, 1983; Summerfield, 1980). Further items were generated by a Student Induction Questionnaire given to the September 1989 intake of 16 year old students admitted to a Sixth Form College, designed to elicit hopes of and attitudes to college life, relationships with staff and other useful information to be used to improve college procedures. Questions asked were for example:

"How did you feel on your first day at college?"

"Do you think you are treated maturely and fairly by your teachers?"

"Did you find staff attitudes..too friendly/ distant and aloof/

patronising/ efficient/ caring..?"

"Do you feel that you will gain your qualifications?" etc.

An initial scale of 88 items was put together. It was piloted on 152 students aged 16-17 years from two Sixth Form Colleges. Oblique factor analysis (Kaiser and Rice, 1974; Youngman, 1976) generated four interpretable factors suitable for scale construction, with an overall IFS of 0.73. 15 items whose low loadings showed them to fit no scale were rejected.

SSPS FACTOR PATTERN MATRIX (CONVENTIONALLY SCALED)

(Appendix 2)

Salients marked with an asterisk.

Subsequent item analysis of these four sub-scales resulted in the rejection of a further 9 items. 64 items were accepted using the alpha-beta method which seeks to maximise the internal consistency of the test. The alpha value for each item is computed (ie the internal consistency reliability) with the item and without it. If alpha is higher without the item then the item is removed.

SSPS - SCALE ALLOCATION (64 items)

SCALE 1	21 items	(Mastery)
SCALE 2	19 items	(Assertiveness)
SCALE 3	14 items	(Social Independence)
SCALE 4	10 items	(Work Related Competence)

Scoring

Items are marked on a four point Likert type scale - Very True, Often True, Sometimes True, Not True. Each category of response is allocated a numerical value taking into account the direction of the statement. The responses are added together to give a score, quantifying the person's position on a given scale. Adding together assumes unidimensionality and reflects the degree of intensity of the subject's feelings.

For the SSPS a positive response is given 4 points, taking into account the direction of the scoring. The maximum number of points attainable for the total scale is 256. At this piloting stage a high score on a sub-scale was given a positive label.

Reliability

TABLE 2

Cross-validation reliabilities for the 4 SSPS sub-scales and total (N=152)

Scale	No of Items	Alpha
1	21	.81
2	19	.82
3	14	.76
4	10	.71
5	88	.82

Reliability values are good for the sub-scales and the total. Sub-scale 4 has a slightly lower reliability, which may weaken its value in relation to the other sub-scales, but it is still acceptable.

Validity

At this stage in the analysis the measure was assessed for content or face validity, in the absence of the availability of a related measure. On inspection, the instrument was judged to measure what it was intended to measure and all items seemed to be working well. Further validation procedures will follow on analysis of the full sample.

FULL SAMPLE ANALYSIS

The item analysis and reliability check on the pilot sample having been completed, the re-scored four-scale version was applied to the main research sample of Sixth Form College students (N-364) to obtain basic statistics so that validation checks could be performed. The distributions of all the measures show fairly good discrimination, although sub-scales 2 and 4 show tendencies towards negative skew whilst sub-scale 3 shows some bi-modality.

TABLE 3

Scale statistics for the pilot sample (N=152) and research sample (N=364)

	Sample 1 (N=152)		**Sample 2** (N=364)	
	Mean	s.d.	Mean	s.d.
Scale 1	57.82	8.37	59.37	8.62
Scale 2	62.22	7.83	63.70	6.85
Scale 3	42.46	5.94	39.93	4.91
Scale 4	30.45	4.52	32.84	4.72
Total	192.96	18.64	195.86	18.75

Reliability

TABLE 4

Cross validation reliabilities for the 4 SSPS sub-scales and total (N=364)

Scale	No of items	Alpha
1	21	.84
2	19	.78
3	13	.65
4	11	.72
Total	64	.88

Reliability values are satisfactory for sub-scales 1, 2 and 4, although sub-scale 3 is seriously weakened, alpha dropping from .76 to .65.

ITEM ANALYSIS - REFINED SCALE - (56 items)

Further item analysis on data from the full sample resulted in the rejection of 8 further items, making a total scale of 56 items. Sub-scale 1=19; sub-scale 2=18; sub-scale 3=10; sub-scale 4=9. One further item was suggested for removal (item 25) but on inspection it was decided that the increase in alpha was minimal - from 0.7426 to 0.7458 - and that the item should be retained to augment the fourth sub-scale. The overall IFS for the 56 item scale is 0.77.

SSPS - FACTOR PATTERN MATRIX (CONVENTIONALLY SCALED)

Salients marked with an asterisk. Underlined item retained. (Appendix 2)

Reliability

TABLE 5

Cross validation reliabilities for the 4 refined SSPS sub-scales and total (N=364)

Scale	No of items	Alpha
1	19	.84
2	18	.78
3	10	.67
4	9	.74
T=	56	.86

Reliability values are still fairly good for the sub-scales and the total. Whilst sub-scales 1 and 2 remain constant, sub-scales 3 and 4 are marginally strengthened, making sub-scale 3 more useful but still weak.

TABLE 6

Scale statistics for research sample comparing initial item analysis (64 items) with subsequent item analysis (56 items) (N=364)

	First Run		Second Run	
	Mean	s.d.	Mean	s.d.
Scale 1	59.37	8.62	52.61	8.18
Scale 2	63.70	6.85	60.51	6.61
Scale 3	39.93	4.91	30.52	4.35
Scale 4	32.84	4.72	26.79	4.45
Total	195.86	18.75	170.44	17.44

The distributions of all the measures of the refined scale still show fairly good discrimination, although sub-scales 2 and 3 now show tendencies towards negative skew and sub-scale 4 to polarization. On inspection, it was decided to examine a five

factor solution, in that sub-scale 1 seemed to exhibit some features of extroversion as opposed to mastery or high control.

5 FACTOR SOLUTION

The 5 Factor solution presented an IFS of 0.75

SSPS - FACTOR PATTERN MATRIX (CONVENTIONALLY SCALED)

(Appendix 2)

Salients marked with an asterisk

ITEM ANALYSIS (52 items)

Initial item analysis of the five factor solution resulted in the generation of five sub-scales comprising 55 items. Nine items whose low loadings showed them to fit no scale were rejected. Four further items were suggested for rejection as alpha would increase for the particular sub-scale on removal. It was decided to remove three items and retain a fourth (item 63), given that the increase in alpha for the sub-scale would be from 0.7992 to 0.8032. This left the sub-scale as follows:

TABLE 7

Cross-validation reliabilities for the 5 SSPS sub-scales and total (N=364)

Scale	No of items	Alpha	Scale Name
1	12	.81	Passivity
2	15	.79	Mastery
3	11	.72	Work Related Inadequacy
4	04	.70	Extroversion
5	10	.66	Social Dependence
T	52	.69	

TABLE 8

Scale statistics for the 5 factor solution (N=364)

Scale	Name	Mean	SD
1	Passivity	23.72	6.08
2	Mastery	41.77	6.36
3	Work Related Inadequacy	18.43	4.35
4	Extroversion	11.78	2.47
5	Social Dependence	16.90	3.96

Distributions in Figure 1 show fairly good discrimination, although scales 1, 3 and 5 show tendencies towards positive skew and scale 4 towards negative skew.

Reliability

Cross validation reliabilities for the 5 SSPS sub-scales (N=364) as shown above indicate that reliability values are still satisfactory although marginally weakened for the sub-scales 1, 2, 3 and 4. Sub-scale 5 is weak in relation to the other scales, containing as it does four items from the previously weak third sub-scale, but represents a recognisable dimension and as such is considered to be useful.

It was decided to accept the 5 factor solution as despite the slight weakening effect of this analysis on all scales the new Extroversion scale stands up reasonably well and is a valuable construct. Note must be made, however, of the small size of the Extroversion scale in the light of Youngman's (1979d) comment that "it is unlikely that any tests (and a sub-test still has to meet the requirements of a test) will perform

effectively with fewer than 6 items".

New scale names were chosen to reflect the character of the items in them. Scales are designed positive (+) or negative (-). Individual items with an inverse relationship to their scale are indicated thus: (-)

Scale 1 PASSIVITY 12 items (-)

06 My parents expect too much of me.

21 My friends always seem to find college work easier than I do.

22 I get confused if I have too many things to do at once.

28 I never seem to do as well as other members of my family.

34 The more problems I encounter, the more depressed I become.

43 I am always afraid that other people will be disappointed in me.

45 However hard I try something always stops me from doing what I want to do.

47 I know that I am going to fail my exams.

55 My spirits generally stay high no matter how many troubles I meet. (-)

56 I don't have much chance of doing what I want if adults don't want me to do it.

58 Having to cope with all this work is making me feel ill.

62 Worrying about an exam or work that is overdue often prevents me from sleeping.

Scale 2 MASTERY 15 items (+)

03 I would like the chance to make important decisions in my future job.

08 I work hard for success rather than dreaming about it.

09 The course I am taking this year will help me to get a good job.

13 Most of my teachers think that I am good at college work.

15 I like my subjects because they cause me to ask more questions.

20 I enjoy making decisions.

26 I enjoy learning new subjects at a higher standard.

27 I usually feel that I am one of the best in my group.

41 I have to persist with a problem even if people tell me to stop.

42 Problems never defeat me - there is always a way round them.

46 It is very important for me to "get on" in the world.

50 I can cope with complicated tasks and ideas.

53 I would be good at managing other people.

57 I know I can work under pressure.

63 I don't know what my success at college depends on. (-)

Scale 3 WORK RELATED INADEQUACY 11 items (-)

02 I often feel that I do not have enough control over my life.

11 I find it difficult to get on with my work because of the attitudes of fellow students.

17 I came to college mainly to please my family.

19 Staff at this college don't work us hard enough - they waste our valuable time with unnecessary waffle.

23 I am easily distracted from my studies by my friends.

31 I came to college to gain time before deciding what to do.

33 My teachers never seem to help me enough.

35 I find the teachers at this college patronising.

39 Teachers make me nervous.

52 Staff here humiliate you if you don't understand the work.

61 I felt messed about when I came to college - I didn't know if I was coming or going.

Scale 4 EXTROVERSION 4 items (+)

12 If I have something to say, I usually say it.

14 I knew that I would soon make friends at college if I gave it time.

32 I usually take the initiative in making new friends.

49 I am a very outgoing person and like to make new friends.

Scale 5 SOCIAL DEPENDENCE 10 items (-)

04 I came to college to be with my friends.

07 I came to college to have a good social life.

18 I was afraid that no-one would speak to me when I came to college and that I would be alone and friendless.

24 I don't really know what I would have to do to get a decent job.

25 If someone doesn't like me I find it hard to work out why.

30 I find it difficult to organise my own work - at school they usually did it for me.

37 I need my friends more than they seem to need me.

51 I find it hard to make decisions which involve other people.

59 I think I will be lucky if anyone ever gives me a job.

60 When something goes wrong for me I usually cannot work out why it happened.

Scoring

Items are marked on a four point scale. As the five sub-scales fall so clearly into positive and negative constructs, items are no longer reversed on marking and sub-scales are labelled positively or negatively as appropriate. A high score on a given sub-scale therefore corresponds positively with that label (see above).

The scale total, necessitating scoring in one direction only and consistently positive labelling, is not considered to be sufficiently discriminating for this analysis. It would be useful if the SSPS were to be used as a diagnostic tool or as part of an assessment procedure.

Sub-scales will now be designated as "scales".

Since the original item selection employed oblique factor analysis, the five scales are likely to be correlated. The following table gives product moment correlations for the main sample (N=364). Scales 1, 3 and 5 show positive correlations, as each scale represents a set of negative items ie Passivity, Work Related Inadequacy and Social Dependence. Scales 2 and 4, representing Mastery and Extroversion, also correlate positively, whilst having a negative relationship with scales 1, 3 and 5.

TABLE 9

Product Moment Correlations for SSPS Scale (52 items) (N=364)

	1	2	3	4	5
Scale 1	1.00				
Scale 2	-0.34**	1.00			
Scale 3	0.57**	-0.23**	1.00		
Scale 4	-0.16**	0.42	-0.09?	1.00	
Scale 5	0.51**	-0.29**	0.48**	-0.16**	1.00

(Significance indicated **P<.01. *P<.05, ?P<.10)

Validity

It is necessary to try to show the validity of these scales as measures of students' self perception. Given the decision to label the scales according to the nature of the constructs, the total SSPS score is not useful in this analysis.

In terms of content or face validity, the scales certainly seem to represent observed sets of attitudes and behaviours of students in the sample. As the items were mainly derived from students own responses to questionnaires, this is to be expected.

Concurrent validity is achieved if the correlation between the developed instrument scores and those of a suitable equivalent is sufficiently high. The absence of an equivalent measure precludes this form of validation. An attempt therefore was made to validate the five scales of the SSPS in terms of construct validity by using the total score of the Nowicki and Strickland Locus of Control scale (1973) as a related

measure. A low score on the Locus of Control Scale denotes Mastery. A high score indicates a high level of External Control.

TABLE 10

Product Moment Correlations for the Total LoC Scale and the 5 SSPS Scales

Key: 1 = LoC total (Low score = Mastery: High score = External Control)

2 = Passivity (High score reflects label)

3 = Mastery (High score reflects label)

4 = Work related inadequacy (High score reflects label)

5 = Extroversion (High score reflects label)

6 = Social dependence (High score reflects label)

	1	2	3	4	5	6
1	1.00					
2	0.52**	1.00				
3	-0.34**	-0.34**	1.00			
4	0.39**	0.57**	-0.23**	1.00		
5	-0.18**	-0.16**	0.42**	0.09?	1.00	
6	0.39**	0.51**	-0.29**	0.48**	-0.16**	1.00

(Significance indicated at ** P=<.01 * P=<.05 ? P=<.10

(Values given to 2 decimal points)

The Loc scale can be seen to correlate positively with the scales Work Related Inadequacy, Social Dependence and most strongly with Passivity. As expected, there is an inverse but highly significant relationship between the LoC scale and Mastery and Extroversion.

Correlation statistics were also obtained for the total Locus of Control score and the SSPS total score with the positively labelled scales reversed to give a meaningful total.

TABLE 11

Correlation between Locus of Control Total and SSPS Total (positive items reversed)

0.5578**

(Significance indicated at ** P=<.01, * P=<.05, ? P=<.10)

Reliability statistics were obtained for the Nowicki-Strickland Scale and are of interest taking into account any constraints on comparability between the anglicised and USA versions of the scale. Reliability was calculated for the research sample (N=364) using Cronbach's alpha method, which is an estimate and generally only offers a lower bound for the true value (Youngman, 1979c). The American sample (N-125) used test-retest procedures, a strategy not available within this current research.

TABLE 12

Reliability Statistics for the Locus of Control Scale for the main sample (N=364) and for the USA sample of 10th Grade students (N=125)

	N	r.	Age of students
Research sample	364	.66	16-17
USA sample	125	.71	15-16

Finally, mean scores for the research sample, whilst being marginally higher that for

the Matheney and Edwards (1974) USA sample, show a similar pattern of distribution.

TABLE 13

Mean differences on the LOC scale between the research sample (N=364) and a USA sample of 10th Grade students (N=96)

	N	Mean	s.d.	Age of students
Research sample	364	13.07	4.51	16-17
Grade 10 students (USA)	96	12.77	4.19	15-16

5.3 Residuals as Variables

An important aspect of the research is to look at change in relation to an individual's overall performance during a given course of study. It is not adequate to merely obtain the difference between initial and final scores (Youngman, 1979c), as students with a low initial score have ample opportunity to improve, but higher scorers are unlikely to better their initial scores by more than a small amount. Thus, low scorers tend to have high gain scores, whilst high scorers have low ones. This defines a negative correlation between initial and difference scores. Residual change scores overcome this problem. These residual scores are not correlated with initial scores, although they are with final ones, and they show a greater reliability. The residual score is the difference between the expected final score, as predicted from the correlation between the two scores, and the actual final score. A positive residual means that the individual did better than expected.

Using multiple regression, each residual is obtained by specifying a model with the final score as the criterion and the initial score as the single predictor.

Change scores were calculated for this research using total score on entry as the predictor and total score on exit as the criterion. This residual was then used as a variable.

Lord (1963) asserts the usefulness of residuals in examining relationships between change and other variables, although there is continuing discussion about appropriate interpretation (Cronback and Furby, 1970; Youngman, 1979c).

Table 14 shows the correlations between the change score and the attainment and personality variables. As would be expected, the change score, obtained by using total scores on entry and exit as the predictor and criterion, correlates significantly with the attainment variables. A strong positive relationship can be seen between the change score and the predictive tutor and student variables, and a strong negative relationship with predicted difference. The change score also exhibited a significant negative relationship with age, course and C+ scores on entry. No significant relationships were noted for the personality variables.

TABLE 14

Correlations between the change measure and attainment, predictive and personality variables

Variable	Description	Residual change measure
1	SEX	-0.01
2	AGE	-0.22**
3	COURSE	-0.24**
4	CONF	-0.06
5	ETHNIC	0.09?
6	SCHOOL	-0.05
7	CENTRY	0.20**
8	TOTENT	-0.05
9	COURSEX	-0.52**
10	TOTEX	0.56**
11	STUPRE	0.39**
12	TUTPRE	0.40**
13	PREDIF	-0.34**
14	PASSIV	-0.02
15	MASTERY	0.06
16	INAD	-0.04
17	EXTRA	-0.03
18	DEPEND	-0.03
19	LOCUS	0.04

Significance indicated ** P<.01, * P<.05, ? P<.10.

CHAPTER 6

STATEMENT OF RESULTS

6.1 Initial Inspection of the Data

The data was analysed in five main stages - the pilot phase, the creation of the Student Self-Perception Scale, the preliminary inspection of the data, cluster analysis and prediction.

All initial data was complete - that is, biographical, SSPS and student prediction variables. In subsequent analysis four variables suffered missing data - variables 8 (TOTENT), 9 (COURSEX), 10 (TOTEX) and 12 (TUTPRE). 25 students left college before the completion of the research. A further 30 students had incomplete data through teacher error or alterations in their courses. As most cases had the central value or middle score as the most frequent, it was decided to use the median to replace missing data in multivariate analyses which required complete data. Since the median is the point on a scale of measurement which divides the distribution of scores in half, it offsets the effects of extreme scores or measures.

Table 15 shows the means and s.d.'s for the variable set.

Frequency distributions were obtained for all variables, enabling the identification of

all actually occurring codes and the tracing and correcting of illegal ones. It was considered that subsequent cross-tabulation tables would be rendered more meaningful if the continuous variable of AGE was re-coded into high, medium and low. The thresholds of the groups were allocated by reference to the frequency charts.

TABLE 15

Basic statistics for the research sample

Variable	Description	Mean	s.d.
4 CONF	Confidence in results	2.76	0.60
7 CENTRY	C+ grades on entry	5.06	3.10
8 TOTENT	Overall total on entry	54.32	14.57
9 COURSEX	Total at end of given course	19.77	7.80
10 TOTEX	Overall total on exit	78.87	17.02
11 STUPRE	Student prediction on entry	25.04	6.28
12 TUTPRE	Tutor prediction pre-exit	18.31	7.43
13 PREDIF	Difference between 11 and 12	14.18	8.41
14 PASSIV	SSPS Passivity	23.70	6.08
15 MAST	SSPS Mastery	41.77	6.36
16 INAD	SSPS Work Related Inadequacy	18.43	4.35
17 EXTRA	SSPS Extroversion	12.02	5.04
18 DEPEND	SSPS Social Dependence	16.85	4.00
19 LOCUS	Locus of Control	13.07	4.50
20 CLUSTER	1 - 8	3.84	2.37
21 RESID	Change score TOTENT->TOTEX	-0.00	10.59

TABLE 16

Recoding of age into high, medium and low (age in months)

New code	Old code	%
1 (N = 124)	192 - 199	36.9
2 (N = 95)	200 - 203	28.3
3 (N = 117)	204 - 224	34.8

Details of the biographical, attainment and personality variables were given in Chapter 4.

To elicit more detail of relationships between the nominal variables, cross-tabulations were obtained. Cross-tabulation of age with cluster, sex, confidence and ethnicity revealed nothing of significance. There was a significant relationship, however, between age and course.

TABLE 17

Comparison of student course and age (Row percentages)

	Course				
Age	**1 (CPVE)**	**2 (GCSE)**	**3 (2 x A)**	**4 (3 x A)**	**Row Total**
1 (N = 124)	14.9	24.6	10.4	50.0	36.8
2 (N = 95)	15.4	15.4	10.6	58.7	28.6
3 (N = 117)	3.2	17.5	19.0	60.3	34.6
Column total	11.0	19.5	13.5	56.0	100.0

Chi-square = 19.57
P = 0.0033 (<.01)

Further sub-group analysis revealed a slight relationship (at the 10% level) between

course and confidence, with CPVE and GCSE students showing higher levels of confidence than A level students.

TABLE 18

Comparison of student course and confidence (Row percentages)

	Confidence				
Course	1 (not)	2 (not very)	3 (fairly)	4 (very)	Row Total
1 (CPVE: N=40)	2.5	12.5	72.5	12.5	11.0
2 (GCSE: N=71)	4.2	14.1	71.8	9.9	19.5
3 (2 x A: N=49)	6.1	16.3	73.5	4.1	13.5
4 (3 x a: N=204)	2.9	27.5	66.2	3.4	56.0
Column Total	3.6	21.7	69.0	5.8	100.0

Chi-square = 16.45
P = 0.057 (<0.10)

Finally, the relationship between course and ethnicity proved significant at the 5% level in that 22.5% of the CPVE courses consisted of Asian or Afro-Caribbean students, whereas only 8.9% of students taking three A-level subjects came from these two ethnic groups.

TABLE 19

Comparison of student course and ethnic group membership (Row percentages)

	Ethnic group				
Course	1 (Asian)	2 (A-C)	3 (Ch.-V)	4 (White)	Row Total
1 (CPVE: N=40)	10.0	12.5	2.8	77.5	11.0
2 (GCSE: N=71)	12.7	9.9	-	74.6	19.5
3 (2 x a: N=49)	2.0	4.1	1.0	93.9	13.5
4 (3 x A: N=204)	6.4	2.5	1.1	90.2	56.0
Column Total	7.4	5.2	1.1	86.3	100

Chi-square = 20.39
P = 0.015 (<0.05)

Inspection of frequency distributions of the residual change scores enabled an initial assessment to be made of the students making positive or negative change in attainment scores during their course. 3 ranges of change score were defined - scores from -26.5 to -3.0 were considered to represent deterioration; scores from -2.9 to +3.0 indicated little or no change; scores from +3.1 to +32.3 indicated improvement.

TABLE 20

Percentage of students making positive, negative or marginal change between TOTENT and TOTEX

Variable	% Positive change	% Negative change	% Little change
Residual Change Score	40.1	33.8	26.1

a) **Correlations between dispositional and performance measures**

Pearson product moment correlations were produced for all variables. The full correlation matrix for all initial variables can be found in Appendix 3. Significance levels are indicated in the usual manner (** $P<.01$, * $P<.05$, ? $P<.10$). Significant relationships were found between initial attainment scores and the predictive and personality variables, with the exception of variable 17, Extroversion, and variable 18, Social Dependency. For final scores, course total on exit was significantly related to the predictive variables, whilst overall total on exit related negatively to predicted difference, passivity and work-related inadequacy, and positively to mastery and change. The SSPS scales showed correlations at the .01 level with each other and with the locus of control scale, with the exception of the negative relationship at

the 10% level of work-related inadequacy and extroversion.

TABLE 21

Product moment correlations between attainment variables on entry and SSPS scales

	Passivity	Mastery	Inadequacy	Extraversion	Dependency
C+ on entry	-0.16**	0.22**	-0.18**	-0.05	-0.03
Total on entry	-0.16**	0.22**	-0.22**	-0.02	-0.03

Significance indicated ** P<.01, * P<.05, ? P<.01

b) **Gender differences**

Having completed an initial scan of the data, it was examined more specifically for gender differences. Nothing of interest was revealed in relation to age, course or ethnicity. A significant result was obtained, however, on analysis of sex by confidence. Males were found to be more confident than females at the .01 level, as seen below.

TABLE 22

Comparison of sex and confidence (Row percentages)

	Confidence				
Sex	1 (not)	2 (not very)	3 (fairly)	4 (very)	Row Total
1 (M: N=169)	1.2	13.6	76.9	8.3	46.4
2 (F: N=195)	5.6	28.7	62.1	3.6	53.6
Column Total	3.6	21.7	69.0	5.8	100.0

Chi-square = 20.92
P = 0.0001 (<.001)

Gender difference also emerged in relation to student prediction of results and in the

predicted difference scores of males and females at the .01 level. Table 23 shows the difference between student prediction scores of males and females. Table 24 shows the gender difference between predicted difference scores.

TABLE 23

Mean difference between males (N=169) and females (N=195) on student prediction

Variable		Mean	s.d.	P
Student prediction	(M)	26.04	6.42	<0.05*
	(F)	24.18	6.06	<0.05*

T value: 2.82
Degrees of freedom: 362
Significance indicated ** P<.01, * P<.05, ? P<.10

TABLE 24

Mean differences between males (N=169) and females (N-195) on predicted difference

Variable		Mean	s.d.	P
Predicted difference	(M)	15.72	8.60	<0.01**
	(F)	12.84	8.05	<0.01**

T value: 3.29
Degrees of freedom: 362
Significance indicated ** P<.01, * P<.05, ? P<.10

Table 25 demonstrates the relationship between gender and personality, in that gender and passivity show a relationship at the 0.003 level and gender and mastery show a significant relationship at the 0.01 level. Extroversion is not significant and dependency and locus of control are significant at the 0.06 and 0.01 levels respectively.

TABLE 25

Mean differences between males and females on the SSPS personality variables and Locus of Control

	Variable					
Variable	**Passivity**	**Mastery**	**Inadequacy**	**Extroversion**	**Depend**	**LoC**
M(N=169)	22.68**	43.05**	18.44	12.43*	14.43**	12.29**
F (N=195)	24.59**	40.66**	18.43	11.67*	17.21**	13.74**
T value:	-3.02	3.62	0.03	1.44	1.84	-3.09
Degrees of freedom	362	362	362	362	362	362

Significance indicated at ** P<.01, * P<.05, ? P<.10.

The gender differences were confirmed by subsequent cluster analysis which revealed that the two predominantly male groups in the analysis, cluster C (Confident) - Males = 61.2%, and cluster E (Optimistic) - Males = 64.1%, showed the greatest discrepancy between their own forecasts of grades on exit and the forecasts of the tutors - the students showing greater optimism. Other gender differences which emerged were a positive significant relationship with passivity and external locus of control as shown above, and a negative relationship with mastery, reflected clearly in the profile of the predominantly female groups A (Passive) - Females = 75%, and H (Fatalistic) - Females = 72.4%

TABLE 26

Correlations showing the relationship between gender and predictive and personality variables

	Variable (Sex)
Variable	
Confidence	-0.23**
Student prediction	-0.14**
Predicted difference	-0.17**
Passivity	0.15**
Mastery	-0.18**
Locus of control	0.16**

Significance indicated ** P<.01., * P<.05, ? P<.10
Gender (SEX) coded Male = 1, Female = 2

[Further details of cluster analysis can be found in Section 6.2]

c) **Ethnicity**

A significant relationship between course and ethnic group having been noted it was considered to be of interest to examine the relationship between ethnicity and the predictive and personality variables. One-way analysis of variance showed a significant difference between groups at the .05 level on the Extroversion variable.

TABLE 27

Scheffé test results for significance of difference on ethnicity and extroversion variables

			Significant differences between pairs of groups			
			Group			
Group	**Mean**	**s.d.**	1	2	3	4
1 (N=27) Asian	11.37	2.8	*			*
2 (N=19) Afro-Caribbean	16.47	19.4				
3 (N=4) Chinese-Viet.	12.00	0.8				
4 (N=314) White	11.81	2.4				

Overall F ratio = 5.43
P = <.05

6.2 Cluster analysis

Having examined bivariate patterns of relationships using cross-tabulation and correlation co-efficients, an attempt to summarise the multiple relationships was made using cluster analysis. From this an analysis of individual profiles could be made. The version of cluster analysis used in this study was Wishart's relocation method (Wishart, 1969).

This method compares score profiles of individuals and random groups, and gradually forms clusters of students with similar score patterns. The successive fusing inherent in Wishart's relocation method results in progressively fewer clusters in each classification. A solution is sought which maximises group homogeneity whilst producing a suitably small number of interpretable groups.

To maximise definition of the clusters, a threshold of 2.0 was imposed. In a standard analysis each case is automatically allocated to one of the clusters on the basis of its distance from that cluster being smaller than its distance from any of the others. However, this distance may still be relatively large. The threshold facility in the cluster analysis programme used here enables the user to specify a minimum distance or similarity for inclusion in a cluster. Any cases not meeting that minimum for any of the clusters is removed to a residue group. If at a later stage in the analysis the case qualifies for inclusion, it is placed in the appropriate cluster. Any remaining outliers can be examined as of interest in their own right. The threshold of 2.0 was found to produce about 10% (N = 28) of the total sample as residue.

For this study, a nine, eight or seven cluster solution was indicated. Discriminant function analysis was used to discriminate maximally between the groups to help the decision as to the final number. Discriminant function analysis allows a set of groups to be analysed on the basis of multivariate functions which maximally discriminate between the groups. Each function is defined in terms of specific variables and tested for significance. Individual cases are scored on the functions, and finally scatter plots are produced showing the location of every case on all pairings of the significant functions. Variables selected for the cluster analysis were the personality variables of the SSPS scale and the variables of Confidence, Predicted Difference (related to Confidence), and Locus of Control (Nowicki and Strickland,1973). Means and s.d.s are presented below.

TABLE 28

Basic statistics for cluster variables

Label	Variable	Mean	s.d.
CONF	4	2.76	0.60
PREDIF	13	14.18	8.41
PASSIV	14	23.70	6.03
MASTERY	15	41.77	6.36
INAD	16	18.43	4.35
EXTRO	17	12.02	5.04
DEPEND	18	16.85	4.00
LOCUS	19	13.07	4.51

On analysis, the nine and eight cluster solutions offered themselves as acceptable in differentiating groups of students characterised by similar sets of response. The seven cluster solution, as a consequence of the redistribution of clusters 4/9, 6/3, 7/5 and 8/15 into new clusters 4/3, 6/5 and 7/5 lacked adequate discrimination. The nine cluster solution was considered to make unnecessary discrimination between groups

exhibiting Mastery. It was therefore decided on inspection to retain the eight cluster solution as it seemed to discriminate appropriately between the groups.

Figure 1 shows the dendrogram and fusion plot for the eight cluster solution. Details of the seven and nine cluster solutions can be seen in Appendix 3. Clusters are characterised by their profiles of average scores. These are given in Table 29 below.

TABLE 29

Centroid scores for the eight clusters

CLUSTERS

Variable	A	B	C	D	E	F	G	H
4 CONF	1.84**	3.07**	3.16**	3.05**	3.08**	1.96**	2.83	2.83
13 PREDIF	9.95**	13.07	17.12**	9.88**	25.05**	10.57	12.52	9.69?
14 PASSIV	26.86**	23.22	17.33**	20.89**	20.56**	20.43?	31.14**	25.97**
15 MASTERY	37.50**	48.70**	49.31**	40.31**	38.79**	41.91	40.19	37.21**
16 INAD	18.64	17.70	14.80**	16.17**	18.15	15.52**	24.07**	18.59
17 EXTRO	10.34**	12.85	13.41**	11.33	12.00	11.26	11.52	11.14
18 DEPEND	18.34**	16.17	13.55**	15.45?	15.31	14.61?	21.95**	16.79
19 LOCUS	14.75**	13.07	7.98**	10.38**	14.15	9.74**	16.21**	18.83**
Cluster sizes	44	46	49	64	39	23	42	29

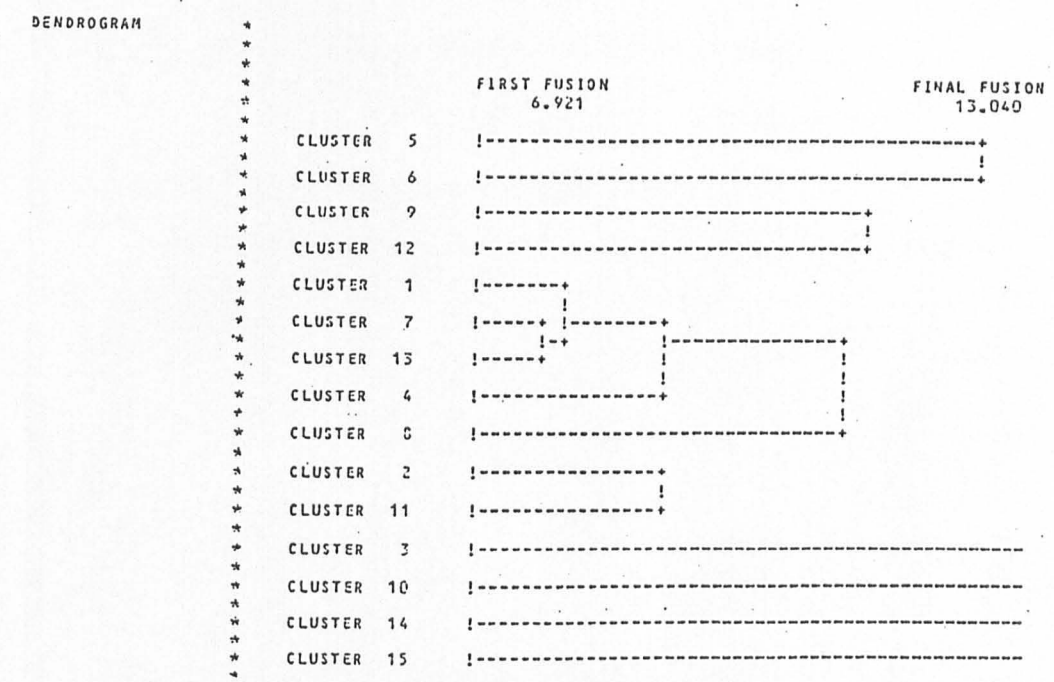
Outliers 28

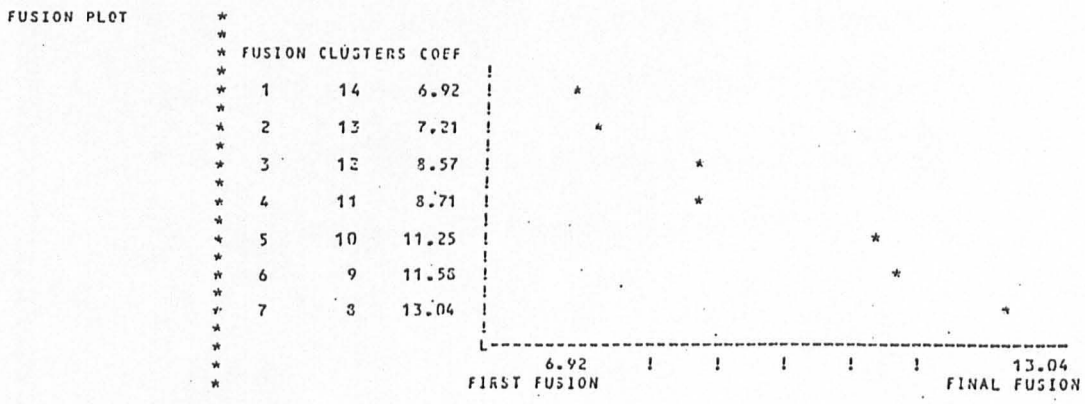
Row mean scores given

Significance indicated ** P<.01, * P<.05, ? P<.10

The table indicates a cluster scoring higher or lower than the sample mean

Figure 1 **Dendrogram and fusion plot for the 8 cluster solution**





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6.3 Discriminant Function Analysis

To maximally discriminate the difference between the eight clusters, they were subjected to discriminant function analysis. The following table provides the essential features of the analysis. Five significant functions were produced.

TABLE 30

Discriminant functions structure for the eight clusters

Variable	Functions				
	1	2	3	4	5
4 CONF	-0.4416	0.8608	0.0000	-0.2263	-0.0961
13 PREDIF	-0.2631	0.3290	-0.3719	0.7679	-0.1003
14 PASSIV	0.8152	0.0886	0.2293	0.0154	-0.0191
15 MASTERY	-0.5586	0.1914	0.7084	0.2224	0.3042
16 INAD	0.6887	0.3130	0.1484	0.2475	-0.2695
17 EXTRO	-0.3087	0.2393	0.2117	0.1936	0.1353
18 DEPEND	0.7147	0.1394	0.2550	0.0891	-0.3245
19 LOCUS	0.7187	0.2257	-0.2514	0.0673	0.5718
Function name	Passive	Confident	Cautious	Hopeful	Fatalistic
Variance %	54.17%	25.13%	10.83%	6.53%	3.23%
Chi-square	563.8	373.6	213.1	144.2	79.1
Significance	**	**	**	**	**

* Column values are correlations between variables and functions

Nature of functions: (Significance indicated at ** P<.01, * P<.05, ? P<.10)

I Passive - this function denotes a very high level of passivity and negativity. It indicates a characteristic of being unable to live up to the expectations of others, worrying about not coping with work and having feelings of powerlessness and impotence. The feelings of having no influence over one's destiny result from a belief in luck, chance and fate. This function indicates a need to be organised by others and a reliance on the company and help of friends, which in

turn leads to an ability to be distracted. A lack of help seems to be forthcoming from others, leading to feelings of inadequacy in the learning situation.

2 Confident - this function implies very high levels of confidence about successs. There is extreme optimism in the forecasting of course grades, combined with a fear of being prevented from working and not receiving enough help. This function has a touch of extroversion.

3 Cautious - this function indicates an eagerness to make decisions, a feeling of being well regarded and an enjoyment of learning new things. Complicated tasks and ideas are coped with. There is, however, a lack of optimism about coping with a given course. There is caution in the forecasting of success and such forecasts are well below the level of actual outcome.

4 Hopeful - this function exhibits a very high level of difference between staff and student predicted outcomes of a given course. There is optimism in the forecast of student grades on the part of the students themselves. Work related inadequacy is high - others are blamed for lack of work and success. There is a consciousness of needing a lot of help, coupled with a determination to hope for the best.

5 Fatalistic - this function demonstrates a fairly high level of belief in luck, chance

and fate. There is no particular dependency on friends or other people. Lives and work are organised, decisions made and difficult tasks coped with. There is still, however, an underlying feeling of lack of control and of being subject to external forces.

Figure 2 demonstrates a useful level of discrimination between the groups on functions 1 and 2. Polarization can be seen between group C, high on mastery and confidence, and group G with its characteristics of passivity and inadequacy. Group A, also high on passivity, shows a clear lack of confidence. Plots showing distributions of the clusters on the other three significant functions can be seen in Appendix 3.

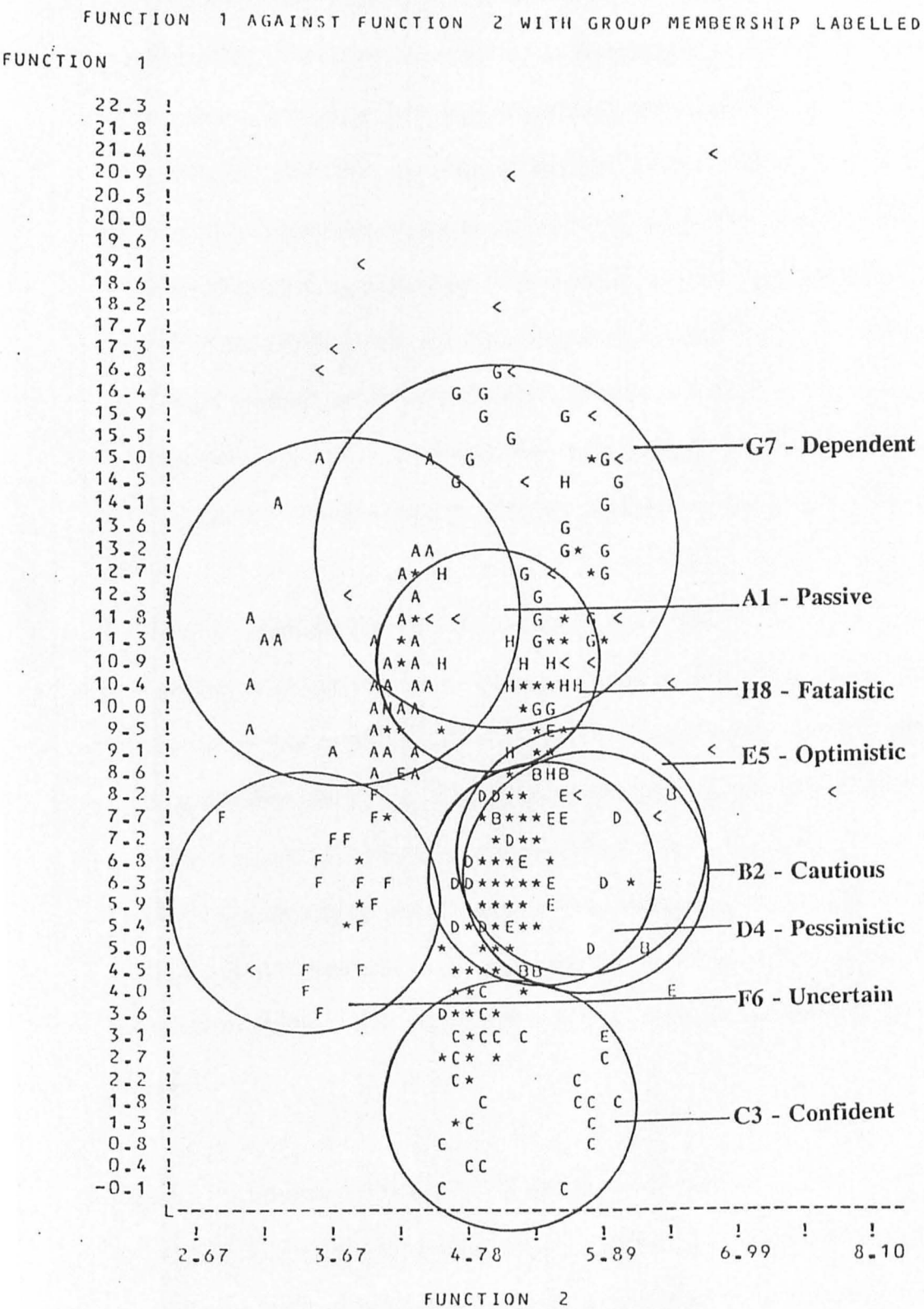
The eight clusters were then examined for their predominant characteristics in the light of the above detail. In combination with detail extracted from the initial cluster profiles, the following groupings emerged.

Group A - Passive N = 44 (75% female, 25% male)

This group scored high on function 1, passive, denoting an inability to live up to other people's expectations, worry and depression about being unable to cope with work and feelings of powerlessness. The group had high external locus of control combined with a high level of social dependency. The group demonstrated feelings of inadequacy in the learning situation, both in relation to other students and to staff. These characteristics were linked with low mastery, low levels of confidence and low extroversion scores. Not surprisingly, predicted difference scores were pessimistic -

the lowest of the eight groups - in that the student prediction of success was far below that of staff. In terms of attainment, however, the group ranked second highest for C+ grades on entry, with a mean score of 6.0, and showed positive change between total entry and exit scores. This group is predominantly female.

Figure 2 **Plot showing cluster scores on functions 1 and 2**



Group B - Cautious N=46 (41.3% female, 58.7% male)

A high rating on function 3 is seen here, indicating a sense of mastery or control over one's fate. The group feels well regarded by others and able to cope with the demands of college life, confident of ultimate success. Although confident and extrovert, the group lacks optimism and has low predicted difference scores, forecasts being well below actual outcomes. This is linked to a moderately strong co-existing belief in luck, chance and fate, and, despite characteristics of independence and adequacy, a certain caution. In terms of attainment, the group is marginally below the sample mean for C+ grades on entry and marginally above for total on entry. The group showed slight negative change in attainment between entry and exit.

Group C - Confident N=49 (38.8% female, 61.2% male)

This group is high on function 2 - confident of success, and on function 4 - hopeful, optimistic in the forecasting of grades, showing a considerable discrepancy between student and staff predictions. Slightly higher than the sample mean for total on entry and considerably higher for C+ grades on entry, with a group mean of 5.8. This group shows the highest mastery score of the eight groups, with a high degree of internal control; predictably, the group has the lowest inadequacy, passivity and dependency scores. The group did, however, show slight negative change in attainment.

Group D - Pessimistic N=64 (53.1% female, 46.9% male)

This group is moderately high on function 2 - confidence - but without the touch of extroversion indicated within this function. Appearing to be adequate, independent

and not externally controlled, the group nevertheless has weak feelings of mastery. The group is slightly above the sample mean for total score and C+ grades on entry, with a mean of 5.6 for the latter. The notable feature of this group is the pessimistic forecast of grades - the second most negative difference between student and tutor prediction in the sample. The high proportion of GCSE one-year students in the group - 29.7% - may explain its seemingly contradictory nature. It is interesting to note that this group showed marked positive change during the course.

Group E - Optimistic N=39 (35.9% female, 64.1% male)

This group is high on function 4 - optimistic and hopeful. The main feature of the group is the very high predicted difference between staff and students' estimates of success. Despite a fairly high confidence score, other features offer little support to this optimism, given that attainment ratings were the lowest of all groups on C+ grades on entry and total score on entry. There is also a negative sense of mastery. Function 4 is high in feelings of work-related inadequacy, and the group reflects this to some extent. The residual change score for the group is very negative, indicating that the initial hopes have not been fulfilled and that some hindrance to attainment has occurred. It is interesting to note that the group is predominantly male.

Group F - Uncertain N=23 (73.9% female, 26.1% male)

The interesting feature of this group is the discrepancy between attainment and confidence. Low on function 2 - confidence - the group is in fact the least confident of the whole sample despite being the best qualified group on entry. C+ grades on entry show a mean of 7.3 and total score on entry has a mean of 63.4 compared with

54.3 for the sample as a whole. Feelings of mastery, adequacy and independence are moderately positive, but forecasts of success are well below the mean for the sample and the group, despite its initial high attainment, makes the greatest negative change whilst at college. This is another predominantly female group.

Group G - Dependent N=42 (57.1% female, 42.9% male)

This group is high on function 1 - passive and dependent. Reliant on company, needing to be organised by other people and helped by staff, the group shows moderate levels of confidence and significant external locus of control scores. The group shows fairly low attainment on entry, the mean for C+ grades on entry being 4.5. Predictions of success were slightly pessimistic and the group showed negative change during the courses. Interestingly, 38.1% of the group were on CPVE or GCSE courses, reflecting an initial lack of attainment which persisted.

Group H - Fatalistic N=29 (72.4% female, 27.6% male)

This group was high on function 5 - external control - exhibiting a fairly high level of belief in luck, chance and fate. Not particularly dependent on friends or other people, able to organise their own lives and to make decisions, the group members nonetheless showed the most negative predicted difference scores along with lower feelings of mastery than would be expected of this function. A group which had initially demonstrated the second lowest level of attainment of all groups made in fact the greatest improvement in terms of positive change. In addition to being predominantly female, this group had the highest proportion of Asian students of any group - 17.2% - but no Afro-Caribbean or Chinese/Vietnamese students.

6.4 Prediction

One of the main purposes of this research is to try to predict success as measured by improved attainment scores using appropriate variables from the variable set. The method employed is that used by Lunzer and Youngman (1977) using covariance regression models. The method seeks to determine what measure or sets of measures have an independent effect on course score on exit, that is the course total accumulated by each student at the end of their agreed course of study, and total score on exit, that is the overall total for each student including points on entry and any accumulated alongside the agreed programme of study. The analysis seeks an optimum linear combination of predictor variables such that this combined score correlates maximally with the criterion measure.

This correlation, the multiple correlation R, has the value of 1.0 for perfect prediction. Having established the predictive power of the model, the relative contributions of the individual components are examined. This is done by computing a full linear regression model including all the variables to be evaluated in relation to a particular criterion. Then a reduced model is constructed omitting the variable or set of variables to be examined. If the multiple correlation drops substantially then the omitted variable contributes to the criterion variance even when all the other predictors are present. It can be said to have an independent effect. The statistical significance of the reduction is tested using an F-test. Because the F-test operates on R^2, for high value of R a very small drop can be statistically significant, particularly if the effect of omitting a single predictor is being tested.

30 different effects were tested

2 criteria were used	- Course score on exit	V9
	- Total score on exit	V10
Predictor variables	- Sex	V1
	- Age	V2
	- Confidence	V4
	- C+ on entry	V7
	- Total on entry	V8
	- Student prediction	V11
	- Tutor prediction	V12
	- Predicted difference	V13
	- SSPS 5 scales	Vs 14-18
	- Locus of control	V19

NB For Tables 31 and 32 (see below) the following conditions apply:

Significance indicated ** $P<.01$, * $P<.05$, ? $P<.10$
Emboldened Multiple R indicates the best independent predictors of the criterion
Successive models show the effect of dropping one predictor from the full model

TABLE 31

Effect of various measures in predicting course score on exit

Criterion	Predictor variables														Multiple R	F-ratio
Course score on exit	1	2	4	7	8	11	12	13	14	15	16	17	18	19	0.849	
	-	2	4	7	8	11	12	13	14	15	16	17	18	19	0.847	5.22*
	1	-	4	7	8	11	12	13	14	15	16	17	18	19	**0.843**	13.83**
	1	2	-	7	8	11	12	13	14	15	16	17	18	19	0.849	0.01
	1	2	4	-	8	11	12	13	14	15	16	17	18	19	0.849	0.00
	1	2	4	7	-	11	12	13	14	15	16	17	18	19	0.849	0.19
	1	2	4	7	8	-	12	13	14	15	16	17	18	19	**0.843**	13.50**
	1	2	4	7	8	11	-	13	14	15	16	17	18	19	**0.777**	147.38**
	1	2	4	7	8	11	12	-	14	15	16	17	18	19	**0.845**	8.29**
	1	2	4	7	8	11	12	13	-	15	16	17	18	19	0.849	0.76
	1	2	4	7	8	11	12	13	14	-	16	17	18	19	0.849	1.15
	1	2	4	7	8	11	12	13	14	15	-	17	18	19	0.849	0.00
	1	2	4	7	8	11	12	13	14	15	16	-	18	19	**0.846**	6.84**
	1	2	4	7	8	11	12	13	14	15	16	17	-	19	0.849	0.41
	1	2	4	7	8	11	12	13	14	15	16	17	18	-	0.848	1.82

TABLE 32

Effect of various measures in predicting total score on exit

Criterion	Predictor variables														Multiple R	F-ratio
Total score on exit	1	2	4	7	8	11	12	13	14	15	16	17	18	19	0.897	
	-	2	4	7	8	11	12	13	14	15	16	17	18	19	0.897	0.29
	1	-	4	7	8	11	12	13	14	15	16	17	18	19	0.896	0.77
	1	2	-	7	8	11	12	13	14	15	16	17	18	19	0.897	0.00
	1	2	4	-	8	11	12	13	14	15	16	17	18	19	**0.892**	14.70**
	1	2	4	7	-	11	12	13	14	15	16	17	18	19	**0.759**	406.43**
	1	2	4	7	8	-	12	13	14	15	16	17	18	19	**0.860**	113.84**
	1	2	4	7	8	11	-	13	14	15	16	17	18	19	**0.888**	28.39**
	1	2	4	7	8	11	12	-	14	15	16	17	18	19	**0.855**	129.08**
	1	2	4	7	8	11	12	13	-	15	16	17	18	19	0.897	0.13
	1	2	4	7	8	11	12	13	14	-	16	17	18	19	0.896	0.38
	1	2	4	7	8	11	12	13	14	15	-	17	18	19	0.897	0.00
	1	2	4	7	8	11	12	13	14	15	16	-	18	19	0.896	2.58
	1	2	4	7	8	11	12	13	14	15	16	17	-	19	0.897	0.00

To predict course score on exit, then, the most effective independent predictor is tutor prediction. The next best predictor is age, followed closely by predicted difference, that is, the discrepancy or lack of it between tutor and student prediction. Interestingly, extroversion was also revealed as a useful independent predictor.

The prediction of total score on exit was most effectively indicated by total score on entry, followed by predicted difference. Student prediction and tutor prediction were effective indicators with C+ on entry also showing significant predictive powers. None of the personality variables were useful in isolation for predicting total on exit, although Mastery and Extroversion showed a non-significant drop in Multiple R.

CHAPTER 7

DISCUSSION

7.1 Hypothesis I

The hypothesis that there is a positive relationship between mastery as measured by the Student Self-Perception Scale and academic attainment, and that a high score on the mastery scale will be accompanied by positive change in attainment, is not sustained. Initial inspection of the data reveals significant positive relationships between mastery and the four attainment variables (Table 33). Relationships between mastery and C+ grades on entry, total score on entry and total score on exit are significant at the .01 level. The relationship with course score on exit is only slightly significant at the .10 level. On examination of the cluster profiles, however, it can be seen that this initial relationship is not sustained over the period of study.

Table 33

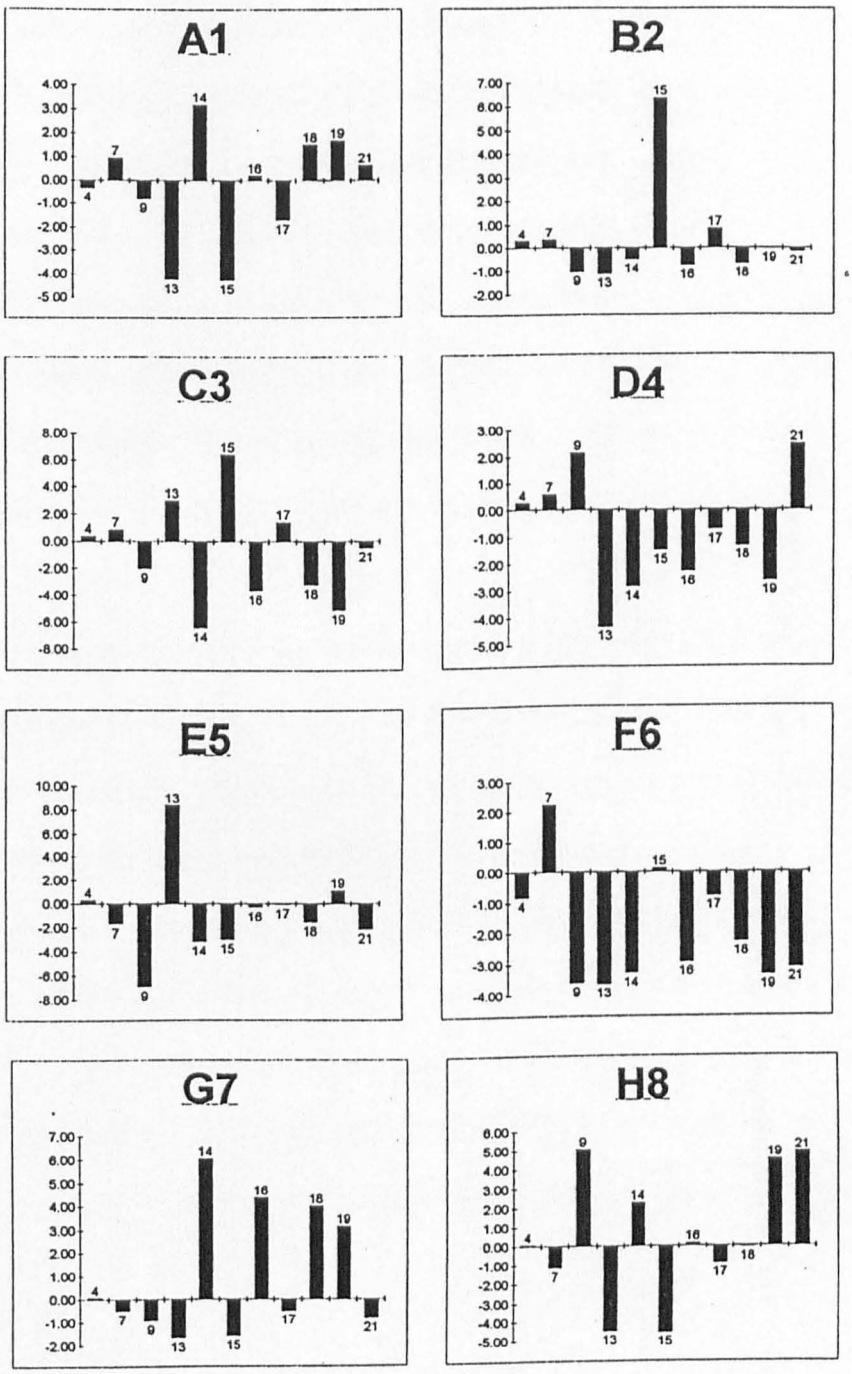
Product moment correlations for the 5 SSPS scales, Locus of Control and the 4 attainment variables

Variable	7 (Centry)	8 (Totent)	9 (Courses)	10 (Totex)
1 Passivity	-0.1674**	-0.1694**	-0.0145	-0.1514**
2 Mastery	0.2280**	0.2247**	0.0992?	0.2328**
3 Inadequacy	-0.1866**	-0.2251**	0.0121	-0.2161**
4 Extroversion	-0.0529	-0.0287	0.0751	-0.0414
5 Dependency	-0.0395	-0.0371	0.0049	-0.0531
6 Locus of Control	-0.1800**	-0.1770**	0.0525	-0.1176**

Significance indicated ** P<.01, * P<.05, ? P<.10

Figure 3 gives the group profiles derived from average group scores on the variables

Figure 3 Cluster profiles for 8 groups



(In the above charts the vertical axis records the Deviation from the Mean)

Key to clusters:

A1 - Passive D4 - Pessimistic G7 - Dependent

B2 - Cautious E5 - Optimistic H8 - Fatalistic

C3 - Confident F6 - Uncertain

which were used to discriminate the groups, with the addition of attainment variables 7 (C+ on entry), 9 (total at the end of a given course) and 21 (residual change score). On entry, the relationship between mastery and C+ scores would seem to be positive for 68% of the sample. For groups with mastery scores above the sample mean - B2, C3 and F6 - C+ scores were also above the sample mean, with F6 showing the highest C+ on entry scores of the whole sample and C3 showing the highest mastery scores. Conversely, of the five groups showing mastery scores below the sample mean, three of these groups - E5, G7 and H8 - had C+ scores which were below the mean. The remaining two groups - A1 and D4 - show negative mastery scores and yet are marginally above the mean for C+ scores on entry.

On examination of the relationship between mastery and course score on exit it can be seen, as noted above, that the relationship does not persist. Of the high mastery groups - B2, C3 and F6 - all are well below the sample mean on this variable, despite previous positive attainment scores on entry. The five low mastery groups - A1, D4, E5, G7 and H8 - present once more a varied picture. Group A1, having had marginally positive C+ scores on entry is marginally below the sample mean for course scores on exit. Group D4, with good C+ on entry scores, has remained well above the sample mean. Groups E5 and G7 remain below the sample mean, whereas H8, with negative C+ scores on entry, shows the highest course score on exit of any group.

A brief examination of the relationship between mastery and the residual change scores may illuminate the preceding picture. Of the clusters showing positive mastery

scores - B2, C3 and F6 - comprising 33% of the total sample, all showed negative change in attainment over the research period. Group F6, showing only a marginally positive mastery score, made the most serious negative change. Factors common to these high mastery groups are positive C+ scores on entry, low passivity, independence, work related adequacy and low, that is internal, locus of control scores. Course scores on exit are below average for all groups and all make negative attainment change. Groups B2 and C3 have high extroversion and confidence scores.

The three groups showing the most negative mastery scores - A1, D4 and H8 - comprising 35% of the total sample make positive attainment change. For these groups the common factors are low mastery and extroversion scores and negative predicted difference scores. A1 and H8 have high passivity and locus of control scores, and D4 and H8 show high scores at the end of a given course. The most striking feature of these two low mastery groups is the predicted difference score - the students' estimates of successful results are very low. Of the remaining two low mastery groups - E5 and G7 - both made negative attainment change.

We can say, then, that for 68% of the sample there is an inverse relationship, at the end of their course, between mastery and attainment change.

7.2 Hypothesis II

The proposition that there is a positive relationship between personality, confidence and academic attainment is not substantiated. In order to demonstrate that such a set of relationships exist high scores on the mastery and extroversion scales and low scores on the passivity, work related inadequacy and dependency scales would be accompanied by a high confidence score, and above average course score on exit and positive attainment change. In terms of attainment, there are significant relationships between the two attainment variables of C+ on entry and total score on entry, and certain personality variables. For these two initial attainment variables a positive relationship exists at the .01 level with mastery and a negative relationship, also at the .01 level with passivity, work related inadequacy and high external locus of control. Confidence also relates to mastery at the .01 level and to extroversion at the .05 level. There are no significant relationships indicated, however, between confidence and the attainment and change variables.

For none of the groups can the proposed set of relationships be said to exist. Table 34 shows the pattern of relationships between clusters, confidence, personality and attainment. Group A1 conforms most closely to the model in a negative sense, as a low confidence group with below average course scores on exit. The pattern is broken by positive change in attainment. The high confidence, high mastery groups - B2 and C3 - deviate from the model in that they show below average course scores on exit, despite having above average C+ grades on entry, and negative attainment change. Group D4 - also a group with above average confidence scores - fails to demonstrate positive mastery and extroversion scores. Of the remaining groups, three

show above average confidence scores and inconsistent patterns of relationships on other variables, whilst group F6 has low confidence linked to low passivity, work related inadequacy and dependency scores with an above average mastery score. It therefore cannot be maintained that there is a positive relationship between personality, confidence and academic attainment. It must be noted, however, that for 39% of the sample - clusters A1, B2 and C3 - a consistently positive relationship between confidence in academic outcomes and personality can be seen.

TABLE 34

Pattern of relationships between clusters, confidence, personality and attainment

	Variables							
	CONF 4	COURSEX 9	PASSIV 14	MAST 15	INAD 16	EXTRO 17	DEPEND 18	RESIDUAL 21
Clusters								
A1	-0.32	-0.79	+3.16	-4.27	+0.20	-1.68	+1.49	**+0.62**
B2	+0.30	**-1.03**	-0.49	+6.36	-0.74	+0.82	-0.68	**-0.14**
C3	+0.40	-2.01	-6.38	+6.36	-3.64	+1.38	-3.20	**-0.48**
D4	+0.28	+2.14	-2.81	**-1.46**	-2.26	**-0.70**	-1.30	+2.47
E5	+0.31	**-6.90**	-3.14	**-2.98**	-0.28	**-0.02**	-1.55	**-2.15**
F6	-0.81	-3.60	**-3.27**	**+0.14**	**-2.91**	-0.76	**-2.25**	-3.10
G7	+0.07	**-0.91**	**+6.03**	**-1.58**	**+4.36**	**-0.50**	**+4.00**	**-0.82**
H8	+0.06	+5.06	**+2.26**	**-4.57**	**+0.15**	**-0.89**	-0.06	+4.90

i) Figures show the difference between the sample mean and the cluster mean.

ii) Emboldened items indicate variables which fail to conform to the predicted model.

7.3 Hypothesis III

The hypothesis that the positive relationship between personality and academic attainment varies with gender and ethnic group is not upheld. No significant gender differences emerge in relation to attainment variables, although there are interesting gender differences on the personality variables in that males are found to be more confident than females at the .01 level, with only 3.6% of females feeling very confident about the outcomes of their courses as opposed to 8.3% of males. Differences also emerge in relation to the passivity variable, with females scoring significantly higher than males. This confirms findings by, among others, Youngman and Lunzer (1977) of female compliance and the role of personality variables in female attainment.

Clarke (1983) states the following:

> "... however it is apparent that the intellectual ability of the male sixth form college students strongly influences their examination performance whilst for female sixth form college students intellectual ability is shown to be an important determinant but differences in their dispositional characteristics are also influential."

Further confirmation of differences in the dimension of personality is the difference seen on the locus of control scale, with females again scoring significantly higher than males in an externally controlled direction. Finally, differences on the mastery scale confirm the above trends. Males score significantly higher than females in terms of perceived control over environment and their own lives. It must be noted, however, that Nowicki and Strickland (1973) failed to find any consistent difference in mean responses to the CNSIE in terms of gender. (See Appendix 1, Tables 6, 7 and 8) The relationship between gender and attainment, although not significant, does hold some interest for the discussion. Despite the above findings, females on entry had

higher C+ grades and total scores than males. On exit, however, males had marginally higher average course scores whereas females maintained marginally higher average total exit scores. Attainment change scores demonstrate - again at a non-significant level - that females make slightly negative change during their course whereas males make slightly positive change.

TABLE 35

A comparison of change scores between male and female students (N=364)

Group	Variable 21 (Residual)
1 (M) N = 169	0.1528
2 (F) N = 195	-0.1325

T value = 0.26 P = 0.79

Looking at the proposition from an ethnicity perspective, one-way analysis of variance reveals no significant differences on the attainment variables between the four ethnic groups. Comparison of groups means did, however, reveal an interesting contrast between the Afro-Caribbean group and the White group on the total on entry variable.

TABLE 36

Differences between Afro-Caribbean and White students on the TOTENT variable

Group		Mean	s.d.
1 Asian	(N=27)	51.48	15.47
2 Afro-Caribbean	(N=19)	46.42	14.78
3 Chinese/Vietnamese	(N=4)	51.50	13.79
4 White	(N=314)	55.07	14.41

Overall F ratio = 2.56 P = 0.05

Scrutiny of the personality variables reveals a significant relationship between ethnicity and extroversion at the .05 level, particularly between Afro-Caribbean, Asian and White students (Table 27, Chapter 6).

In terms of attainment change an association emerges between ethnic group and attainment change. One way analysis of variance fails to reveal significant differences, whilst demonstrating that change scores of Asian students are positive whereas those of White students alone, as noted in Table 37, are negative.

TABLE 37

Differences between ethnic group and attainment change

Group		Mean	s.d.
1 Asian	(N=27)	3.06	11.16
2 Afro-Caribbean	(N=19)	2.14	8.08
3 Chinese/Vietnamese	(N=4)	1.19	14.64
4 White	(N=314)	-0.40	10.63

Overall F ratio = 1.18 P = 0.31

No significant differences are found between locus of control and ethnicity, despite Nowicki's findings that black students score more externally than white students (Marcus, 1975; Nowicki, 1976; Fryear and Carlson, 1976). Nowicki et al.'s studies showed, in fact, that black students became more external with age - a difference that has social and cultural implications beyond the scope of this study.

Clear confirmation, then, emerges in two areas. Firstly, females are less confident, more passive and more external than males amd perform less well on course. Foon (1988), conducting research into the relationsip between school type, adolescent self-

esteem, attribution styles and affiliation needs, showed particular interest in gender differences and reports studies which show that secondary schooling has a debilitating effect on female self-esteem, and that measured self-esteem of adolescent females is significantly lower than that of their male counterparts. Females tend to attribute success in subjects to unstable factors such as "an easy test on the day when they felt good", whereas males tend to attribute success in subjects to stable factors such as ability. Foon quotes Ferrema and Sherman (1977) who state that "... at every level, females have been found to perceive academic achievement as being out of their control". Implications of this finding for educational practice will be discussed later. The other interesting issue to emerge lies in the link between extroversion and ethnicity. Given that research has indicated a constant (although generally weak) relationship between extroversion and academic attainment (Clarke, 1987), the extrovert character of the Afro-Caribbean group may have contributed to a mildly significant negative attainment change. Entwistle and Wilson (1977) assert that extroverts with adequate motivation and study methods can be as successful as introverts. Problematically, it is usually found that extroverts do not own these characteristics. Implications of this finding will also be discussed in more depth below.

7.4 Hypothesis IV

The hypothesis that personality factors as measured by the Student Self-Perception Scale are effective predictors of academic attainment over a given course of study is not sustained. For attainment at the end of a course of study, tutor prediction emerged as the best independent predictor. The next best indicator is age - a variable deemed to be of limited significance in this research due to the relatively narrow age range of the sample. Age is followed closely by predicted difference - that is, the difference between student and tutor prediction. The lone personality predictor of attainment is extroversion - certainly, the two high extroversion groups, B2 and C3, entered college with above average C+ scores, but both showed negative attainment change by the end of the course. In terms of tutor prediction - the best independent predictor - highly significant correlations are found with C+ on entry scores, total scores on entry, course scores on exit and, at the 10% level, total scores on exit. Highly significant relationships were also found between tutor prediction, predicted difference and attainment change. This seems to conflict with the findings of Nisbet and Entwistle (1969) who argued that teacher prediction, at least at primary level, was unreliable. It would seem that at Sixth Form level prediction has more potential for accuracy. Tutor predictions are grounded in externally examined curriculum and therefore have more precise criteria. Tutor prediction within this research also took place at the end of a student's course of study and may have contained an element of self-fulfilling prophecy in that expectations may have been communicated to the student and affected attainment. Predicted difference as an indicator of academic attainment rests on the view that the student holds of his own potential outcomes as compared with the views of his tutors. An interesting relationship can be deduced

here in that groups with more extreme predicted difference, that is, a greater discrepancy between what the students themselves believe that they will achieve and what their tutors predict, do in fact have below average extroversion scores and low mastery scores. These groups - A1, D4, E5, F6 and H8 - comprise 53% of the sample. An exception is cluster F6 which has mastery scores marginally above the sample mean accompanied, however, by low extroversion scores.

For predicting total scores on exit - a more generalised calculation incorporating pre-college attainment - total score on entry is the best predictor, followed again by predicted difference scores. Student prediction and tutor prediction are also significant indicators in their own right. From these findings, previous attainment is endorsed as being the most effective predictor for future attainment, confirming many previous findings including Nisbet, Welsh and Entwistle (1972), Youngman and Lunzer (1977) and Summerfield (1980). This finding particularly applies at the beginning of a course of study (Nisbet and Entwistle, 1969).

A further highly significant attainment predictor of total score on exit is seen in the C+ grades on entry variable, again endorsing the predictive role of previous attainment and demonstrating the superiority of attainment variables over personality variables as predictors of academic attainment. The possible, and within this research problematic, role of extroversion as a predictor must be noted here. As a predictor of academic attainment, the relative weakness of the scale makes judgements questionable. Extroversion would seem to have a dual role in terms of effect upon performance - the scale indicates an outgoing and positive personality with a strong

sense of self which, when linked with a high mastery score - as in groups B2 and C3 - leads to independent action of a social rather than an academic nature and fails to stimulate positive attainment. The relationships between prediction variables and positive or negative change are significant at the .01 level and it can be clearly seen that for 31% of the sample - groups B2, F6 and G7 - negative predicted difference coincides with negative change, and that the two groups who are optimistic, and indeed confident, about their results - C3 and E5 - also make negative change.

It can be said, then, that the Student Self-Perception Scale failed to predict attainment at any level of significance and that any attempt to predict attainment at the end of a given course should be based on previous attainment. The findings therefore endorse previous findings that prior attainment is the best predictor of future attainment and that, at the on-course level, tutor prediction - potentially based on knowledge of prior attainment as well as current performance - is the most effective indicator of future attainment. Personality measures, then, as defined here and with the marginal exception of extroversion, do not seem to be adequate predictors, despite their evident usefulness as source material for knowledge of the individual student.

As Clarke and Youngman (1987) assert:

> "... the more consistent findings suggest generally that intellectual ability and previous examination performance are the strongest determinants of attainment, whilst within the dispositional domain of personality, extroversion and emotional stability claim some importance."

In conclusion, Sumner and Bradley (1977) wrote:

> "... current attainment will continue to predict future attainment until such time as improved teaching methods can reduce or eliminate the effects of individual differences."

7.5 Hypothesis V

The hypothesis that personality factors as measured by the Student Self-Perception Scale exert a substantial effect on performance independent of ability is sustained. In the context of this study the C+ and total scores on entry are taken as indicators of ability. It was beyond the scope of the research to obtain I.Q. scores, and there are also strong ethical and practical reasons why it would have been unreasonable to request this information by testing within this age group. Any form of ability testing with 16-19 year olds would involve extended negotiation, a potentially unacceptable refusal rate and an impracticable amount of time - along with a serious lack of opportunity - to obtain student evaluation of the process and give feedback, counselling and support relating to the results. Given this set of reservations, it was decided that GCSE and other external examination results would be taken as indicators of the ability to attain academically at a given level and at a given point in time.

In order to ascertain the relationship between personality factors as measured by the SSPS and performance, it is necessary to look at positive attainment change in relation to the SSPS scales. Given the failure to demonstrate a relationship between positive scores on the mastery and extroversion scales and positive attainment change, alongside the inverse relationship between high attainment scores on entry and on exit for 68% of the sample, the search for what precise factors do affect attainment change in this 16-19 age group must continue.

Of the three groups demonstrating positive change, all showed low mastery and

extroversion scores on entry, and two groups - A1 and H8 - had high passivity scores and marginally high work related inadequacy and social dependency scores. These two groups also had high locus of control scores denoting externality. For the remaining five groups it could be argued that the relationship between personality, as opposed to ability, and attainment factors is also operating in that there is an inverse relationship between attainment scores on entry and attainment change on course for 68% of the sample. For the 63% of the total sample who entered college with higher than average C+ scores, 45% show below average course scores on exit. 33% of these deteriorators show high mastery scores and 27% show above average extroversion scores. Given the lack of consistency, then, in the relationship between previous attainment and positive attainment change, it may be asserted that personality factors play a varied yet identifiable role in performance.

This finding ties in with the work of Clarke and Youngman (1987) who found that the combined effect of the student's dispositional characteristics measured in their study was, on average, almost equal to measured intellectual ability in independently determining GCE O level performance - 40% and 36% respectively of explained criterion variance. At Advanced level the effect is considerably more influential - 24% and 3.5% respectively of explained criterion variance. Clarke and Youngman comment that the considerable explanatory power associated with these students' dispositional characteristics is particularly encouraging given that the measures employed sought only to identify differing levels of student inhibition/self-confidence and resultant anxiety. Each of the student types identified follows a different route to success which appears dependent on their contrasting motivational "needs". Work

with younger school children in Britain and in Hungary (Kozéki and Entwistle, 1984) suggests that motivational categories embracing differences in pupils' sociability, self-confidence/independence and conformity (among others) could considerably strengthen the explanatory power of the concept of school motivation. Clarke and Youngman's findings appear to offer some support to this view, as does the present study.

Students demonstrating high mastery and negative change, coupled with extroversion, may have made the decision that the development of the social dimension of their lives is a more immediate need. Confident that they can achieve academically, the need to prove this recedes. These students have control over their lives and make their own decisions. Conversely, externality and low feelings of mastery may make students more amenable to tutor influence and more eager to succeed in an educational setting. Students who attribute their perceived failure to lack of effort, rather than ability, may counteract this by increasing effort (Nichols, 1978), whatever the externally judged reality of their attainment levels may be. Certainly the three groups showing positive change - A1, D4 and H8 - have marginal confidence levels which, when related to feelings of externality, may achieve the obverse emotion to confidence - that of anxiety, which then may promote a more determined approach to the learning process. Youngman and Lunzer (1977) discuss the role of anxiety in relation to their Nottingham Transfer study. Discussing his Uncertain type, Youngman suggests that an element of worry can facilitate rather than impair attainment, and that up to a certain level anxiety is necessary to produce motivation. Clarke (1983) highlights anxiety as being strongly implicated in academic

performance and suggests the need to develop an objective measure of this construct which is more specifically related to aspects of students' social/self-confidence. For only 17% of the sample, then, do high attainment scores on entry relate to positive change in attainment and above average course scores on exit. For a further 22% low attainment scores on entry relate to negative course scores on exit and negative change. For the remaining 61% it may be asserted that there is a relationship between personality factors and performance independent of ability as indicated by attainment scores on entry.

7.6 Hypothesis VI

The hypothesis that identifiable clusters of students will emerge exhibiting varying patterns of relationship between personality, self-concept and attainment is supported. The precedent for this approach derives directly from work undertaken by Youngman and Lunzer (1977), Entwistle and Brennan (1971) and Clarke and Youngman (1987). In their study of GCE performance of Further Education and Sixth Form College students, Clarke and Youngman examined the dispositional associates of GCE O-A/level performance employing a sample of 356 two-year, full-time GCE A-level students who entered further education and Sixth Form College immediately after completing their fifth form work in schools. A method of cluster analysis was used to identify student types based on selected dispositional characteristics.

The present study also seeks to produce identifiable types and to relate them where possible to those produced in previous research. The cluster analysis used for this study produced eight clusters and twenty eight outliers - students who fail to fit into any group. Profiles of typical cluster members and outliers can be found in Chapter 8. An examination of each group in turn will demonstrate the validity of the types in relation to the Clarke and Youngman (1987) and the Entwistle and Brennan (1971) study - the Rowntree Project.

Each of the eight clusters presented demonstrate a clear inter-relationship between the characteristics of their members which meets Cullinan's (1969) requirement that "types" should be identified by virtue of a relationship between members or their attributes and not simply by listing their defining characteristics. A cautionary note

must be injected here. The use of cluster analysis to produce information for research purposes, particularly in relation to children and young people, has been criticised. Statistical issues aside (Clarke and Youngman, 1987), there is an inherent danger in applying classificatory labels to groups of people. The necessity for shorthand labels for convenient identification of the types described are open to misunderstanding and potential abuse. Labelling clusters is a matter of judgement for the researcher, and whilst the necessity is accepted, the labels must be used primarily as a means of clarification. Our enhanced knowledge and awareness which derives from the use of this method must then be placed firmly in the context of the educational well-being of the student.

Table 38 summarises the relationships between the clusters emerging from comparisons between the current study and other relevant studies, and Figure 4 shows the relative positions of Clarke and Youngman's clusters on dimensions of extroversion and anxiety.

Group A1 - Passive. This group is similar to Clarke and Youngman's Cluster 5 - conforming introverts - located in the passive quadrant. Lacking confidence in themselves and others these students have a relatively pessimistic view of the world. They feel unable to live up to the expectations of others and are worried and depressed about feeling unable to cope with work. There are strong feelings of powerlessness within this group and, as with Clarke and Youngman's Cluster 5, a firm belief in the role of fate. Despite these findings, however, the group has attainment scores above average and makes positive change on course. The role of

anxiety - given a marginally negative confidence score - may have contributed to the positive attainment change (Youngman and Lunzer, 1977; Clarke, 1983), and it must be noted that the group is predominantly female with the characteristic lack of confidence noted earlier. The group also matches moderately closely with Entwistle and Brennan's Cluster 8 - neurotic introverts - who see themselves in a negative light as being unpopular, unsociable and lacking in ambition.

TABLE 38

A comparison of the research sample clusters with Clarke and Youngman (1987) and Entwistle and Brennan (1971)

SUMMERFIELD (1995)	CLARKE & YOUNGMAN (1987)	ENTWISTLE & BRENNAN (1971)
CLUSTER A - PASSIVE These students have a high level of social dependency and feel unable to live up to the expectations of others. They feel inadequate as learners, despite having the second highest C+ grades on entry. The group is introverted, with low confidence and high external control scores.	**CLUSTER 5-CONFORMING INTROVERTS** A moderate level of social inhibition can be seen in this group. The students are preoccupied with self and the perceptions of themselves in relation to others. They lack confidence and have a pessimistic view of the world, believing that fate plays an important role. They are not assertive and consider it unimportant to get their own ideas into practice.	**CLUSTER 8-NEUROTIC INTROVERTS** These students see themselves as being unsociable, un popular and lacking in ambition. They have low scores on motivation and poor study methods. An average attainment group.
CLUSTER B - CAUTIOUS This group shows a strong sense of mastery and control over one's fate. The students are confident and extrovert, although lacking some optimism over the outcomes of their studies. There is a hint of belief in luck, chance or fate and signs of under-achievement in final outcomes	**CLUSTER 2 - REFLEXIVE EXTROVERTS** These students are highly sociable in a serious minded way. They are ambitious and energetic, mixing with people for the stimulation of their ideas. They have a strong and stable self-picture which is not determined by comparing themselves with others. They are confident and feel that they can positively influence life events which affect them.	**CLUSTER 4-SOCIABLE STABLE EXTROVERTS** This group contains students who are not reaching their potential. The group has the highest levels of verbal ability and scores on motivation. Study methods are above average. These students seem to be activists, with fairly strong political and social values.

SUMMERFIELD (1995)	CLARKE & YOUNGMAN (1987)	ENTWISTLE & BRENNAN (1971)
CLUSTER C - CONFIDENT These students have the highest mastery scores of the whole sample, with a high degree of internal control. Confident of success, hopeful and optimistic, the group does show slight negative change during the course of study and low course exit scores.	**CLUSTER 1 - SOCIAL EXTROVERTS** These students are socializers who enjoy mixing and communicate easily. They are carefree and confident, self-motivated and ambitious. They feel that they can exercise control over others and put their own ideas into practice. They feel responsible for shaping their lives.	**CLUSTER 10 - SOCIAL EXTROVERTS** A high ability group showing low attainment, these students are extroverted but not neurotic. They have high social values and appear to be tough minded radicals. These students seem to opt out of study at a fairly early age, whilst being sufficiently able to complete the course.
CLUSTER D - PESSIMISTIC This group is fairly confident but also mildly introverted. Adequate, independent and internally controlled the students nevertheless have slightly weak feelings of mastery. An above average group for attainment on entry, the group shows good course exit scores and positive change, despite pessimistic predictions.	**CLUSTER 4 - CONFIDENT INTROVERTS** These students are characterised by a tendency towards social inhibition and may be uncomfortable in company. They converse easily to express ideas and whilst having a genuine regard for people, prefer to work with objects. They have a stable view of self and are motivated by challenge. They have a strong belief in their ability to control events which influence their lives.	**CLUSTER 1 - STABLE INTROVERTS** This group has good ability combined with high motivation, good study methods and examination techniques. Introverted and stable, this group has the highest attainment of any cluster. Modest on self-ratings such as 'sociable' and 'likeable' the group shows signs of tough mindedness and ambition.

SUMMERFIELD (1995)	CLARKE & YOUNGMAN (1987)	ENTWISTLE & BRENNAN (1971)
CLUSTER E - OPTIMISTIC These students are optimistic and hopeful on the surface, with just above average confidence scores linked to a moderate belief in external control. The group had the lowest attainment scores on entry and predicted the highest grades on exit - a wish not to be fulfilled, as the group showed considerable negative change	**CLUSTER 3 - SURFACE EXTROVERTS** These students are superficially sociable but do not perceive themselves as "one of the crowd" and generally do not enjoy being with people. They constantly compare themselves unfavourably with others and their self-perceptions are subject to frequent fluctuations. They lack confidence and feel controlled by external forces.	**CLUSTER 9-NEUROTIC EXTROVERTS** These students have high scores on neuroticism and high aesthetic values. They see themselves as being sociable, reasonably likeable but not hard working.
CLUSTER F - UNCERTAIN These students are the least confident group of the whole sample, despite being the best qualified group on entry. They show moderately positive feelings of mastery, adequacy and independence but have low forecasts of success. The group makes the greatest negative change, and is predominantly female.	**CLUSTER 6 - INSULAR INTROVERTS** These students are sociable isolates with a strong preoccupation with self. They are lonely and dislike conversation, having low personal worth and self-regard. They lack ambition and do not respond to external incentives, although they do seek success to gain respect. They feel that they have little control over events which rule their lives, and exhibit high levels of anxiety.	**CLUSTER 6 - ANXIOUS INTROVERTS** These students have high scores on neuroticism (anxiety) and low extroversion and motivation scores. Their self-ratings were uniformly negative, describing themselves as neither likeable nor self-confident. They have little social life. The group consists of hardworking females with few outstanding characteristics.

SUMMERFIELD (1995)	CLARKE & YOUNGMAN (1987)	ENTWISTLE & BRENNAN (1971)
CLUSTER G - DEPENDENT A passive and dependent group, reliant on company for support and needing to be organised by others. These students have moderate levels of confidence and a strong belief in chance, luck and fate. The predictions of these students are pessimistic and their attainment change is negative.	**CLUSTER 5 - CONFORMING INTROVERTS** This group shows characteristics of conformity and mild anxiety. The students experience mild fluctuations in their self-opinions and a belief that they do not control their own fate. A lack of social and personal confidence makes them feel useless and ineffectual.	**CLUSTER 8 - NEUROTIC INTROVERTS** These students are of average attainment. They see themselves as unsociable, lacking in ambition and unpopular. They have low scores on motivation and poor study methods.
CLUSTER H - FATALISTIC A high level of belief in luck, chance and fate characterises these students. They are not particularly dependent on other people and feel able to organise their own lives, but are extremely pessimistic about outcomes. However, despite low entry qualifications the group makes the greatest improvement in terms of positive change. The group is predominantly female.	**CLUSTER 6 - INSULAR INTROVERTS** The nearest available match to Cluster H, this group also feels that it has little control over events. Similar in low self-regard, these students do reflect the striving aspect of Cluster H in that, whilst not being ambitious, they seek success in order to gain respect and to enhance their self-esteem.	**CLUSTER 12 - TENDER INTROVERTS** A predominantly female group, these students have low entry qualifications but are of average ability. These students have poor examination techniques which may explain low attainment scores. They are tenderminded and have high religious values.

Figure 4

THE RELATIVE POSITIONS OF IDENTIFIED CLUSTERS ON DIMENSIONS OF EXTRAVERSION AND ANXIETY. (THE EXTRAVERSION SCALE EXTENDS 1·5 STANDARD DEVIATIONS EITHER SIDE OF MEAN VALUE AND THE ANXIETY SCALE 1 STANDARD DEVIATION.)

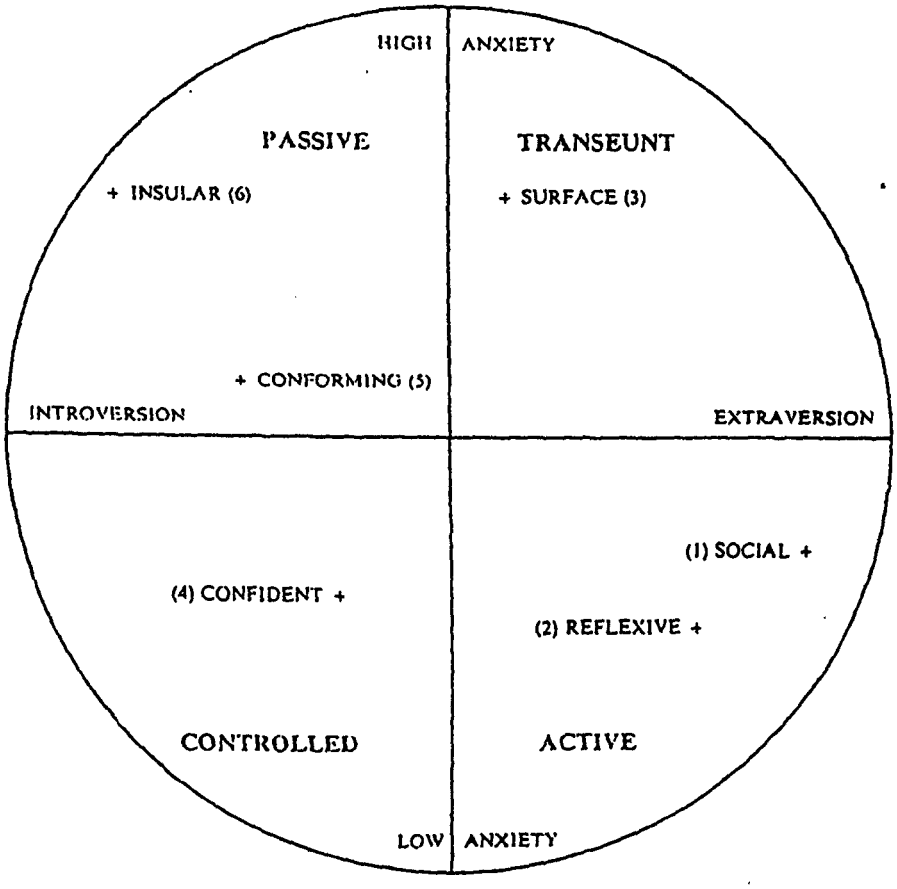


Figure 4 shows each cluster's relative position. The two-dimensional figure defines four quadrants which may be labelled Active, Transeunt, Passive and Controlled. Each provides a broad descriptive label for the clusters located within. Clusters 1 and 2 occupy the Active quadrant and each is characterised by a particular type of extraversion which appears to stem from their differing needs. Students in Cluster 1 are gregarious and are therefore described as "Social Extraverts", which clearly distinguishes them from students in Cluster 2 who, whilst also demonstrating a relatively high level of sociability, appear to direct it more purposefully to self-fulfilment and are therefore described as "Reflexive Extraverts". Students located in the Transeunt quadrant (Cluster 3) are characterised by an overt display of sociability which masks their underlying feelings of social unease and are labelled as "Surface Extraverts".

The two clusters in the Passive quadrant are again differentiated by the nature of their introversion. Students in Cluster 6 are characterised by their strong preoccupation with the "self" and are described as "Insular Introverts" whereas those in Cluster 5 are unassertive and are therefore identified as "Conforming Introverts". The remaining group of students, contained in Cluster 4, are located in the Controlled quadrant. They are characterised by some social inhibition which they are able to control and are described as "Confident Introverts".

(Clarke and Youngman, 1987)

Group B2 - Cautious. Corresponding most closely to Clarke and Youngman's Cluster 2 - reflexive extroverts - this group is located in the active quadrant. There is also a close affiliation with Entwistle and Brennan's Cluster 4 of the Rowntree study which demonstrated social and self-confidence, combined with emotional stability and a tough-minded "activist" approach to life. Group B2 shows a strong sense of mastery with feelings of being well regarded by others and able to cope with the demands of college life. A confident and extrovert group of students, although at first sight digressing from Clarke and Youngman's Cluster 2 in that an element of caution is demonstrated in forecasts of final outcomes. On further inspection, however, it is apparent that Clarke and Youngman's Cluster 2 does appear to be less carefree and more dependent on others for ideas than other good ability groups within their sample. Certainly group B2's strong sense of mastery and its extrovert quality corresponds to Clarke and Youngman's group, with its characteristics of sociability purposely directed towards self-fulfillment, whilst not wishing to take anything for granted. The links with Entwistle and Brennan's Cluster 4 - sociable, stable extroverts - are pertinent. An able, activist group who are well motivated they are, as with group B2 and its marginally negative attainment change, not fully reaching their potential.

Group C3 - Confident. An above average ability group, these students demonstrate a high level of internal control. Corresponding most closely to Clarke and Youngman's Cluster 1 - social extroverts, located in the active quadrant - they are confident of success, hopeful and optimistic in the forecasting of grades. Ambitious and self-motivated, they show a strong sense of responsibility for shaping their own

lives. The group's lack of social inhibition and relative lack of anxiety may have led to deterioration of attainment scores and to mild negative change. Having demonstrated an ability to succeed at GCSE level it may be speculated that these young people, characterised by Clarke and Youngman as "enjoying mixing", have taken the decision, as mentioned above, to focus on other areas of their lives. Carefree, self-motivated and with a light-hearted approach to life they will do as well as necessary to achieve their aims without sacrificing social relationships. Entwistle and Brennan's Cluster 10 - social extroverts - parallel group C3 with their good ability and high social values - tough minded radicals. Entwistle and Brennan's Cluster 10 interestingly opted out of intensive study fairly early in their courses, but appear to be sufficiently able to complete their courses.

Group D4 - Pessimistic. This group corresponds most closely to Clarke and Youngman's Cluster 4 - confident introverts - located in the controlled quadrant. Adequate, independent and internally controlled, the research group differs from the Clarke and Youngman group in that there is evidence of weak feelings of mastery. An able group, there are nevertheless strong feelings of pessimism about final outcomes, despite notable positive change in attainment during the course of study. This contradiction may be explained by the fact that group D4 has a relatively high proportion of GCSE - as opposed to A-level - students who are repeating subjects previously failed, rather than fulfilling their aspirations to proceed immediately on entry to A-level courses. The experience of failure may have tempered any innate optimism which other noted characteristics of this group such as confidence or internal control may have engendered, and produces minor contradictions in the

profile compared with other studies. The group's positive change in attainment denotes previous underachievement which strong and stable personality attributes may rectify in a Sixth Form College environment. Entwistle and Brennan's Cluster 1 - stable introverts - corresponds moderately closely to group D4. Modest on self-ratings, with good motivation and study habits, the group has the highest attainment of the Rowntree clusters.

Group E5 - Optimistic. Corresponding closely to Clarke and Youngman's Cluster 3 - surface extroverts - located in the transient quadrant, this group is on the surface optimistic and hopeful with an extremely high predicted difference score between student and tutor expectations of success. Predominantly male, the group has a strong belief in luck, chance and fate. Attainment change is negative, however, and underlying the surface optimism there is a feeling of insecurity and low self-worth. As with Clarke and Youngman's Cluster 3, there seems to be a conflict between surface sociability and self-perception, and an innate feeling of inability to influence events. Within the current research there are feelings too, for this group, of work-related inadequacy - not enough help is felt to be received in the learning situation. The group shows negative attainment change and very low scores on exit. Daines (1985) demonstrated that, as far as the accuracy of self-estimates were concerned, less able students consistently overestimated their performance and this finding, coupled with a need to attribute failure to others in not receiving adequate help, indicates a self-protective mechanism at work based on an awareness of previous failure. Daines (1977) quotes Murstein (1965) in stating that low achievers such as this group represents not only overestimated the grades they thought they would receive but they

were even more mistakenly optimistic in what they thought they deserved. Murstein elaborates upon the "grade deserved" concept and concludes that in the mind of the student it involves a moral dimension, a sense of entitlement related to the amount of effort employed. One might speculate that in the mind of the student, at the beginning of a course of study, the intention to work hard and succeed is a predictor of outcome, unrelated to awareness of levels of previous attainment. A moderate correspondence can be found between this group and Entwistle and Brennan's Cluster 9 - neurotic extroverts - who see themselves as sociable, reasonably likeable but not hardworking.

Group F6 - Uncertain. The Uncertain group corresponds most closely to Clarke and Youngman's Cluster 6 - insular introverts - located in the passive quadrant. Another predominantly female group, there is an interesting discrepancy between attainment and confidence here. Unlike Clarke and Youngman's Cluster 6, group F6 is not particularly passive on the Student Self-Perception Scale, but is certainly the least confident of the whole sample despite being the best qualified group on entry. The lack of confidence equates with the low self-regard of the Clarke and Youngman group, endorsed by low estimate of success at the end of the course and the most negative attainment change of any of the groups. It is difficult to ascertain the causes of the negative profile of this group, given its high attainment scores on entry, but lack of confidence may be seen as a strong factor, perhaps tipping over into a destructive level of anxiety. The group is in fact closer in this respect to Entwistle and Brennan's Cluster 6 - anxious introverts - who have high scores on neuroticism (anxiety) and low extroversion and motivation scores. Their self-ratings were

negative, unconfident and unsociable. Entwistle and Brennan's Cluster 6 is also predominantly female.

Group G7 - Dependent. This group, as with A1, corresponds closely to Clarke and Youngman's Cluster 5 - conforming introverts - located in the passive quadrant. Reliant on others, needing to be organised by others and with high external locus of control scores, the group shows fairly low attainment scores on entry and negative attainment change. The group also shows high levels of work related inadequacy. There is a negative profile to this group which indicates an initial lack of attainment which has not altered during their sixth form career. Entwistle and Brennan's Cluster 8 - neurotic introverts - matches Group G7 closely - students of average attainment who see themselves as unsociable, lacking in ambition and unpopular. They have poor motivation and poor study methods.

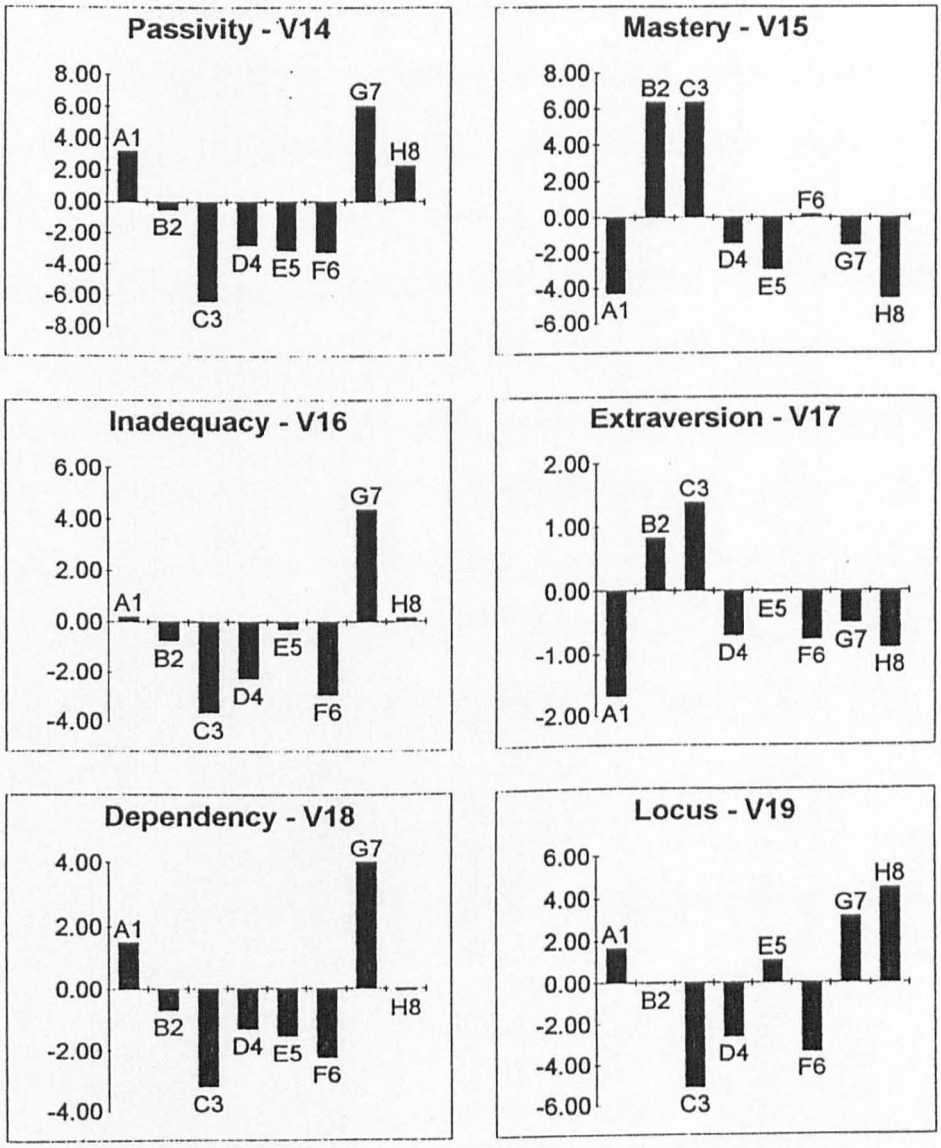
Group H8 - Fatalistic. A similarity with Clarke and Youngman's Cluster 6 - insular introverts - located in the passive quadrant, is evident here. Again, there is evidence of weak feelings of control over events which shape the students' lives, with a high level of belief in luck, chance and fate. Not particularly dependent but with very low feelings of mastery, the group in fact make the most positive attainment change of the whole sample. Clarke and Youngman's Cluster 6 exhibit a characteristic of seeking success to raise self-regard. It may be that the marginally positive confidence score shown by group H8 acted as a stimulus to produce the positive attainment change which is seen at the end of the course of study. Entwistle and Brennan's Cluster 12 with its profile of low attainment but average ability, interestingly possessing high

religious values, may provide an alternative mode of externality which enhances the similarities between the groups.

Whilst not expecting to reproduce Clarke and Youngman's groups precisely, there is sufficient similarity between the types of students to suggest that they are useful definitions. The implications of the findings can only be assessed at the level of the individual institution, but early identification of the syndromes, linked to appropriate policies, would serve to alleviate many of the problems encountered at the start of sixth form education on transfer from secondary school.

Figure 5 shows a comparison of the 8 clusters on the five Student Self-Perception Scales and the Locus of Control Scale

Figure 5 Comparison of the 8 clusters on the 5 Student Self-Perception Scales and the Locus of Control Scale



(In the above charts the vertical axis records the Deviation from the Mean)

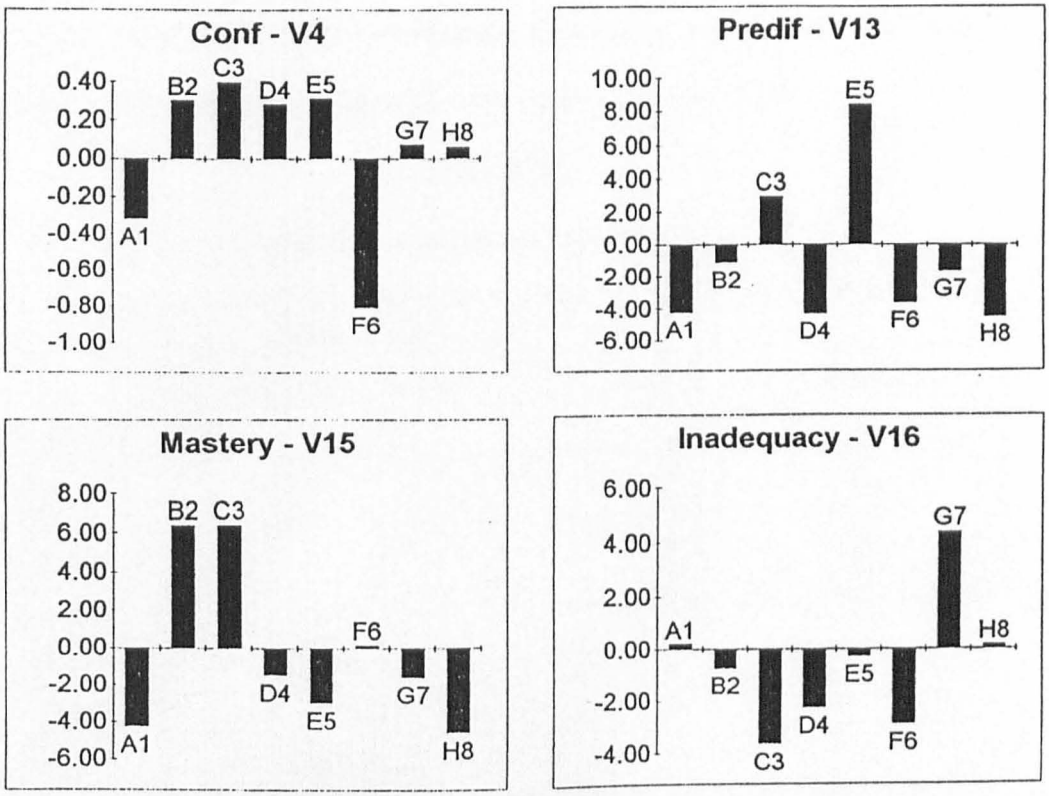
Key to clusters:

A1 - Passive	E5 - Optimistic
B2 - Cautious	F6 - Uncertain
C3 - Confident	G7 - Dependent
D4 - Pessimistic	H8 - Fatalistic

The role of academic self-concept within the research is pervasive, reflecting the dual aspects of self-concept, as described by Burns (1982), of beliefs about oneself (self-image) and evaluations of oneself (self-esteem) as a learner. Bearing in mind that academic self-concept is a specific dimension of global self-concept, relating more significantly to academic achievement (Burns, 1982; Marsh, 1992), it would seem appropriate at this stage to augment the above discussion by examining more closely the relationship of academic self-concept to other variables within the analysis. The measures most implicated in an assessment of academic self-concept are those of confidence in successful outcomes, the mastery scale, which consists predominantly of college work oriented items, and the work-related inadequacy scale which deals more specifically with feelings of ineffectiveness as a learner. These scales may be usefully examined alongside the predicted difference variable which shows discrepancy between the student's view of him/herself as a learner and the view of his/her tutors.

Figure 6 shows a comparison of the eight clusters on the Academic Self-Concept variables.

Figure 6 Comparison of the 8 clusters on the Academic Self-Concept variables



(In the above charts the vertical axis records the Deviation from the Mean)

Key to clusters:

A1 - Passive	E5 - Optimistic
B2 - Cautious	F6 - Uncertain
C3 - Confident	G7 - Dependent
D4 - Pessimistic	H8 - Fatalistic

Correlation analysis shows highly significant relationships at the .01 level between confidence and predicted difference and confidence and mastery. Work related inadequacy has a highly significant negative relationship with mastery and a slightly negative relationship, at the .10 level, with confidence (Table 39).

TABLE 39

Correlations between academic self-concept and attainment variables

	Academic Self-Concept			
	Confidence	Predif	Mastery	Inadequacy
Attainment				
Centry	-0.1406**	-0.1608**	0.2280**	-0.1866**
Totent	-0.1286**	-0.1778**	0.2247**	-0.2251**
Coursex	0.0747	-0.3996**	0.0992?	0.0121
Totex	-0.0635	-0.3498**	0.2328**	-0.2161**

Significance indicated ** P<.01, * P<.05, ? P<.10

An examination of the eight clusters shows that the two very high mastery groups - B2 and C3 - have high confidence and low work related inadequacy scores, indicating a strong and positive view of their own academic performance. Discrepancies on the predicted difference scores of these two groups emphasise the cautious nature of the B2 group, forecasting slightly lower grades at the end of their course than their tutors' forecasts. The slightly negative change scores for these two groups indicate, as previously noted, a deliberate choice rather than a lack of ability to attain. The relationship between the variables is adequately consistent. Two further groups also show a relatively consistent pattern of relationships between the variables. Groups A1 and H8 show a negative profile of negative predicted difference, a low sense of mastery, and work-related inadequacy scores barely above the sample mean. The two

mastery, and work-related inadequacy scores barely above the sample mean. The two groups differ only on the confidence variable, with A1 marginally below the mean and H8 marginally above. These four consistent groups constitute 47% of the total sample. No consistent patterns emerge for the other four groups.

Finally, relating the academic self-concept variables to change scores, the inverse relationship again emerges between a positive self-view as a learner and eventual outcomes. The two groups with the most positive self-concepts as learners - B2 and C3 - make negative attainment change. The two groups with the most negative profiles on these variables make positive attainment change - A1 and H8. The remaining groups show diversity which requires more precise investigation beyond the current scope of this study.

Groups emerging from this research as at risk are those who show negative attainment change during their course of study - groups E5 and F6 at a more serious level and groups B2, C3 and G7 at a less serious level. Clusters B2 and C3 are distinguished from other groups in the sample by positive extroversion scores, previously discussed, combined with high mastery scores and positive confidence scores. They also show course scores on exit below the sample mean. Comment has already been made that these students set their own agendas and take control of their lives. The extroversion factor has traditionally been used to characterise students as sociable, risk-taking, impulsive and expressive. In educational terms, particularly in studies in higher education, it has been consistently found that introverts in most subject areas tend to be more successful than extroverts - a finding true of only 35% of this sample on

entry, and of only 25% of this sample on exit from a given course. The relative weakness of the extroversion scale, however, precludes ascribing particular significance to this finding. Interestingly, as quoted above, Entwistle and Wilson (1977) showed that extroverts who had high scores on motivation and study methods were equally as successful as introverts with comparable scores. However, they add, fewer extroverts, compared with introverts, did in fact have high motivation or good study methods - hence the relationship shown here between extroversion and negative attainment change.

The three remaining at risk groups have in common only poor scores on exit from their courses and moderate introversion scores. Cluster E5 - the Optimistic group - has abnormally high predicted difference scores alongside poor previous and current attainment. There are indications of compensatory mechanisms at work here, along with an element of bluff on starting at a new institution, on new types of course. The challenge with these students is to maintain and nurture their desire for success whilst operating at a realistic level in terms of potential outcomes. Close monitoring and support, early diagnosis of learning difficulties and appropriate on-course guidance will be essential to avoid deflated hopes and potential drop-out. Cluster F6 - Uncertain - is the best qualified group on entry but lacking confidence and showing deterioration in attainment during the course. A factor in this group must be its predominantly female character, not passive but with overt lack of confidence. The building of positive self-concept and, again, constant encouragement and support is essential for this group and opens up the argument for single sex schooling in which the self-esteem of females is shown to be considerably higher than that of females in

a co-educational setting (Foon, 1988). Cluster G7 - Dependent - is a singularly passive group with problems of adequacy in the learning situation and external feelings of control. For these students, again, individual support must be the key to positive attainment, with changes to self-concept and an introduction to self-efficacy structures to facilitate change.

For all of these at risk groups, then, careful monitoring and support is the key to providing appropriate remedies for impediments to progress and positive attainment. Changing self-concept, self-efficacy strategies, guidance and counselling, provision for different learning styles and varied learning situations would provide an environment and a climate in which the range of students could flourish, whatever their individual patterns of personality, self-concept and attainment.

CHAPTER 8

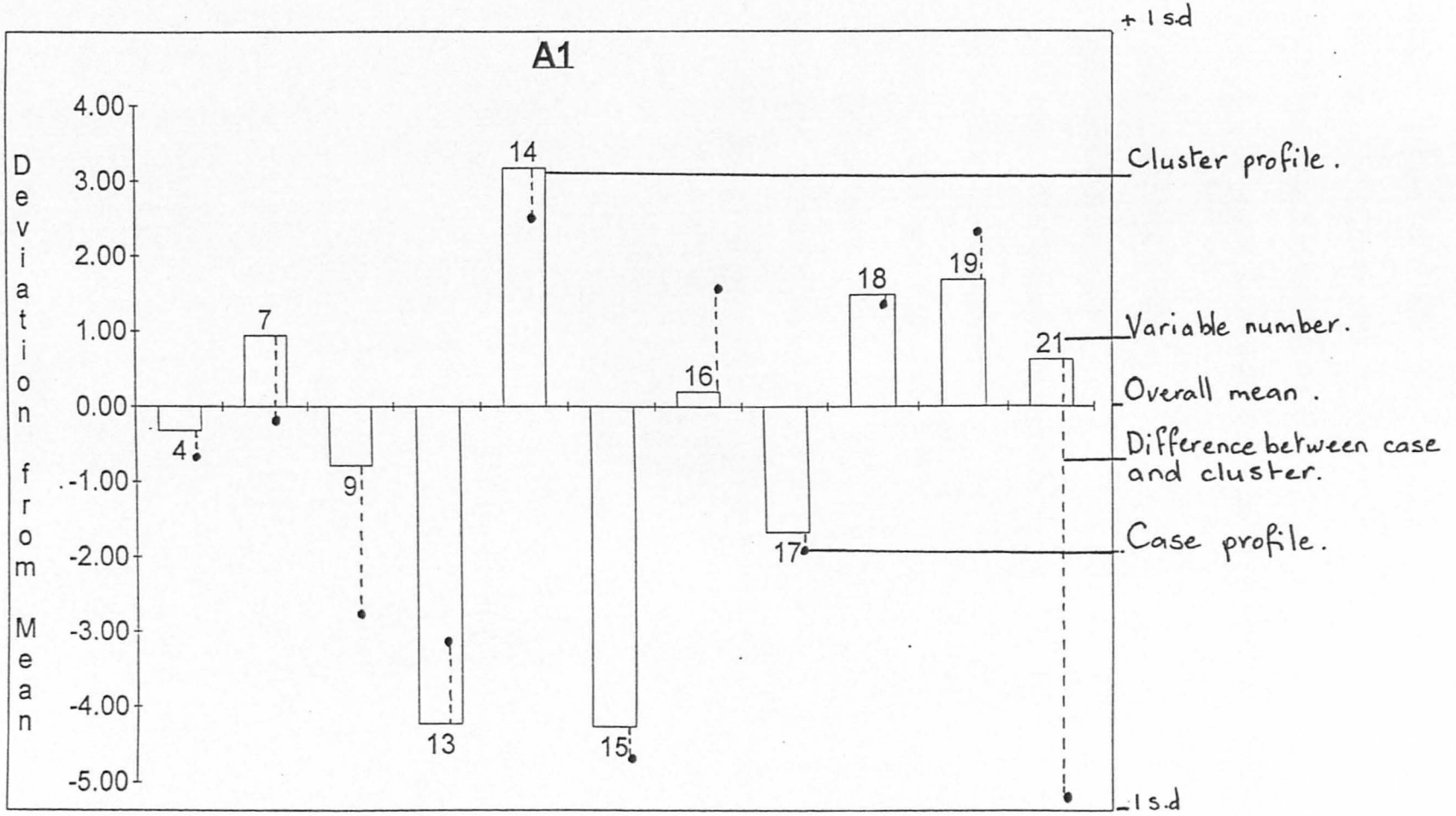
THIRTY SIX CASE STUDIES

i) Introduction

The function of the use of cluster analysis in this study is to facilitate our understanding of the complex patterns of relationships that exist between personality and attainment variables. The level of similarity between the student types identified in this study and those described by Clarke and Youngman (1987) and Entwistle and Brennan (1971) is encouraging despite differences in the measures employed and in the research designs. In order to illustrate the nature of the eight clusters still further, case studies will be presented of a typical member of each cluster using the range of information collected for that student during their time in college, focussing particularly on tutors' reports and profiles completed by the students themselves as part of the college Record of Achievement. Each student's profile is accompanied by a diagram showing the relationship between the cluster profile and the individual profile.

A further section will present case studies of twenty eight students known as outliers who failed to fit into any cluster. In the case of outliers, the individual profile is present. Figure 7 explains the Student Profile.

Figure 7 The Student Profile



Averages curtailed at 1 s.d. for clusters and 2 s.d. for outliers

Key to Student Profile

V4 - CONF - confidence in results

V7 - CENTRY - C+ scores on entry

V9 - COURSEX - total at end of given course

V13 - PREDIF - difference between student predictions on entry and tutor prediction pre-exit

V14 - PASSIV - SSPS Passivity scale

V15 - MAST - SSPS Mastery scale

V16 - INAD - SSPS Work related inadequacy scale

V17 - EXTRA - SSPS Extroversion scale

V18 - DEPEND - SSPS Social Dependence scale

V19 - LOC - Locus of Control scale

V21 - RESIDUAL - Residual change score (TOTENT-TOTEX)

OUTLIERS - students who did not fit into any cluster - 8% of the sample

ii) 8 Typical Cluster Members

1. **Cluster A. Passive**

Case 268

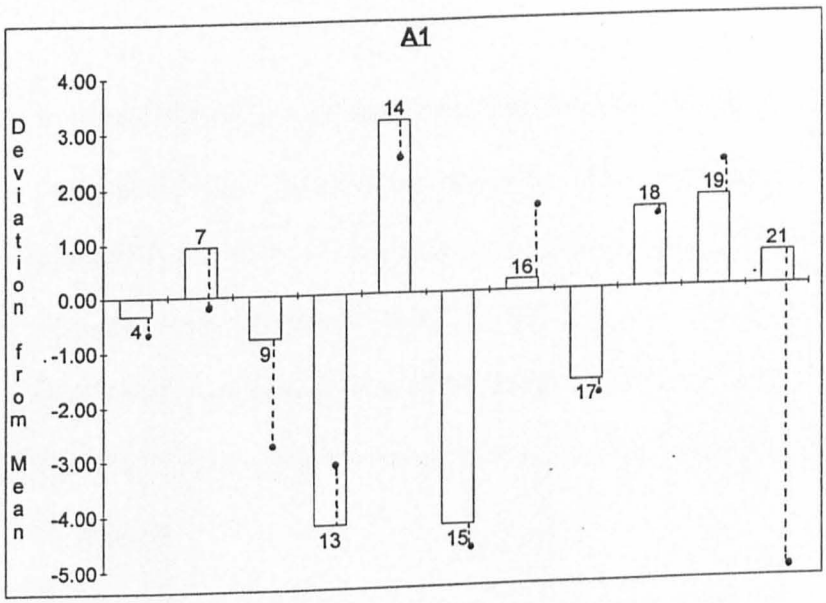
M. is moderately close to the cluster mean apart from his course score on exit and his change score, which deviate in a negative direction. M. is a male representative of a predominantly female group. sharing the characteristics on entry of low confidence and a high level of passivity and external control. Comments from M.'s teachers at his secondary school outline a student low in confidence and slow yet steady in his work. His Maths teacher comments: "M. does not always find the work easy and he works quite slowly even when he understands. He will need to work hard to gain an E". Geography teachers add: "Very slow working and not all that committed at present. M. needs to get organised if he is to be successful." The exception to this pre-college profile is the comment of the Art teacher: "M. has ability and imagination. He is always anxious to improve and would be a capable A-level student." The final comment of the school is as follows:

> "M. is a mature and responsible pupil, who, though somewhat reserved, gets on well with his peers and staff alike. Although he is not without ability I feel he has not given of his best efforts during his examination courses, seeming content to do just enough to get by. Perhaps he may find the narrowing of subjects at college more stimulating. He has an excellent attendance and punctuality record."

Accepted at college to take A-level Art and Business Studies, and to re-take GCSE Maths, M. gave little of himself away when completing his RoA Student Profile. His main interests were life-drawing classes and his part-time job in a hardware store, and he was involved in exhibiting some of his art work and sculpture locally.

Stating early that he wished to do an Art Foundation Course, he tended in college to concentrate on his passion for this subject and to do well in it. Described as "a typical art student... intense... conscientious... with natural flair," M. gained his GCSE Maths at the third attempt. In other areas of his course, however, M. is described as quiet and as someone "who would benefit from asking more in class to clarify points."

On application to Higher Education at the end of his two-year course, M. is able to write eloquently about his love for Art. He is described by his tutors at this stage as a fine artist who is sensitive to criticism and listens carefully to teaching advice. In his other A-level subject - Business Studies - he "does not find the subject easy" but is striving to gain a good A-level to enable him to pursue his career in Art. M. completed his course at college by obtaining an A grade in Art and a C grade in Business Studies. He proceeded to Higher Education. M.'s specific ability tends to mask his membership of this passive group, in that he had a passion for a specific subject, which perhaps led him to underachieve in other areas of his course and to remove him from the overall positive attainment change of the rest of the group. Had M.'s specific talent not been well nurtured, his overall profile within college may have looked very different.


A1
Deviation from Mean
4.00
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2. Cluster B. Cautious

Case 63

A. is fairly close to the cluster mean on most variables, the most noticeable deviation being for course score on exit. A. obviously did very well at college, unlike the majority of this group in terms of the C+ grades that they came in with. A. has high internal locus of control and a strong feeling of adequacy in the learning situation. A student of Chinese origin, A. demonstrates the cautious nature of this good ability group. More optimistic about the outcomes of her course than others in the group, A. is in fact less passive.

Comments from A.'s secondary school teachers indicate a pupil who works well but "tends to panic when in exams." A. always "tries her hardest" and has "an excellent attitude to work". Typical of the cluster in her wish to master new experiences and make decisions, A.'s work experience report states:

> "A.'s response to work experience was excellent. She has given her future career much thought and has researched possibilities with enthusiasm."

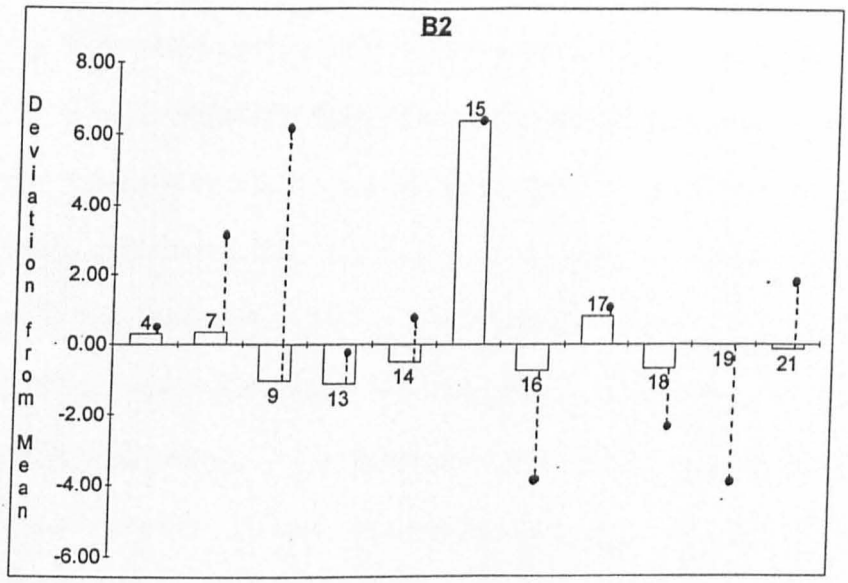
A.'s Record of Achievement from her secondary school gives more detail, commenting on her enthusiasm, eagerness to take responsibility within the life of the school, her musical abilities, membership of the Chinese Christian Youth Group and her love of travel. A. achieved excellent GCSE results - 2 grade A's, 2 grade B's and 5 grade C's, and was accepted for a 3 A-level course at college studying Physics, Chemistry and Biology. A. wrote a full Student Profile on entry, emphasising her love of music and sport. She stated her intention of studying Pharmacy at university.

A.'s college reports throughout her course reflect her hard-working attitudes but also an undertone of anxiety. Her Physics teacher states: "She fusses and worries about her work but always does a good job." The lack of security is reflected again in the comments of her Biology teacher: "A. is very conscientious and hardworking. She is very keen to overcome any problems or misunderstandings, and this should stand her in good stead in the coming year." In Chemistry.. "her main difficulty is that she panics if things do not go to plan, but she does not need to worry at all." By the end of her lower sixth year, A. is showing signs of not performing to her ability level and has some disappointing examination results, and this obviously shakes her confidence. Comments in her final year reflect this - for instance:

> "A. is working very hard. She gets easily upset by little problems. She must be more confident about her ability - this, and continued hard work will get her a good grade."

A. gained four A-level subjects, having taken up General Studies in the upper sixth. Her grades were two C's, one D and one E.

A. achieved her ambition to study Pharmacy and gained a place at a midlands university. She worked hard to conquer her insecurity and to take control of her life, receiving from tutors consistent encouragement and support which helped her to succeed.


B2
Deviation from Mean
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3. **Cluster C. Confident.**

Case 363

Y. shares many of the characteristics of this cluster quite closely, but with a massive negative difference on the attainment change score and serious deviation on the course exit score. Sociable and extrovert, Y. may typify the student who, whilst being able to cope with study, opts out at a fairly early stage. Fairly realistic about the outcome of his studies, Y. feels in change of his life, carefree and confident. Y.'s teachers from his secondary school characterise him as polite and cheerful with good relationships and a steady outlook. Y.'s headteacher comments on his application for an A-level course: "Obviously Y. is ambitious at this time, but he is a good steady worker and would benefit from a college course. He would probably do better from one more year at GCSE level". Deemed on interview for a college place to be "unlikely to secure enough Cs", Y. confounded his critics by obtaining one B and four C grades, thus qualifying to undertake a three A-level course.

Y. completed his Student Profile in detail, indicating his enthusiasm for American Football, his part-time job at Asda and his love of video machines. His reports started enthusiastically, with his personal tutor commenting:

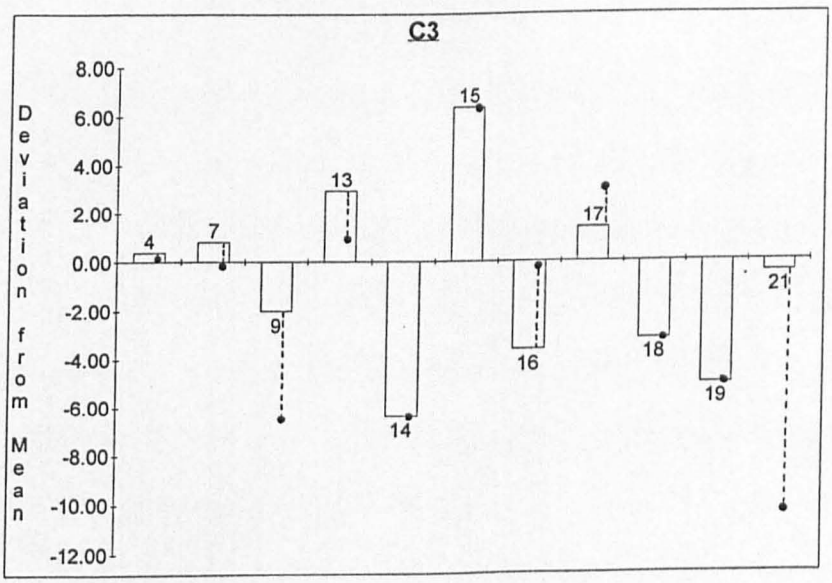
> "This is a remarkably good report and I trust that Y. will give attention to the sound advice offered by his subject tutors. He can gain real success at college (and not just playing cards!) if he puts his mind to it."

Good orally, Y.'s written work lacked depth and adequate explanation, and he started to miss giving in homework at an early stage. The chemistry teacher stated:

> "Y. has made a reasonable start to his A level studies but has missed several pieces of homework recently. He must realise that when he has been absent it is his

responsibility to catch up on work missed, otherwise he will find gaps in his knowledge which will hinder his progress."

By the beginning oof his upper sixth year, Y. was being complemented on his sporting prowess, but concern was shown over his examination subjects. The problem arose through frequent absences resulting in poor understanding of key areas of the course. His general understanding of his subjects remained satisfactory, but fine detail and depth of knowledge still needed developing. He gained eventually two grade Ds at A-level - Business Studies and Physical Education - and one grade E in Social Biology. Y. applied for Higher Education with cautious backing from the college. He gained a place on an HND Sports Science course at a local university. It is difficult to know what more college could have provided for Y. and despite his absences and self-determining behaviour he achieved his primary aim and obtained the course that suited his particular talents.



4. Cluster D. Pessimistic

Case 104

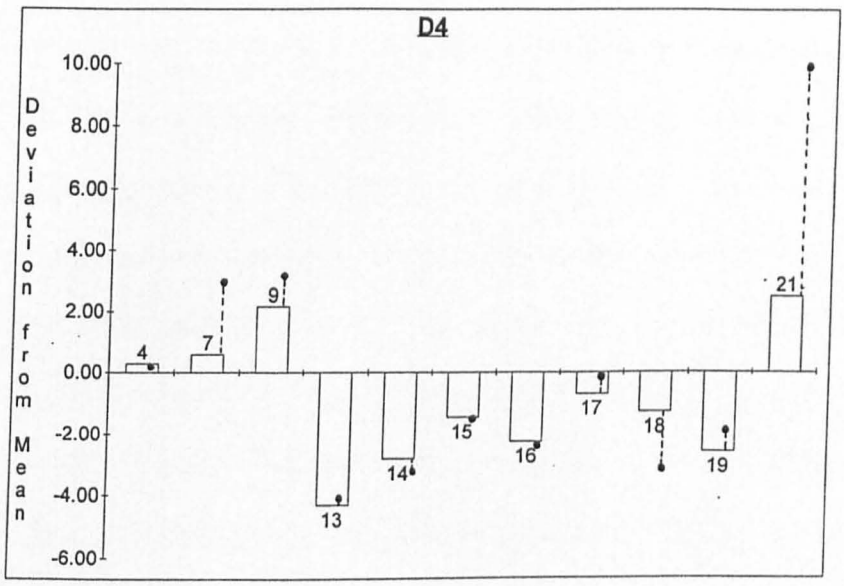
D. is very close to the cluster mean on all of the personality variables apart from low dependency, in which she exceeds an already independent group. In terms of attainment scores, she is well above the cluster mean, and shares their confidence at a general level, although as a group this cluster is very pessimistic about predicted outcomes at the end of the course. Confidence is operating here as a personality variable, not as a predictor of attainment. This cluster is characterised by weak feelings of mastery but does have high internal control. Given the relationship between internality and attainment, the explanation for the positive attainment change of this group may reside here. Comments from D.'s secondary school teachers describe her as fairly quiet yet friendly, and her relationships with adults are "much better - they improve as she gets to know adults." D. enjoys listening more than talking and intends to pursue a full-time higher educationas a veterinary surgeon or in a bank.

D. entered college with high grades - three A grades, four B grades and one C gradee. She opted to study A-level Chemistry, Maths and Physics. Her Student Profile on entry showed a range of interests and hobbies - playing the guitar, cooking, reading and playing tennis. Socially D. was fairly active, having a part-time job at a hairdresser's and fund-raising for charity as a member of the finance sub-committee of the College Council. Her reports indicate a positive, hardworking attitude and she completed a very promising first year. D. continued to work hard in her second year an obtained two A grades and two B grades at A-level. She proceeded to Higher

Education and expressed her career aims as follows:

> "Initially I want to do some voluntary work in Third World countries. I also want to try to help work towards solving their problems - either through practical help (education) or by getting involved in research and/or fund-raising, and increasing the First World's awareness of the problems experienced in these countries.
> Practical help may involve further training, possibly as a teacher. I may also need training as regards farming practices/procedures at fisheries etc. so that I cna actually help the people when they are experiencing problems.
> A knowledge of the political policies of various Third World countries would also help, as would a knowledge of health problems. Further education will hopefully enable me to gain a broader knowledge of physical/human factors which can influence hardships, and it will also give me time to decide on which specific area I want to specialise in."

D. represents, then, the modest stability of this group which, coupled with tough-mindedness and high motivation, over-rides the pessimism of their initial predictions and demonstrates a level of aspiration and striving which leads to success. For such a student the role of the college must be to support and encourage her aspirations and provide the means by which she can progress to the next stage of her education through appropriate opportunities and personal guidance.


D4
Deviation from Mean
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5. **Cluster E. Optimistic.**

Case 177

H. deviates from the cluster mean most noticeably on the locus of control measure - she has a high level of externality. Her predicted difference score is on the cluster mean, and she predicts that she will do extremely well on course. This corresponds to the most striking feature of this modest ability group - a hope that they will emerge with high grades. Unfortunately, as with H., her course scores on exit and predicted attainment change are negative. H.'s teachers at her previous school commented that she was very hardworking with excellent attitudes to her work. She was thoughtful and expressive apart from maths, from which she seemed to absent herself frequently. Her headteacher said of her:

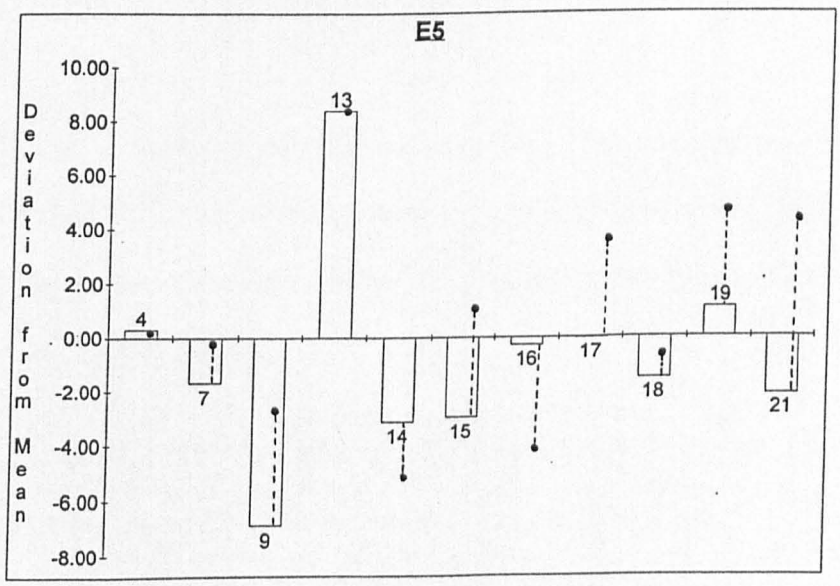
> "H. is pleasant and co-operative. A hard-working, well-motivated pupil. Socially, she is well-adjusted and aware. H. has helped at Parents' Evenings and in the school shop. H. seems to be aiming rather too high in career ambitions - possibly nursing would be a more suitable avenue to pursue."

H.'s stated career ambition on entry was medicine, but she enrolled on a three A-level course of Social Biology, Chemistry and English - subjects which would preclude an acceptance at Medical School. Her Student Profile showed a range of initial activity which was not sustained throughout her course - community service, tennis, part-time work in a leather shop and keeping accounts for her father's business. Early reports suggested she was struggling with some aspects of her chemistry work, and was not considered to be "working to full capacity". H.'s teachers maintained that she was capable of higher marks, but her progress in her second year was hindered by absenteeism. Reports issued before the A-level examinations showed a measure of despair in terms of H.'s effort and attendance.

Her personal tutor commented:

> "H. is not without ability but often fails to make the most of it. If she intends to secure grades that reflect her true potential then she will have to make a major effort over the next few weeks."

H. obtained one D grade and two U grades at A-level and made a decision not to apply for Higher Education. She wished to avoid jobs involving science and was receiving careers counselling to identify an occupational area of interest to her. Despite admonitions H. failed to take charge of her learning as reflected in increasing absence, and her own particularly high level of external control may have made her feel that she could not alter the situation she was in, or change her outcomes. Having set her sights initially high, it may be that H. realising that it was unlikely that she could gain a place at Medical School, opted out of the learning process so that she could attribute potential failure to lack of effort rather than ability. Certainly she seems to have capitulated to her fate, and, given increasing attendance problems, there was little that tutors could do to change this.



6. Cluster F. Uncertain

Case 51

Fairly typical of the group on most variables, L. deviates most noticeably on the passivity measure, having a very high score. Otherwise, L. represents the good ability of this cluster, being in fact the best qualified in terms of C+ grades and total scores on entry. L. herself, on entry, was above the cluster mean for C+ scores in that she had eight - two As, four Bs and two Cs. Despite good attainment, however, this group was the least confident of the whole sample. On exit from her course L., along with the cluster, showed very negative course exit and change scores.

L.'s secondary school teachers described her as lively, confident and polite with staff and peers alike - a pleasant, open pupil. She attained well without having to work too hard and was considered suitable for further and higher education. L. indicated a range of interests and accomplishments on her Student Profile - swimming, playing the flute, community service and a Saturday job in town. L. became a member of the Student Council.

L.'s reports in college characterised her as quiet but after initially finding some difficulty settling into some of her subjects she gained confidence and began to join in discussions and become more sociable.. Her psychology teacher comments at the Christmas of her first year:

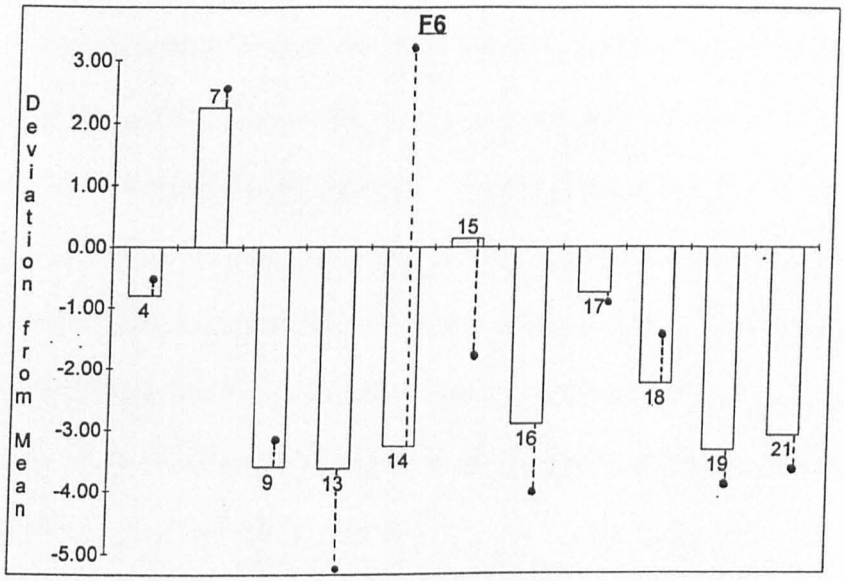
> "L. has made a promising start to the course. Her written work has been of a high standard, and I hope that this will continue. On occasions, L. has been distracted by those around her. I expect her to realise that this is not the way to develop in this subject, particularly as she has shown what good work she can

> produce. I expect all areas of L.'s work to steadily improve as she becomes more familiar with the subject."

By her upper sixth year L. had given up A-level French, with which she had had considerable difficulty, and taken up a one-year General Studies A-level course. She seemed to be coping well with her revised programme and her tutors forecast modest A-level grades. L. did in fact achieve two grade Cs and one D.

L.'s career aim was to work in nursing or a health-related profession and she gained a place on a nursing course at a Polytechnic. She failed to settle into that situation and withdrew. She returned to the college for a further year to re-take Psychology A-level and to reflect further on her intended career.

L. herself reflected that she had "fallen into" Higher Education - perhaps as a result of her passivity and lack of confidence, and her return to college for a year came from a need to convince herself that she was entering Higher Education for positive reasons. L. then reapplied for a BA in Nursing at a local university. By acting as a support and taking L. back onto a course when her initial plans failed, college enabled her to re-evaluate her situation and come to a more committed state of mind concerning her future.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7. Cluster G. Dependant

Case 45

N. is close to the cluster mean on most variables, but differs on predicted difference - much higher than the cluster mean - and C+ on entry, on which variable N. is better qualified than the average cluster member. High on passivity, work-related inadequacy and social dependency, this group as a whole needs to be supported and organised by others and has little feeling of control over their lives. Reports from secondary school indicate that N. is confident, mature, conscientious and has a good sense of humour. N. is reliable and keen to do well for herself, getting on well with staff and peers alike. Her headteacher states:

> "N. is extremely keen to do well, but this does not detract from her relationships with others. Within the tutor group she is popular. Further education would pose few problems for N."

N.'s summer grades presented few problems for her proposed course - she gained seven grade C+ grades and embarked upon a three A-level course. Her Student Profile was sparse but adventurous - she took part in the Duke of Edinburgh's Award Scheme, went jet-skiing, did Community Service and was on the Student Council. Reports from the beginning of her time at college, however, suggested that N. should work more consistently and not allow herself to be so easily distracted by others. She is accused of being careless - "... there are certain weaknesses in her English", and reticent - ..."she rarely contributes to class discussion but is happy to respond to direct questions".

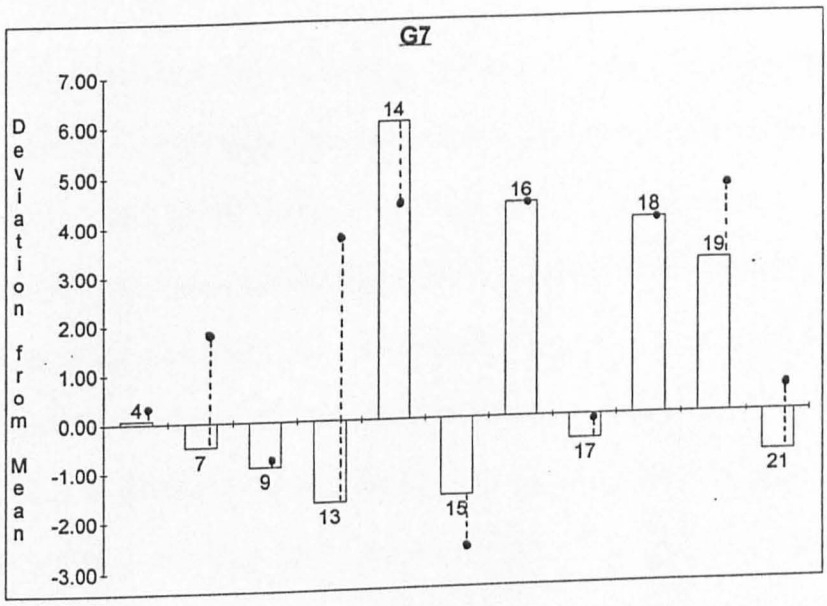
In the second year of her course, N. is still working well, but she achieved poor mock examination results in some subjects. Her Business Studies teacher commented

as follows:

> "N. has been a very conscientious, well motivated student throughout this year, achieving consistently good marks in all areas of the course. Her recent exam result of 41% was obviously disappointing, but due to poor interpretation of questions and general exam nerves, more than lack of understanding or revision. I am confident she can improve on this next year."

By her upper sixth year, N. was working well and obviously wishing to achieve. She in fact finished her course with two grade Bs and one N. She applied to Higher Education and commenced a B.Sc. in Valuation and Estate Management at a University in the west of England.

Unlike the cluster, N. did in fact make positive attainment change, perhaps due to her greater feelings of confidence and higher C+ scores on entry as compared with the cluster as a whole. This combination of confidence and previous good attainment, combined with overt and sustained encouragement from tutors, enabled N. to fulfil her ambitions despite her initial negative tendencies.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8. Cluster H. Fatalistic

Case 116

E. differs from the cluster mean most noticeably on her poor course score on exit and negative change score. This group is predominantly female, low in self-regard but showing the striving aspect of its character in a very positive change score. The students in this group also have a strong belief in luck, chance and fate, and E. is very close to the cluster mean in terms of externality. E.'s teachers forecasted modest GCSE grades at the end of her secondary schooling and she in fact achieved three E grades, four F grades and one U grade. Her Student Profile showed an interest in roller-skating, swimming, baby-sitting and going to the pictures. Quite early in the academic year E.'s parents received letters of concern about her attendance. For instance:

> "To date, E. has been absent 25 times and late 11 times. Obviously this is unacceptable. As registration is often missed it is extremely difficult for us to maintain any sort of contact."

No response was received from E.'s parents and her attendance continued to be erratic. The concern of tutors was shown in E.'s reports. Her tutor writes:

> "E.'s year has drifted by. Due to lack of self-motivation and attendance her chance to achieve good grades is slipping away."

E.'s English teacher comments further:

> "E.'s attendance is giving cause for concern. She struggles with this subject, although recently there have been signs of improvement. She has missed many pieces and it seems a shame that her earlier work could easily go to waste."

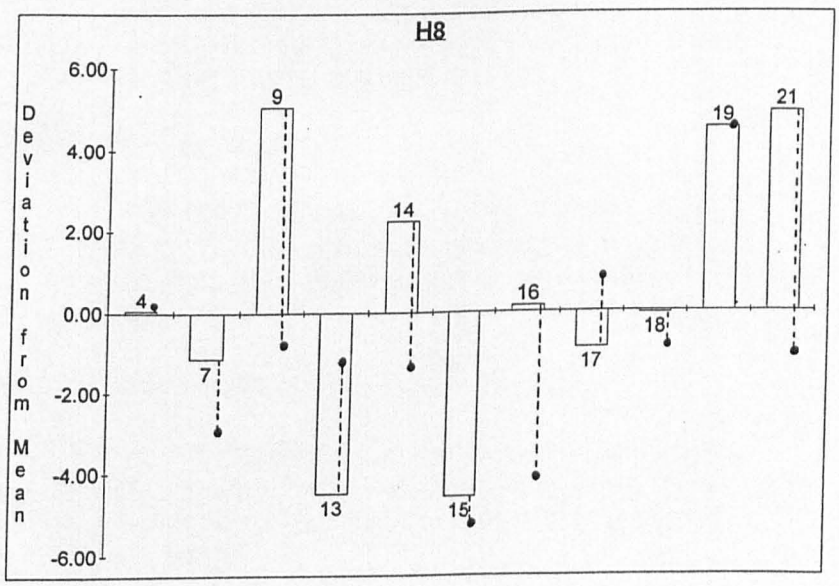
By March, staff were continuing to be concerned. E.'s Maths teacher stated:

> "Whilst there is an improvement... it is not the best that

she can do, and with a more serious and thorough approach she can improve her grades."

E. failed to see the need to change and this was reflected in her results. She gained a CPVE certificate in Business Studies and four GCSE subjects - two grade E, one grade F and one grade G. She applied for a course in Beauty Therapy at a local college of Further Education, but was eventually accepted on to a BTEC course in Caring.

Had tutors been able to work more closely with E. it is possible that she could have made the positive change in attainment seen by the rest of her group. Her persistent absence from college, however, make any attempt to change her views of herself and of her opportunities extremely difficult, and it cannot be said that the college did much for E. except keep her in the system for another chance.



iii) **28 Outliers**

Outlier 1

003

N. deviates from the sample mean most noticeably in her social dependency, low sense of mastery and her optimistic predicted difference score. A one-year student, N. entered college with six D and one E grades in her GCSE subjects. N.'s previous school made little comment on her ability and aptitudes apart from finding her quiet and likeable. In her Student Profile on entry to college N. expressed an interest in badminton, ten-pin bowling and roller-skating. She had also had experience of looking after the elderly at a local hospital and working in a Community Centre.

N.'s early reports indicated a student who was quiet and conscientious but showing some cause for concern. N.'s personal tutor commented:

> "N. has made a good start to college and is a quiet, conscientious student. She has the ability to improve her grades but will need to work more quickly in order to do this. N. must try to be more consistent in her efforts and revise thoroughly."

N.'s Business Studies tutor added:

> "N. has made a reasonable start to this course. However, she is reluctant to contribute to class discussions and I feel that this has slowed down her progress."

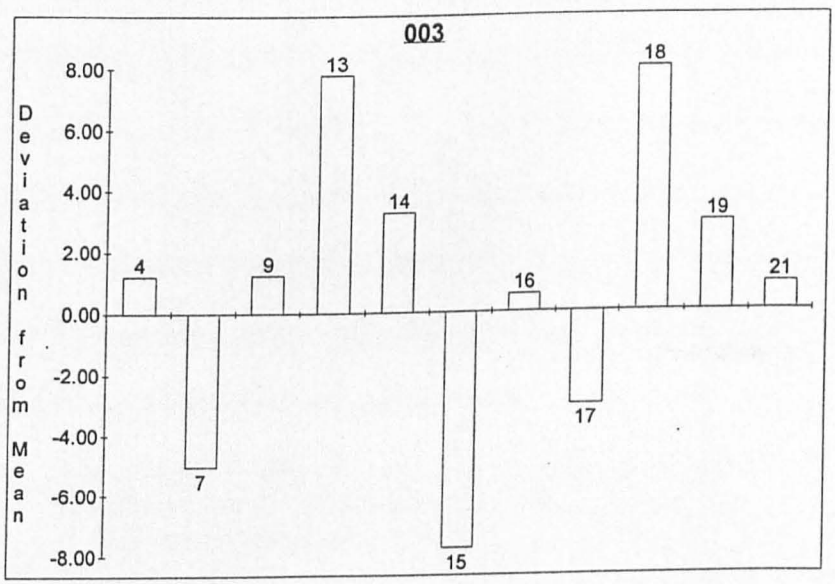
The Chemistry teacher expressed concern about absences:

> "We are concerned that N. has missed some lessons recently. She has a long way to go before she reaches pass level and she must make sure she keeps up to date with the work."

Further comments note the "need for consistency" and the "need to work more

quickly to put ideas to full use when time is limited."

Struggling in the work situation, then, and with little evident sense of purpose or control, N. began to miss coursework deadlines, receiving warning letters about her progress. By March the letters were also concerning her increasingly frequent absences from lessons and from college. Despite her lack of success, N.'s hopes were still sufficiently high to encourage her to apply for an A-level course at a local College of Further Education. She obtained two C grades at the end of her college course, and her ultimate destination is unknown.



Outlier 2

028

S.'s profile shows a massively optimistic predicted difference score and equally massive negative attainment change and course score on exit, in relation to the sample mean. Another quiet student, S.'s teachers at her secondary school characterised her as hard-working and well organised, mixing well with her peer group but somewhat lacking in imagination. Her headteacher comments:

> "S. has coped well at school and has matured noticeably over the past year. She is quiet but efficient and has a clear idea of what she must do. At 'A' level she will work hard and we feel that she would fit into a college environment."

S. entered college with moderately good GCSE results - four B grades, one C grade and three D grades. She started on a three A-level course of Physics, Social Biology and English, in the hope of becoming a primary school teacher. A proficient musician, playing both cello and piano, S. also worked as a ward waitress at a local hospital, did a paper round and helped with a Brownie pack. S.'s early reports were mixed. She changed her course to A-level English and History and her indecision was reflected in the comments of her personal tutor:

> "S. seemed to take a long time to settle down and become a member of the tutor group. She must also try to improve her attendance record."

After changing her subjects, S. seemed to work steadily and make progress. Her essay writing showed promise and she produced some good practical criticism work. Some staff commented on absences - "she has made a reasonable start to the course in spite of some absences" and "S.'s absence and GCSE retakes have affected her confidence a little."

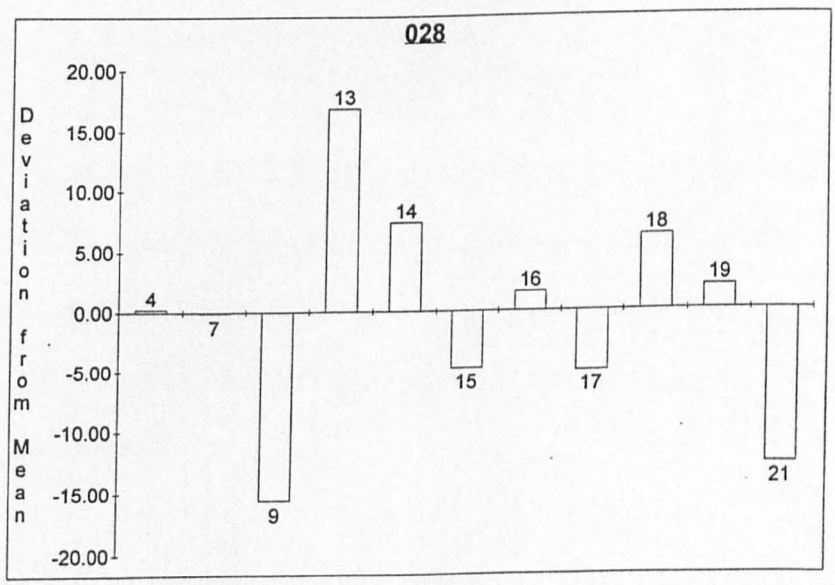
By July S.'s personal tutor was writing on her report:

> "I was disappointed to see S.'s History reports. I will look for a change in attitude next year. I am very pleased, however, with S.'s contribution to the social life of the college."

Whilst achieving poor end of year results in History, S.'s English results were a little better, representing "a firm foundation on which to build". Her English Literature teacher shed some light on the reasons for S.'s difficulties:

> "S. has had some difficulties this year because of her health but her mark of 56% is almost a C. I am sure that with a good long essay and her increasing maturity of approach she will be able to improve on her grade."

Despite the optimism of the English teacher, S.'s problems eventually defeated her and she left her A-level course at the end of her first year. Never having really settled academically, S. gained two C grades - one in Biology and one in Maths - at GCSE level and went into employment.



Outlier 3

048

L. differs from the sample mean in her seriously low course score on exit, low sense of mastery and high level of passivity. She embarked on a two A-level course at college, having taken two years previously to gain five GCSE subjects at grade C and one at grade B. Her previous school described her as "an average student" who was a popular and out-going member of the fifth year. She was an enthusiastic participant in the Duke of Edinburgh's Award Scheme, an energetic young lady with "a good deal to offer". L.'s headteacher did comment, however, that she would be likely to struggle to successfully conclude her chosen A-level courses. L. did not complete a Student Profile on entry, but her personal interests revolved around Rocky Horror cultural activities.

L.'s reports demonstrate that from the start of her course she set her own agenda in terms of attendance and punctuality. Her personal tutor commented:

> "A satisfactory start, but I must see some improvement in L.'s punctuality and attendance next term. Home study periods are a removable privilege."

L. made a good start to her Sociology course, which she obviously enjoyed. Her written work was good, though needing more detail in parts, and she was "willing to contribute to class discussion and works well in the small group situation." However, "in order to develop her ideas and understanding she must realise that attendance at all lessons is essential."

L. also enjoyed her Psychology lessons, and was growing in confidence in her oral

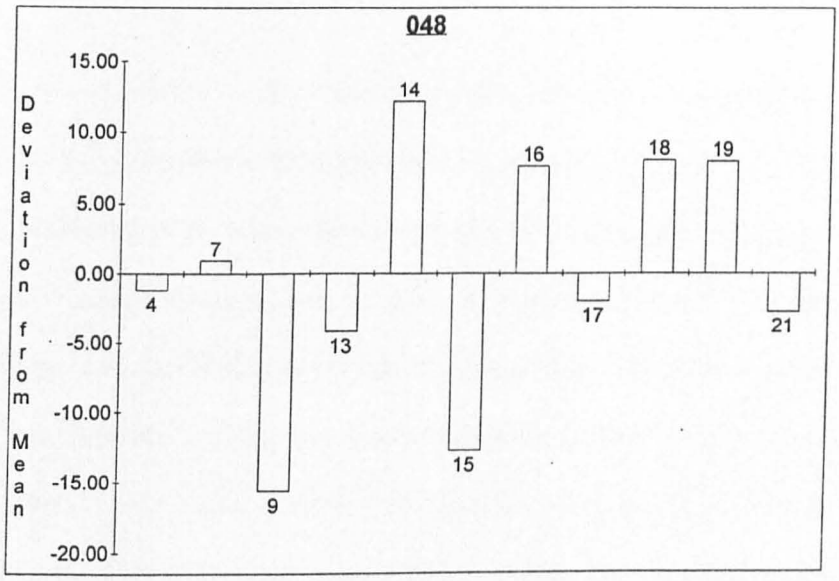
contributions. Again, a note of caution:

> "I hope that L. will continue to work hard and that she will not let herself be distracted by those around her - as she does on the odd occasion."

L.'s summer exams at the end of her first year showed that academically she was coping well but that her absences were affecting her attainment. L.'s Psychology teacher comments again:

> "L.'s exam results (48%) shows that she has a grasp of some of the aspects of this subject, but there are weak areas - possibly due to a number of absences, and she is already a project behind the rest of the group. There are lots of areas for improvement."

By her second year, L. was still demonstrating an aptitude for her subjects, but her motivation and effort were sporadic. L. had clearly made a choice between her academic success and her social life, and this choice was reflected in her final results, which did not reflect her ability in the opinion of her teachers. She achieved a grade C in her Sociology, a U in Psychology and a grade D in General Studies which she took as a one year course in the upper sixth. L. did achieve a place at a southern university to study for a BA in Sociology - a reflection of her ability rather than her diligence, but nonetheless a very appropriate outcome for this particular student.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Outlier 4

154

D. deviates from the sample mean on passivity and work-related inadequacy. D.'s course score on exit is high and he makes positive attainment change although the picture is of a student who aspires to do well but who lacks the confidence and previous success to carry through his aspirations. D.'s secondary school teachers felt that he had improved considerably in the last two years of his secondary career, and had worked "much harder". They felt that he would do well in his future studies. Gaining one grade D, one grade E, three grade Fs and two grade G at GCSE level, D. embarked upon a CPVE Business Studies course at college. His Student Profile on entry revealed an interest in ice-skating and work experience at Sainsburys Supermarket.

Early reports show a need to "get down to some hard work... he knows what he has to do." Obviously able to achieve a grade C in most subjects, D. either failed to take his mock examinations or seriously underachieved in relation to the standards his teachers felt he could meet. D.'s Art teacher commented:

> "D. proved in his last project what he is capable of and achieved a good grade. He now needs to utilise every minute of his lessons in this final coursework project and put in some extra time to add to existing work, in order to show breadth of study in his final exhibition and achieve success."

By this point, letters were going home to D.'s parents explaining why he could not drop recreation on Wednesday afternoon to do "other things". At the end of his one-year course, for which he obtained a full CPVE certificate, D. continued on to an A-level course, taking Art and Design and English. He obviously struggled at this

level, as reflected in his December report:

> "D. needs to make a much more determined effort if he hopes to achieve the standard required for success at A-level."

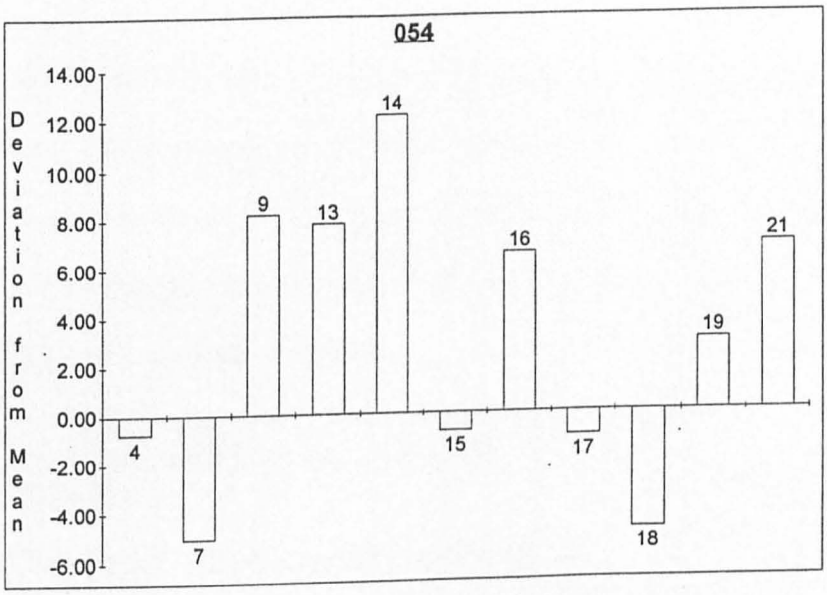
And:

> "This has not been a good start for D. on an A-level course. He has been slow to motivate himself and research ideas in an organised manner. His marks reflect his lack of interest and we hope for better results next term, with increased commitment."
>
> "The same lack of commitment is evident in D.'s fine art grades this term. He has made a poor response to homework and failed to exhibit his last project for assessment. He knows what he has to do - it is up to him."

D.'s English teacher adds:

> "D. is finding the transition from GCSE to A-level rather difficult. He is still too intent on re-telling the story of the texts rather than commenting with textual back-up and analysis. Perhaps if he drew on his knowledge of text, rather than drawing on the text, he might improve."

Letters home confirmed the anxiety felt by staff about D.'s commitment and ability to cope. Concern was expressed in December about whether A-levels were the best course for him and in May the letters were confirming D.'s intention to leave college. D.'s eventual destination is unknown, but clearly the demands of A-level work overcame his desire to succeed and he sought other ways of fulfilling his aspirations.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Outlier 5

070

J. is characterised by her high score on the work-related adequacy scale accompanied by positive attainment change and a good course score on exit. Coming to college from a local secondary school, J.'s forecasts of grades were good. Her teacher thought that she would gain two B grades and six C grades at GCSE. J. was described as follows by her English teacher:

> "A conscientious worker. Good basic English without any great imaginative flair. Good orally - able to argue logically."

A further comment by her Textiles teacher described her as:

> "A very able pupil who enjoys the practical aspects of the work. Occasionally lacking in motivation towards her written work. However, J. is capable of achieving a high grade if she makes a determined effort."

J. came to college with a grade B in Drama, grade C in both Maths and English and four grade Ds. She started a CPVE course in Business Studies. Her Student Profile on entry showed an interest in drama, community service at a local hospital for the elderly and an interest in a career in law. J.'s early reports indicated that she was "not engaged in the learning process", despite showing ability and capability. J.'s personal tutor commented:

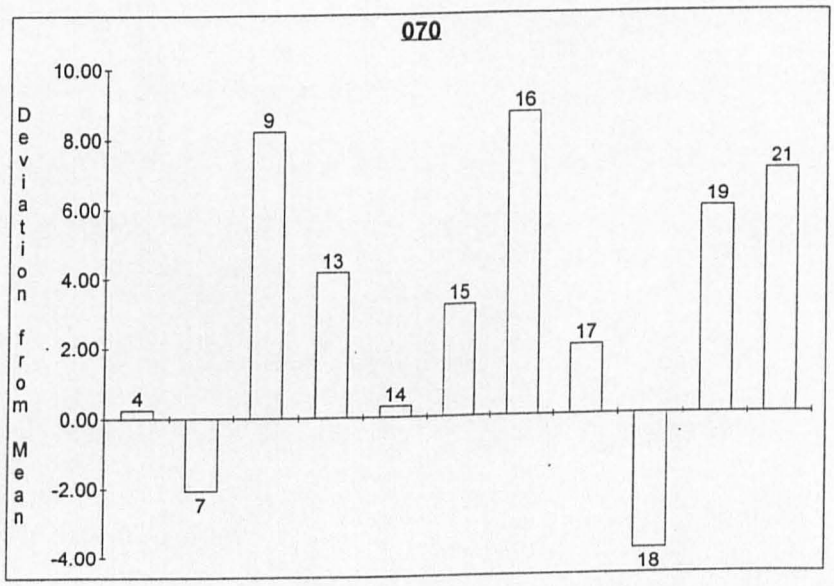
> "J.'s talents an abilities are not represented in any of her subjects at college. I hope that sometime in the not too distant future she will find something that she is enthusiastic about."

In relation to work experience, the comment was:

> "J. spent her work experience at X. Due to periods of absence the report that we received back was not favourable. J. needs to sort out the direction she wants to go in. She is very capable - this is a sad scenario."

J. subsequently deeply offended a member of staff at a personal level and became very upset in her attempts to rectify the situation - J. hyperventilated and then resolved to co-operate. J. expressed a wish to do an A-level course at college and to this end determined to behave appropriately.

J. did achieve a full CPVE certificate but did not return to college or go on to a more advanced course. J. found work in a health food store.



Outlier 6

086

K. is characterised by her massive deviation from the sample mean on negative attainment change and low course score on exit. K. has an optimistic predicted difference score and a low sense of mastery. These features, linked with high passivity, work-related inadequacy and external locus of control denote a student who feels a total lack of power over her fate. K.'s secondary school teachers depict her as "a pleasant member of the tutor group with a good circle of friends". They go on to say, however, that "K. has not always got the most out of her ability, though in recent times there have been signs of improvement in application". On entry, K. had gained four GCSE subjects at grade C or above. She started on a two A-level course in English and French. K.'s Student Profile on entry indicated an interest in netball and part-time work. K.'s early reports were encouraging. Her personal tutor said of her:

> "This is a generally pleasing report. I hope K. will grow in confidence and show more perseverance with Maths so that she can achieve the success she is capable of".

K.'s English teacher reported:

> "K. has made a satisfactory start to the course. She works with interest and it is clear that she has ability. I would now like to see a rather more disciplined approach to matters of organisation, presentation and punctuality because it is important for K. to do herself justice".

Words of concern are already apparent:

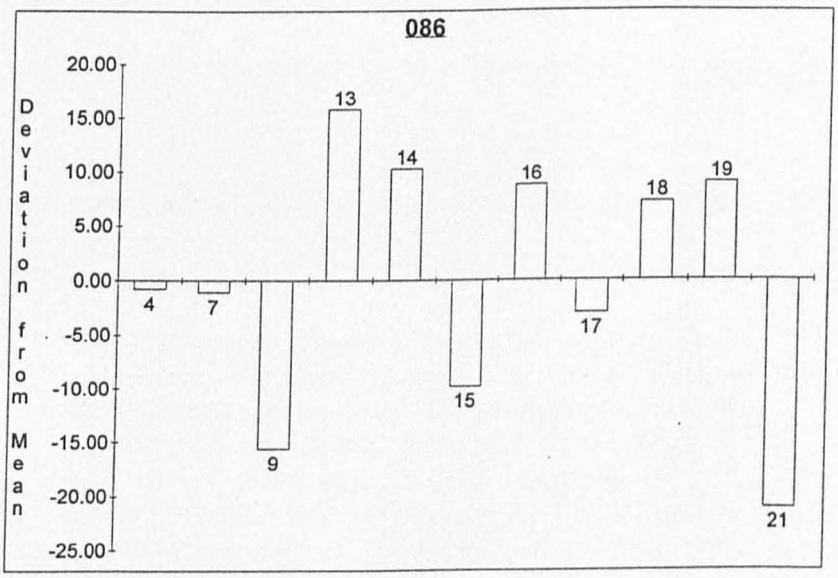
> "K. lacks confidence in her abilities, though I think she undervalues herself and perhaps overstates the gap between herself and others in the class. If she wants to make progress, she must come forward and ask for

advice and she must not be reluctant to hand in her work for assessment".

K. decided at the end of her lower sixth year to apply to a local college of Further Education for a vocational course. She was supported in this by the college, who felt that she was clearly socially confident and outgoing, but:

> "...more motivated towards a vocational course than a purely academic course. Though coping well with A-level, she lacks confidence and feels out of her depth".

K. therefore discontinued her course before completion and proceeded into a different, and hopefully more suitable, learning environment.



Outlier 7

138

R. has negative scores on all variables except course score on exit for which she is well above the sample mean. A complex student, with a history of severe physical and sexual abuse and personal disruption, R. wished to achieve in college despite her previous negative experiences. R.'s secondary school teachers gave guarded comments on her ability and potential as a learner. Her headteacher stated:

> "R. is a slightly below average student. Her best subject is English. Currently she is not working to her full potential. Oral contributions can at times be intelligent and thoughtful. R.'s erratic behaviour can often affect her academic performance. R. has a good imagination which she sometimes uses to her own advantage".

R. was interviewed for college with her social worker, who was very supportive. Her interests were varied - playing the guitar, caring for the elderly and working in a casino. R.'s ambition was to do a social work or teacher training course.

R.'s reports indicated that she was making satisfactory progress, despite missing some lessons. Her lack of self-esteem and confidence is revealed in her Maths reports:

> "R. is too concerned with what she finds she cannot do, and does not look hard enough at what she can do. She has quite a lot of practical common sense in Maths and a good sense of numbers without using a calculator, both of which are real strengths in exams. If she accepts that she can make real progress from a modest beginning she will be able to use her strengths with confidence and see it happen".

Other comments on attendance add to the picture:

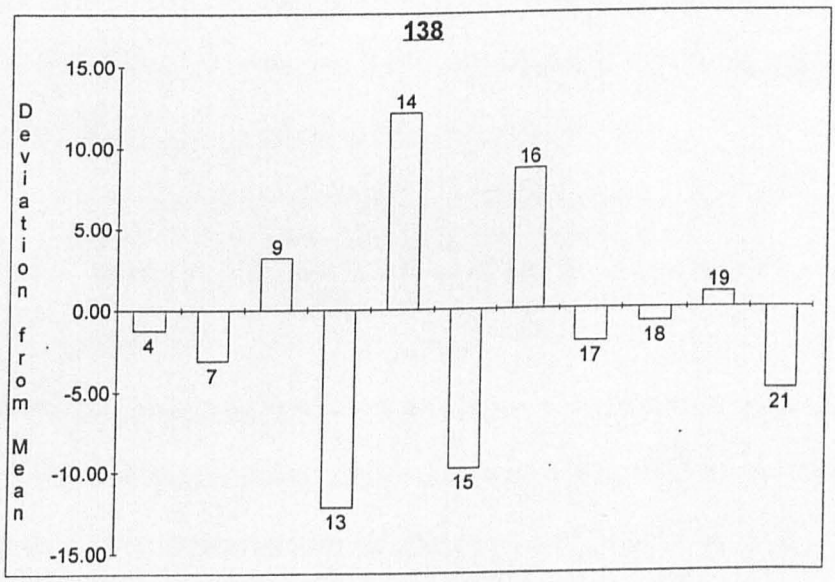
> "R. tries hard when she is here but her attendance has been too erratic to make any consistent progress."

During R.'s first year in college she did manage to gain two GCSE C grades - one

in English and one in Sociology. R.'s tutor was able to recommend her for an A-level course in Further Education in the following way:

> "R. has done well during her two years at college, and is undoubtedly of good ability. R. now needs to build on her academic achievement in a way which will help her to achieve her career goals. R. is sensitive and articulate and benefits from a supportive environment which also offers challenge. R. has a deep understanding of people and will do well in her chosen career."

R. gained a place to study A-level English and Sociology and eventually gained a post in industry supervising a team of workers in a dry-cleaning business.



Outlier 8

139

G. differs from the sample mean in his tremendous optimism about his final outcomes and his severe negative attainment change and course score on exit. Above the sample mean on confidence at C+ scores on entry, G. nonetheless failed to benefit from his course in college and left at the end of the first year of his A-level course.

G.'s secondary school teachers described him as quiet but confident. He had a good attitude to academic work, enjoyed sport and seemed to be reliable and conscientious. G. entered college with good GCSE results - two grade As, four grade Bs and one grade D. He started a three A-level course and on entry described himself as a guitar player in a band and interested in a career in computing. G.'s early reports were on the whole positive. His personal tutor stated:

> "G. has shown himself to be a very capable student at this level of study and generally maintains the right approach, but there are times when his preference for the casual and informal are not appropriate within his timetable".

G.'s Information Technology teacher reported that he had produced good work in his first term and had shown ability. With continued effort, he felt, and a little more attention to written documentation of programmes G. should do well. Business Studies teachers, however, were more critical:

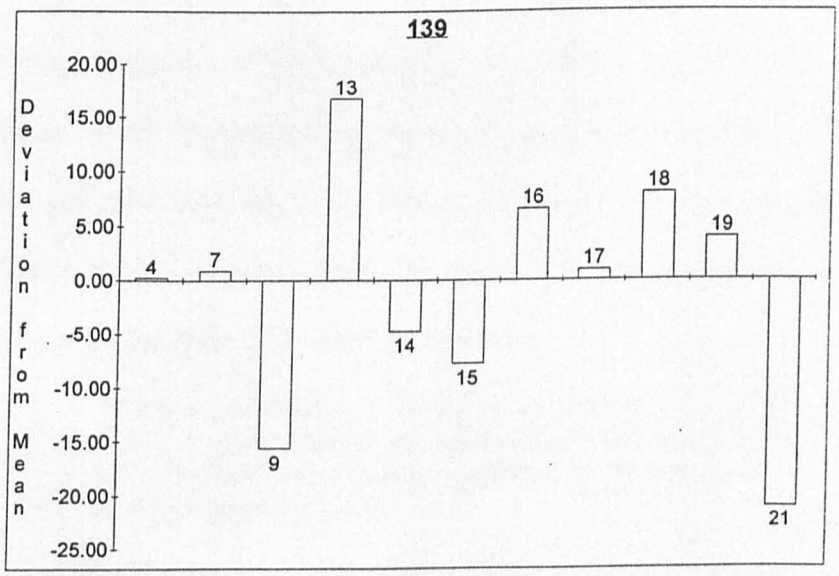
> "G. is far too talkative, to the point where he disrupts the lessons and shows a disappointing level of maturity. This is unfortunate because he has shown that he is capable of producing a high standard of work when he makes the effort".

By January of his lower sixth year G. was causing real concern. Although

acknowledged as an able student, he was missing lessons and staying away from college. At the end of his first year he applied for a post in the Civil Service, and his tutor commented as follows:

> "Since starting at college, G. has proved to be a very able student but his expectations of himself and his course have diverged. He needs to be encouraged in order to achieve effective oral expression to help in forming good relationships, but he does have long-standing friendships... through his real ability in playing the electronic guitar. Since he has been with us only a short time and wishes to leave it is hard to give an objective view of his reaction to difficulties and his sense of responsibility, but I feel that with maturity he could be motivated by this employment to a positive response."

G. left college for a post with the Inland Revenue without completing his course.



Outlier 9

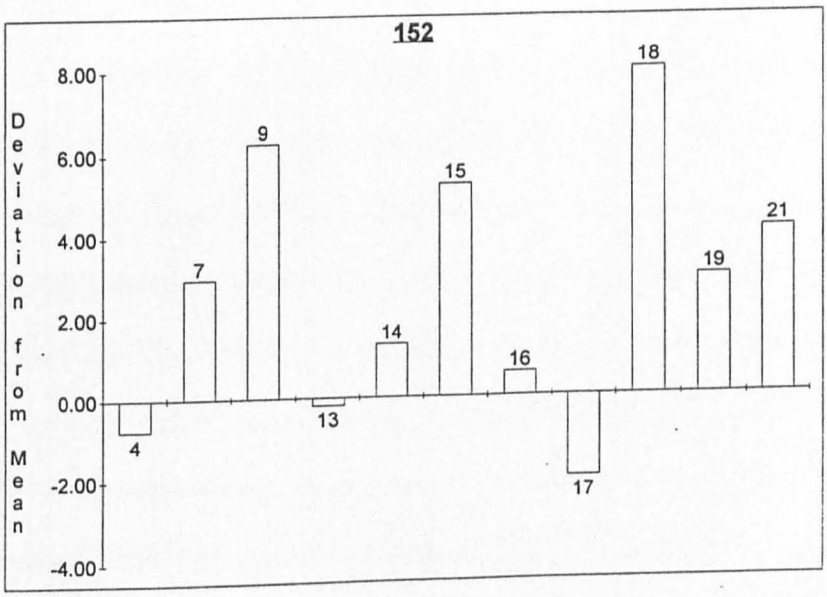
152

N. is a student who came to college with well above average GCSE grades and left showing positive attainment change and good course scores on exit. Presumably achieving outlier status by virtue of his exceptionally good ability, N. gained his ultimate goal of studying Physics at university. N.'s secondary school teachers characterised him as mature, thoughtful, polite and cheerful. The standard of his work was consistently high and there seems to be no indication of the social dependency which is also a feature of N.'s profile. N. achieved his forecast grades of five grade As, two grade Bs and on C and on entry to college described himself as interested in scuba-diving, sailing and achieving the Duke of Edinburgh Gold Award. His ambition was to do a degree, probably Physics based.

No on-going reports for N. were available, but on application to university he was described as "a very competent scientist with a logical mind which is more than able to analyse and solve problems". He was reported to be well organised and to have the ability to think through methods and effectively plan experiments. N. sums himself up in his application for Higher Education:

> "Physics has been my favourite subject for several years. I enjoy finding out how things work and why things happen in the natural world and the challenge of solving logical problems".

N. achieved excellent A-level results and proceeded to study Physics at a university in the midlands.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Outlier 10

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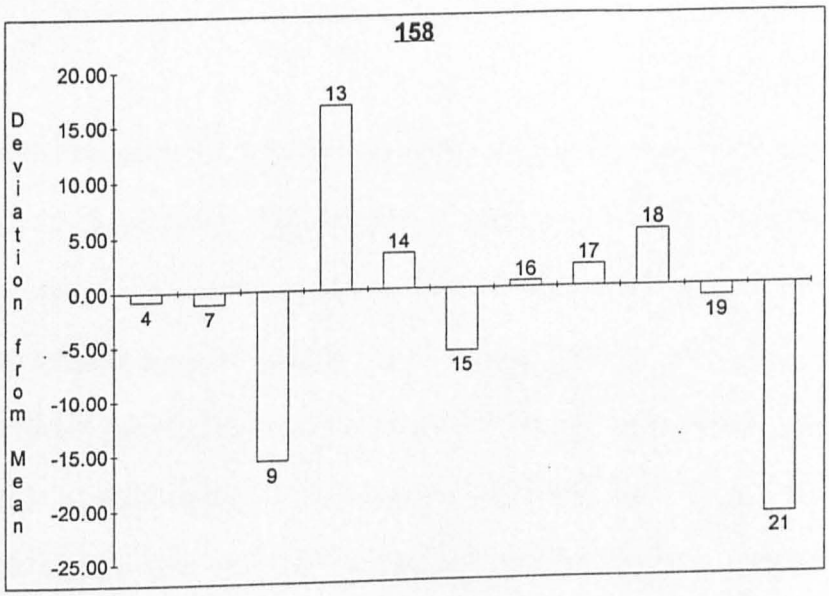
T. deviates from the sample mean in her extremely optimistic view of her eventual outcomes. She also shows severe deterioration in attainment change and a low course score on exit. T. entered college with a reputation from her secondary school of being pleasant, friendly and conscientious. Her grades at GCSE were forecast as Bs or Cs, although her actual results were four grade Cs, three grade Ds and two grade Es. T. embarked on a two A-level course, choosing Psychology and Sociology as her subjects. Her early reports showed that she had made a promising start to the year, working with interest and understanding. T.'s Sociology teacher comments:

> "T. has made a fairly good start to the course. She certainly works hard. In her written work she needs to recognise that quality not quantity is most important, though her work reveals an understanding of the necessary concepts. T. is willing to demonstrate her knowledge in class discussion where she readily contributes. A promising start".

By March, T. had opted out and failed to take her GCSE re-take subjects in the previous November. She left college in August of the same year to undertake a course at a local college of Further Education. Nothing further is known of T.'s motives, apart from problems indicated in a letter sent in May:

> "Dear T.
> I gather that you have had some problems and wonder whether you intend continuing at college, as you have been absent nine times this term.
> Could you please let me know your future plans as soon as possible and whether you need help or advice".

No response was received.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Outlier 11

163

D. is notable for an extreme discrepancy between his own and his tutors' forecast of outcomes, and for exceptionally low feelings of mastery and negative attainment change. High also on the scale of passivity, work-related inadequacy and social dependency, D. presents a negative profile. He does in fact achieve some success on course as indicated by an above average course score on exit, but overall negative change is evident as noted above. D.'s secondary school teachers indicated that he had fairly good relationships with other pupils but could be brusque. D. entered college with five GCSE subjects at grade C or above - in fact he gained an A grade for History, two B grades and two C grades. He embarked upon a three A-level course, taking English, History and Business Studies. D. was also proficient at various sporting activities, particularly basket-ball and athletics. D.'s early reports were pessimistic. His personal tutor wrote:

> "Neither in attendance nor in attitude to work has D. settled in. I hope for a general improvement next term. He would be making life very difficult for himself if he persisted in his erratic behaviour".

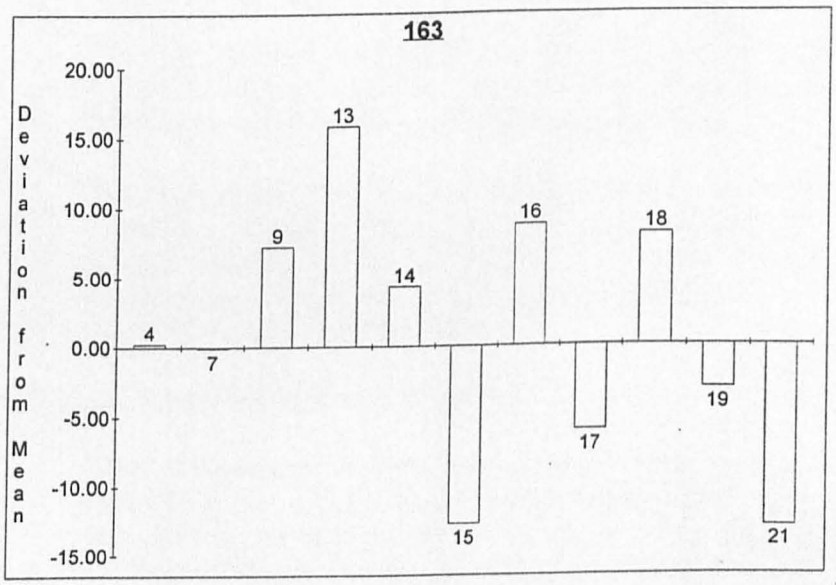
D.'s History teacher added:

> "I find it difficult at present to assess how D. is likely to do in this subject because of his apparent lack of interest and commitment. He misses odd lessons and hands in essays late - this does not augur well for the future. Only consistent work will bring success and D. must demonstrate his determination next term".

D.'s Business Studies teacher also expressed dissatisfaction:

> "D. has not yet really settled into this course yet. His attendance is erratic and he hands in work late. If he was prepared to work harder I am sure he could achieve better results".

Letters home reflected these concerns. In December, concern was expressed about D.'s progress, lack of attendance and lack of motivation. D.'s tutor comments that he "does not appear at ease with himself". In January, D. decided to drop A-level History and, in the words of the Careers Officer, "... is still drifting without any future plans and as he is quite happy in college and has no desire to exert himself... he is currently thinking of picking up a Sociology A-level". D. in fact left after a year of A-level study, undecided what to do next. His next step is unknown.



Outlier 12

165

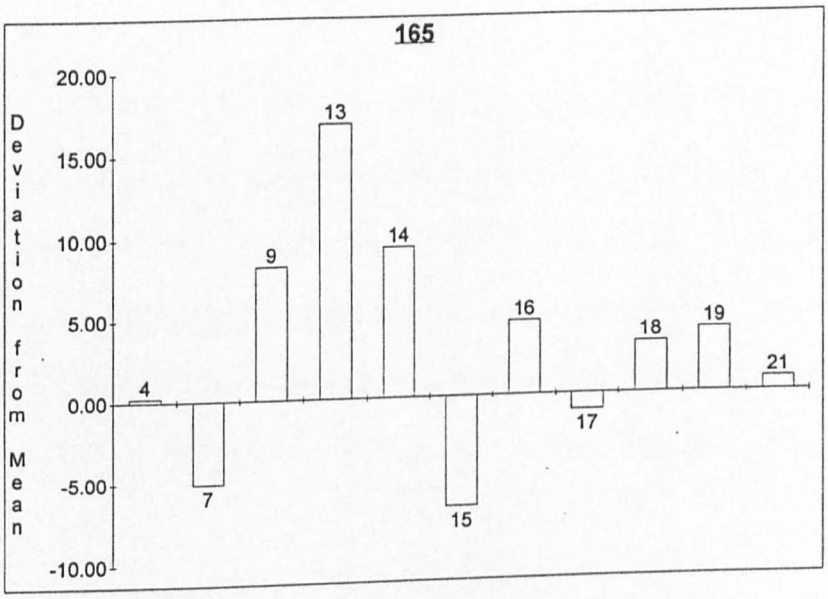
M. deviates from the sample mean in terms of predicted difference - he is extremely optimistic about his outcomes. M. has very low scores on entry but does make slight positive change in attainment whilst in college, both in terms of his residual change score and a good course score on exit. M. started his college course with one grade E, one F and five G at GCSE. He began a CPVE Business Studies course and declared a range of interests in his Student Profile - swimming, cricket, music and computing. From the start of his course M. gave cause for concern. Coursework was late, incurring letters to his parents, and absences increased. Staff commented:

> "M. has worked inconsistently this year. He has proved at times that he is capable. He must believe in himself and get down to some hard work and revision".
>
> "M. cheerfully idles his way through most lessons producing on occasions some short but quite inventive pieces. There is not a lot of substance in his folder and at present he will have to be content with a D/E grade. I feel he should be aiming higher".

By December, M.'s personal tutor was despairing:

> "I am disappointed with M.'s progress this term. He came back (to college) on the understanding that he would work and attend but this report is somewhat damning evidence. Unless he adopts a more mature attitude he is condemning himself to another wasted year".

Eventually M. was taken off the college roll as, despite his pleas to remain at college, he was found to be doing a part-time job in Coventry and did not seriously intend to attend college on a regular basis. M. decided eventually that he wanted to be a Legal Executive, and applied to a local college of Further Education for such a course. It is not known if he succeeded.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Outlier 13

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A.'s profile is interesting in terms of his very high passivity and work-related inadequacy scores, linked to low feelings of mastery and a high external score on the locus of control scale. Interestingly, A. made good positive change in attainment during his time at college, perhaps helped in this case by slightly above average confidence and a moderately high extroversion score. A.'s teachers at his secondary school presented a mixed picture of his abilities and attitudes. His History teacher stated:

> "A. is quite happy just to 'drift along'. Poor motivation - rarely works hard in lessons. A. has completed most of the coursework assignments but these have been of a poor standard, reflecting his attitude. Not without ability".

Other comments such as - "pleasant enough but tends to idleness" "... totally lacking in motivation" "... a capable boy who hasn't applied himself" "... quite happy to pass the time day-dreaming" - echo throughout A.'s pre-entry report. His headteacher sums up:

> "A pleasant enough pupil, but inclined to play the class "clown" at times, which is a shame, because with more effort and motivation A. could achieve much better grades. A. has a wide circle of friends of both sexes and is always cheerful and polite".

A. came to college with two GCSE grade Ds, one E and two Fs. He joined a CPVE Services to People course and took alongside this course a further four GCSE subjects. In his Student Profile he gave his interests as "just loafing" and "just drinking" and his ambition as wishing to join the Police Section of the Royal Air Force. A.'s early reports were encouraging but he still seemed not to be using his

ability. A.'s English teacher comments:

> "A. has ability in this subject but far too often he chooses not to use it. He is easily distracted from his work and consequently hands in work below his best. He cannot afford to be so casual if he wishes to succeed in June".

His CPVE tutor adds:

> "A. needs to be thinking about how to channel his many positive characteristics in a particular direction".

By March, the same tutor reports:

> "A. is an able student who has made progress this year and who is developing a more mature approach to his study. If he looks to his strengths and makes a determined effort next term he should be able to improve his results".

At the end of his first year at college A. gained C grades in English and Maths and a good CPVE certificate. On the basis of these results A. started a two A-level course, taking Psychology and English as his main subjects. His first set of A-level reports show that he was struggling with written work and with concentration in class. His Psychology teacher comments:

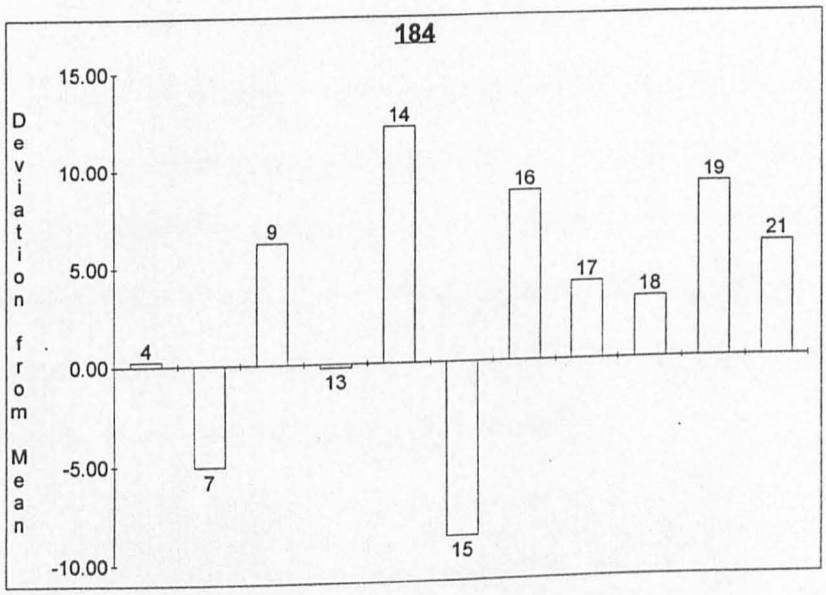
> "A. has made good progress this term. He is enthusiastic about the subject and contributes well in class discussion. However, he still needs to give priority to his written work".

A.'s English teacher writes:

> "A. is a perfectly pleasant chap who has some perceptions about literature which he expresses orally quite well. On paper, however, it is a different matter. His written work demonstrates all the hallmarks of haste and ill-preparation and its distinct lack of textual reference or analysis makes one wonder whether he has read the book he is studying at anything but the most surface level".

In the light of such comment - perhaps because of it, A. took the decision to leave

college. He found a job in printing.



Outlier 14

186

E. shows massive deviation from the sample mean on the predicted difference variable. He is wildly optimistic about his eventual outcomes, although he did eventually make slight positive attainment change. Socially dependent to some extent, E.'s profile also shows strong internal control. A student with a very strict background, controlled by a mother with rigid attitudes, E. always tried his hardest and gave of his best. His secondary school teachers characterised him as a pleasant, hardworking pupil of limited ability, always eager to please and keen to overcome his learning difficulties. His headteacher described him thus:

> "A very pleasant member of the group, E. is always smart and tidy and conforms happily to school rules. He has to work hard to overcome his difficulties and has made enormous progress in all areas. He is able to take responsibility and has been a representative on the senior school committee for two years. He would do well at college, not only would it enable him to improve his academic achievement but it would allow him the opportunity to become more adept at communicative and social skills".

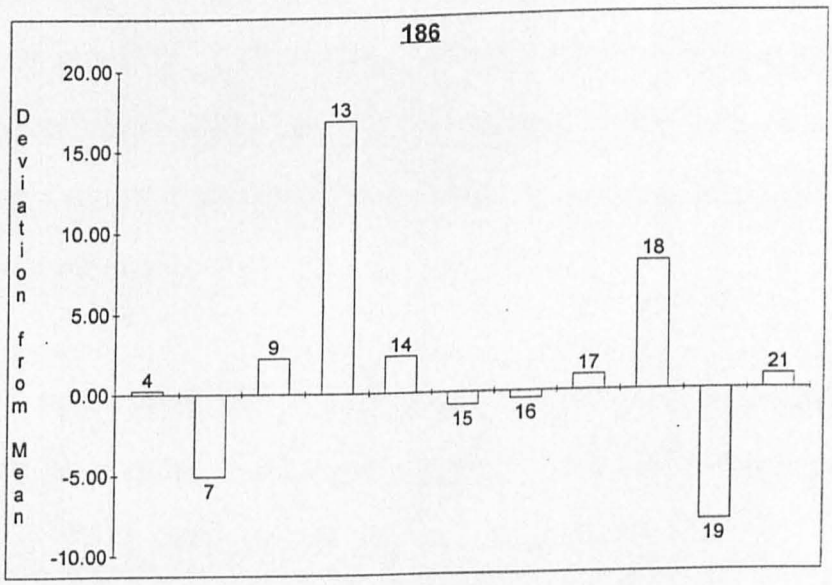
E. entered college with a GCSE grade D in English and three grade Fs. He started a CPVE Business Studies course. In his Student Profile E. declared that he had joined the college hockey team and was a member of the College Council.

E.'s first reports showed that he was working hard and making good progress in all his subjects, despite experiencing difficulties - particularly with coursework. His English teacher wrote:

> "E. produced some better work in the second half of the term. He is producing a satisfactory coursework file and now has to learn to reproduce this in examination

> conditions. He must read carefully to avoid misunderstandings in answering comprehension questions".

By March, E.'s tutor comments again that he has worked very hard throughout the year to overcome his difficulties, although his mock examination results were rather disappointing and he needs to work more quickly under the pressure of examination conditions. E. did manage to improve his GCSE grades to two Ds, two Es and an F, which demonstrated his persistence and positive attitude. Aspiring to A-level work, E. was carefully counselled about his next step in education and was eventually accepted on to an Electronic Engineering course at a local college of Further Education.



Outlier 15

205

P. differs from the sample mean in his combination of strong feelings of mastery and confidence aligned to high passivity and work-related inadequacy scores. P.'s secondary school report indicates that he has problems relating to both adults and other pupils.

> "P. is generally satisfactory. He seems to wander from group to group, rather than becoming a permanent 'member'. P. has some problems with staff and other adults, mainly because he can't keep quiet. He tries to be 'clever', doesn't listen and has plenty to say".

The report ends scathingly:

> "P. is an individual who can't mind his own business and is rather a show off".

P. entered college with poor grades - two grade Fs, three grade G and two No Results. He started on a CPVE Services to People course, indicating on his Student Profile that he played various sports, being a member of local cricket and football teams, had a part-time job as an assistant at the Co-op Supermarket, and enjoyed films, music and dancing.

P.'s early reports show him as experiencing difficulties, getting behind with coursework "in an attempt to disguise his problems". P.'s CPVE tutor comments:

> "P. is settling down and can produce good work. However, he is still too easily distracted in class and needs to learn not to find excuse for not doing the work".

Despite enjoying sport, P. is also found to be taking this subject less seriously than required:

> "P. is a capable student and has the ability to do well in the subject. He appears to lack commitment at times resulting in lack of effort or, far too frequently, non-attendance. Both his theory and practical work at times are of a very good standard, but he must be consistent in his efforts".

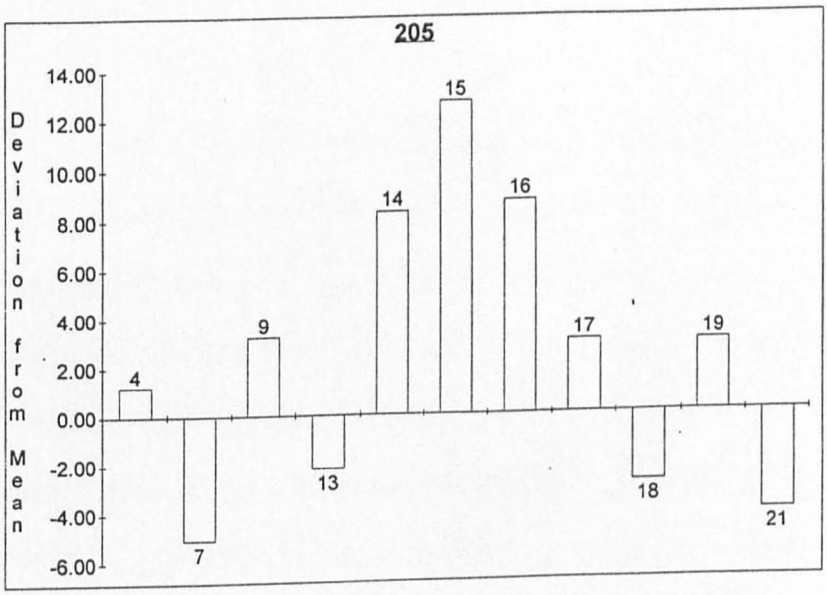
By March, P. can be seen to have made progress. He worked well on work experience at the Central Catering Department of a local university, and impressed his supervisors with his hard work and positive approach. He was still finding difficulty with the theoretical aspects of the course, however, and was criticised again by his Physical Education teacher:

> "P. is very capable practically, but he has not come to terms with the theoretical aspects of the course. He has a lazy attitude to written coursework and is often slow to make a verbal contribution, despite being quite capable of doing so. I feel sure that if he "bothered" a little more he could improve in both respects and achieve a good final result".

P.'s attitude on the football pitch, too, failed to impress his teachers:

> "P. has made a number of appearances in the 3rd XI team this season, but will not play again this season after refusing to be a substitute recently. He must learn to take the "ups" and "downs" of football".

P. did successfully complete his CPVE certificate and proceeded to a local college of Further Education to do a BTEC First Diploma in Information Technology.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Outlier 16

208

A very poor course score on exit and extremely high predicted difference score are the most noticeable differences between E. and the sample mean. External locus of control and high passivity scores are also of interest. E. came to college as a shy, reserved student with a limited circle of friends. Her secondary school reports described her as highly motivated but struggling in some aspects of her work. A student of Chinese origin, E. sometimes had difficulties with comprehension and sentence structure but her determination to succeed was considered enough to help her overcome problems. E. gained two grade B and two grade C passes at GCSE and started on a two A-level course with a further two GCSE subjects. Her personal interests, as described in her Student Profile, were sporting and artistic. She worked at weekends in the family's Take-Away restaurant.

E. had good early reports. Her Social Biology teacher said of her A-level work:

> "E. has made a good start to the course. In class she is very quiet, but is usually correct when asked a question. Her written work is well expressed and shows the necessary degree of analysis and detail".

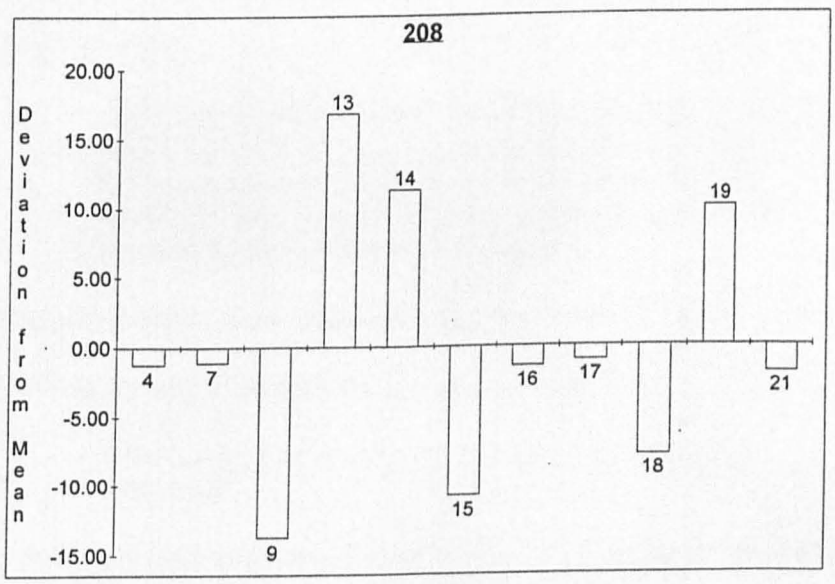
E.'s English teacher commented:

> "E. is a very pleasant member of the group and a conscientious student. She listens, thinks and tries hard to apply her learning in her written work. Her style of writing needs some improvement; this will come with continued practice and applied work. A good start".

E. continued to work hard and in the summer obtained C passes in GCSE Maths and Physics. Her A-level subjects, however, were by the following April causing some concern. E.'s Social Biology teacher exhorted her to remain confident and

determined, but acknowledged that her poor interpretation of essay subjects was a key factor contributing to a disappointing mock examination result. E.'s English teacher felt that she should reach a closer understanding and familiarity with her A-level texts.

E. finally achieved a grade U in A-level Social Biology and a grade E in English. E. wished for a career in architecture, but her poor A-level results precluded this. She did, however, obtain a place on an HND Building course at a northern Institution of Higher Education.



Outlier 17

241

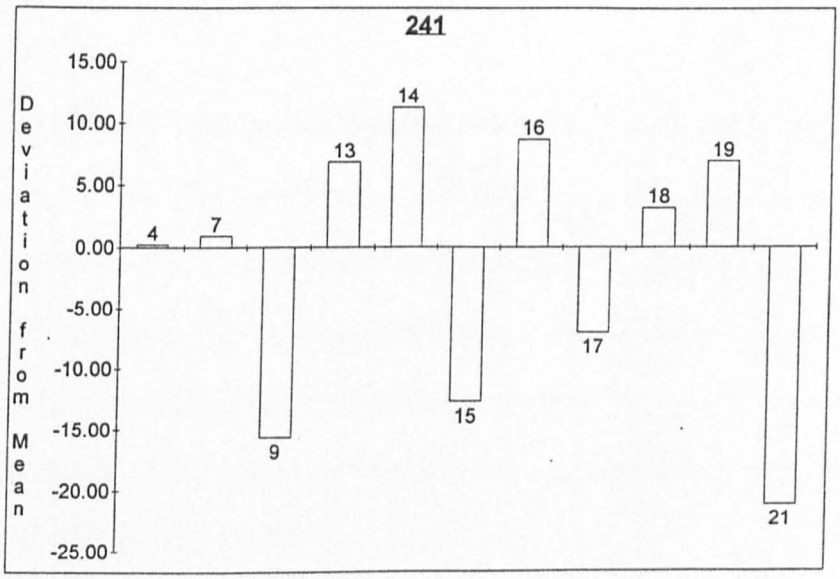
Deviating from the sample mean on a range of variables, R. makes most noticeable change in attainment, achieving little during her time in college and certainly not fulfilling her early potential. Reports from her secondary school described her as a little reserved but mixing well with friends. She was a good communicator and had "reasonable skills", but needed encouragement to get involved. She was certainly deemed capable of benefitting from a sixth form education, although attendance was rather irregular. R. entered college with one A grade, one B grade and four C grades at GCSE. She embarked upon a three A-level course and a repeat GCSE Maths course. From the beginning staff were showing concern about R.'s attendance. Her personal tutor wrote:

> "Without doubt R. is not progressing as well as she might and this is a great disappointment. She must attend regularly if she wants to realise the potential she obviously has, because in spite of this she has made favourable impressions on her teachers".

R.'s English teachers were impressed by her interest, active participation in discussion and her sound, thoughtful approach to essay writing. They comment:

> "She is adjusting steadily to the demands of advanced level study".

Despite this encouragement and obvious ability, R.'s personal life with alcoholic parents became extremely difficult. After gaining a grade C in Maths in the summer of her first year she left college and set up home with T., a fellow student whom she had met at college.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Outlier 18

248

G. showed exceptionally marked deterioration in relation to the sample mean in course score on exit and attainment change. G. also has an extremely optimistic predicted difference score. An extreme version of Cluster 5E, Optimistic, he was described by his previous school as "a delightful boy". G. has moderate dyslexia which proved to be a problem to his academic progress. His mood reportedly fluctuated considerably, ranging from very positive feelings about himself to severe despondency. His Housemaster wrote:

> "G. is very much an individual, and is concerned about his 'public image'. He is always very polite but sometimes under-confident... he finds some aspects of written work extremely frustrating in view of his intelligence. He very much responds to encouragement".

With a supportive home background, G. decided to abandon public school life and leave the rather "closed" atmosphere in which he felt oppressed by his contemporaries. He entered college with an A grade in Maths, three grade Cs, one D and two Es. He started a three A-level course and was full of optimism and enthusiasm for his changed way of life. A keen sportsman, his Student Profile revealed a love of nature and a caring personality.

G.'s early reports, however, show a concern about his powers of concentration and his commitment. His personal tutor commented:

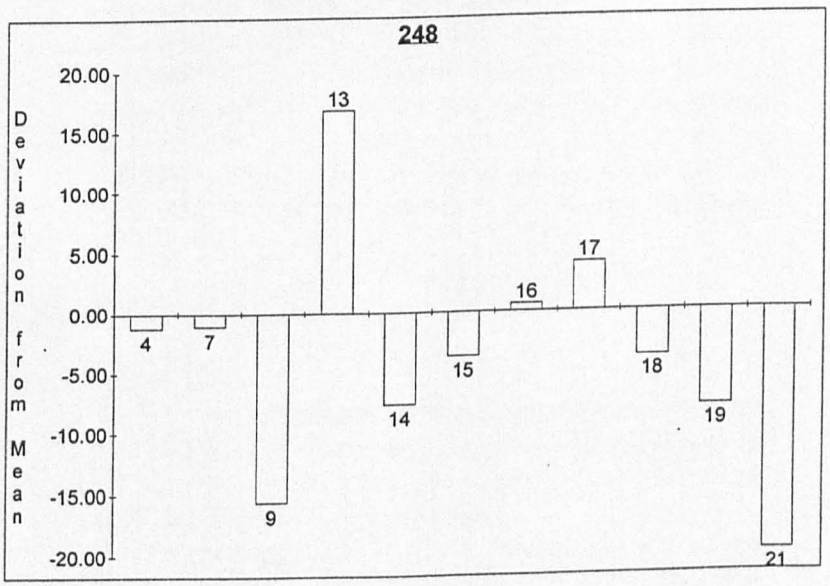
> "G. has not come to terms with the amount of work needed for success in our A-level courses. I believe he has plenty of ability but is lacking in motivation and determination. Success or failure are in his hands".

This comment is reflected in most of G.'s subject reports, despite a reported I.Q. of 130 obtained by a psychologist as evidence to examination boards of his dyslexia. G.'s teachers acknowledged his learning difficulty but seemed to be unaware of its implications.

At the end of his lower sixth year, G. was not thriving on his courses. His personal tutor comments again:

> "G. has not really made the most of his talents. He has been given many opportunities to show that his attitude to hard work has changed, but despite his good intentions, nothing changed. He must ask himself why he wants to be at college"

Acknowledging his inability to "get to grips" with his studies, G. consulted the college Careers Officer and decided to make a fresh start by applying to a local College of Further Education. He moved on to a BTEC National Diploma in Business Studies.



Outlier 19

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H. deviates from the sample mean in her massive negative attainment change and poor course score on exit. Initially very optimistic about her results, H. became increasingly detached from college life and left before her year's course ended. Entering college as a quiet, well-motivated student, H. was polite, pleasant and reliable. She started on a five GCSE re-take course, having previously gained one grade E, one grade F and one grade G at GCSE. Due to early absence, no reports exist for H. Her file contains letters from as early as September expressing concern:

> "H. has been absent from college all week and I have been unable to make contact with anyone by telephone today".

And by December:

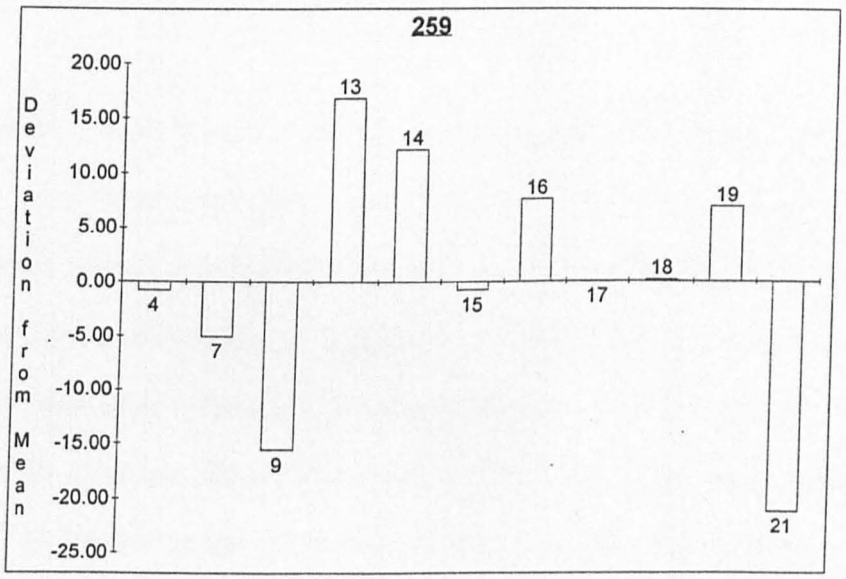
> "Dear H.
> We are, as you know, very concerned that we have not seen you at college for so long. I do understand that you have problems, and I do not wish to make life more difficult for you, but we need to know whether or not you are returning to college.
> I must point out that you will now have great difficulty in making up the work you have missed, and if you have managed to get a job this will probably be the best solution for you. Will you get in touch as soon as possible, please, and let us know your intentions? If you want to come in and talk to us we will be pleased to see you".

Finally, later in December:

> "Dear H.
> I wrote to you recently asking if you intended to return to college. As I have not received a reply or any form of message from you, I feel that I must clarify the position from our point of view.
> If we have not heard from you before the end of this term - Thursday, 19th December - we will assume that you have left and take your name off the college roll".

A similar letter was sent to H.'s parents, and as no response was received H. was removed from the college roll.

It was later reported that H.'s family had irretrievably split up and she had no domestic support. She therefore took a job in a local store.



Outlier 20

276

A. is differentiated from the sample mean by his high levels of passivity and work-related inadequacy, linked with low confidence and negative predicted difference. A very quiet student, A. had one or two close friends at his secondary school, and was not really accepted as "one of the boys", although respected by all of them. A. was described as exceptionally polite and having to be "dragged into conversation". Deemed to be very clever by his secondary school teachers, A. was highly recommended for sixth form education.

A. came to college with seven GCSE subjects at grade C or above, including one grade A and three grade Bs. He started on an A-level course consisting of Computing, History and Business Studies. A.'s Student Profile gives little away, emphasising a love of sport and computing. His career aim was to go to university and then find employment in the area of finance. He worked part-time in a newsagent's shop and did a paper round. A.'s early reports were encouraging, although his History teacher felt that his mastery of English was a handicap. He was hardworking, committed and enthusiastic. A.'s mock examination results at the end of his first year were a little disappointing. His personal tutor commented:

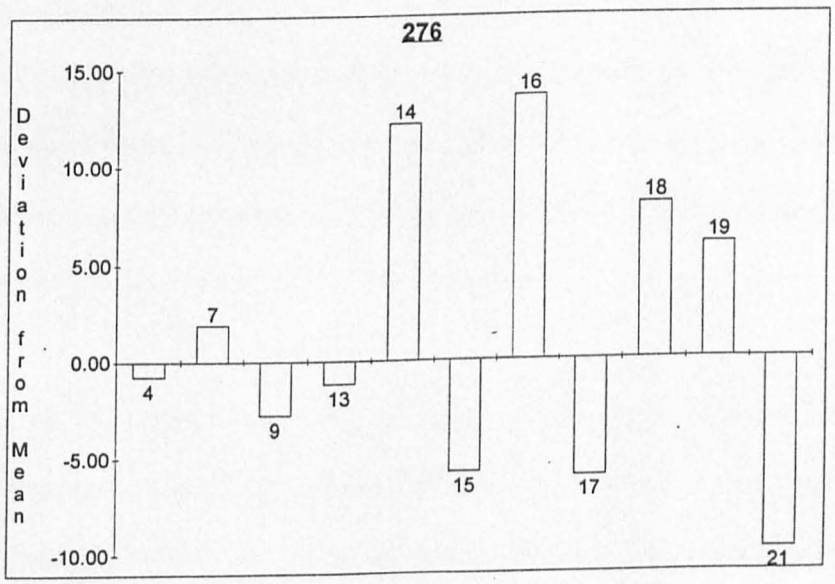
> "A. has worked steadily during the year and his testimonial results are a little disappointing. He needs to improve his examination technique in order to improve his chances of getting good grades in his A-levels".

A.'s attitude to work and his conscientious approach, however, are not faulted. His History teacher writes:

> "A. has not done as well in his mock exam as the general quality of his work might suggest. I believe, however, that his general ability and conscientious attitude will effect an improvement next June".

By March of his final year, however, A.'s mock examinations were again disappointing. Staff felt that he deserved good grades but that he did not understand some of the work well enough to apply it correctly to examination questions. However, as his A-level Business Studies teacher remarked -"if he keeps working hard I am sure he will be rewarded".

A. eventually gained two grade Cs and a grade D at A-level and proceeded to a B.A. degree in accountancy at a university in the midlands.



Outlier 21

283

Differing from the sample mean on passivity, social dependency and external control, W. nevertheless shows a sense of mastery and mild extroversion. W. has had, for all of her school career, considerable communication problems, appearing to be withdrawn and yet participating in her own quiet way. Reports from her secondary school describe W. as "finding it difficult to mix socially", and "preferring to sit away from the others". W. certainly seemed to lack confidence and found it difficult to approach staff, needing positive encouragement to communicate. Despite this, W. always seemed happy and contented.

W. entered college with two grade Es and three grade G at GCSE level. Her communication difficulties were noted and she was placed on a CPVE Care course with a tutor who was experienced with students with learning difficulties. Her Student Profile showed a liking for cooking and she was also a regular baby-sitter with a child who she subsequently studied for her GCSE Child Development course. W.'s ambition was to do some sort of job in nursing.

W.'s first set of reports were very pleasing. Staff were impressed by her hardworking attitude and determination to produce good work. W. produced well thought out assignments and her confidence within the group began to increase. Her English teacher wrote:

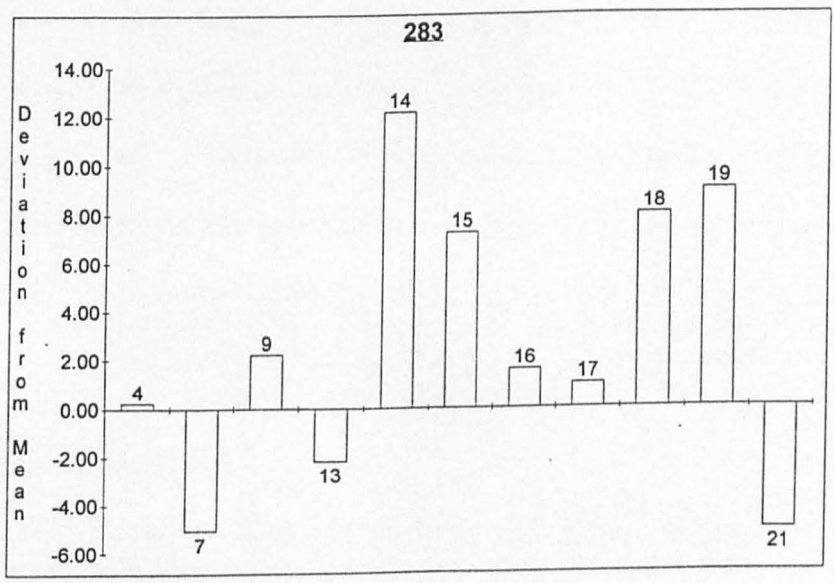
> "W. is settling down well in the group and showing a little more self-confidence in her attitudes and work although still a little quiet in group discussions. She must continue to work hard and build on these early

> successes. A pleasant student who has made a good start".

By March, W.'s personal tutor wrote:

> "W. has made remarkable progress this year and her teachers are delighted with her increasingly friendly approach and greater confidence. I hope that W. continues to thrive next year and that she eventually finds a job she really likes".

W. had an excellent work experience at a local primary school, where she forged useful relationships with staff and pupils alike - the children loved her and she was recommended for this kind of work. All of W.'s tutors wrote in a similarly positive vein about her achievements, and she ended the year with a full CPVE certificate and some improved GCSE grades, including a grade D for Child Development. W. eventually gained a place on a Youth Training Scheme in Caring.



Outlier 22

285

J. deviates from the sample mean most noticeably on her low mastery score which is linked to moderately high social dependency. J.'s reports from her previous school described her as at times fairly pleasant and mature but "sometimes this is hidden by a loud, brash exterior which only allows her to relate to a similar group of peers and certain staff she likes". J.'s headteacher felt that, despite having set her heart on coming to college, J. did not really know or understand about the courses and would need a great deal of help and guidance in choosing one suitable for her - adding that work never seemed to be a particularly high priority with her.

J. came to college with one E grade, one F grade and one G grade at GCSE. She began a CPVE Care course with four further GCSE subjects. J.'s Student Profile revealed that she liked walking, swimming, dancing and looking after other people. She had done work experience with children and the elderly, and aimed to take up nursing as a career. J. settled in to college well and received a good first set of reports, although with some reservations. J.'s Child Development teacher wrote:

> "J.'s work is excellent when it arrives, but her output is still rather patchy. If she really made up her mind to do well she could get a good grade - she has plenty of natural intelligence and understanding".

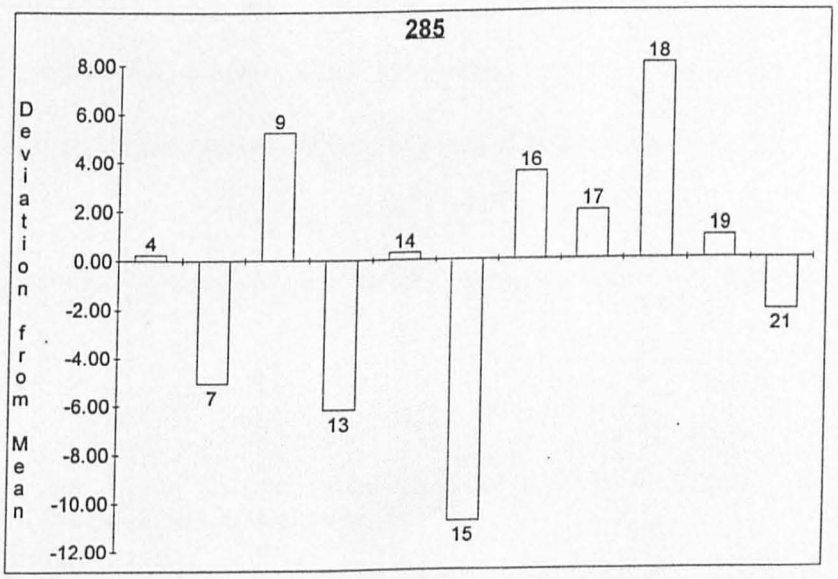
J.'s Biology teacher added:

> "J. has the ability to do quite well in this subject. Unfortunately her standard of work is variable due to her irregular attendance at lessons".

March reports saw some further positive comment, with an excellent work experience at a local primary school, but a continuing concern about absence from lessons was

evident in that it was affecting her progress. J. stayed on course to the end of the year and gained a grade C in English and a full CPVE certificate.

J. decided to remain at college for another year to re-take GCSE subjects. Despite some success in the previous year, J. never really believed in her own ability despite the reassurance of staff. By April, after a much publicised abortion, and serious relationship problems, J. was too distracted to do herself justice. She took her summer examinations and gained a grade C in Child Development. J. left college and attempted to gain a training place in nursing, with college support. She did not succeed and decided to start her own family.



Outlier 23

309

D.'s positive sense of mastery and positive course score on exit differentiate him from the sample mean. Coming into the college with a good report from his secondary school, D. is described as a quiet young man with a pleasant nature, always polite, co-operative and respectful. D.'s headteacher felt that:

> "D., in my opinion, has the ability to cope with the courses. He is mature enough to realise that a lot of hard work and effort must be made on his part if he is going to realise the career of his choice".

Despite high forecast GCSE grades, D. came to college with one grade C, three grade Es and one grade F. He started on a CPVE Services to People course, with four other GCSE subjects. On his Student Profile D. expressed an interest in sport, including sea-fishing, and art. His early reports showed that he had made a promising start to the course but lacked confidence in his own ability. He was confident and successful as a member of the soccer team, however.

By March, D. was discriminating against subjects he disliked, and his personal tutor comments:

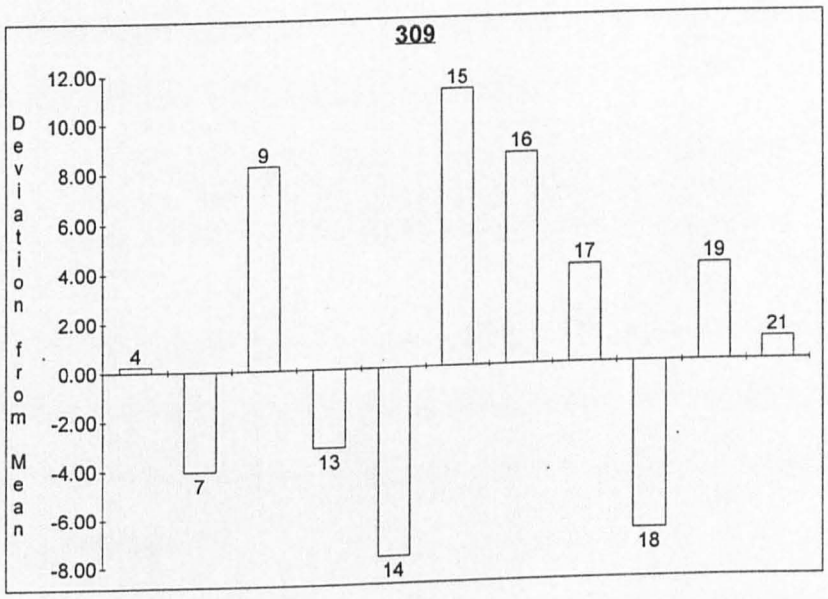
> "When D. is enthusiastic about his subject he works hard and makes progress. However, he is only hurting himself by his habit of opting out of anything he finds difficult or uncomfortable".

Obviously less than enthusiastic about Physical Education by this stage, D.'s teacher says of him:

> "D. is slow to show enthusiasm or effort either in theory or practical work, without which it seems difficult to see how he will achieve the result of which he might be capable. He must make a big effort, revise

thoroughly in the build up to the final examinations and give himself a chance of success in the subject".

D.'s summer results were disappointing. He gained one grade D and three grade Es at GCSE. He found work in a garage as a body repairer.



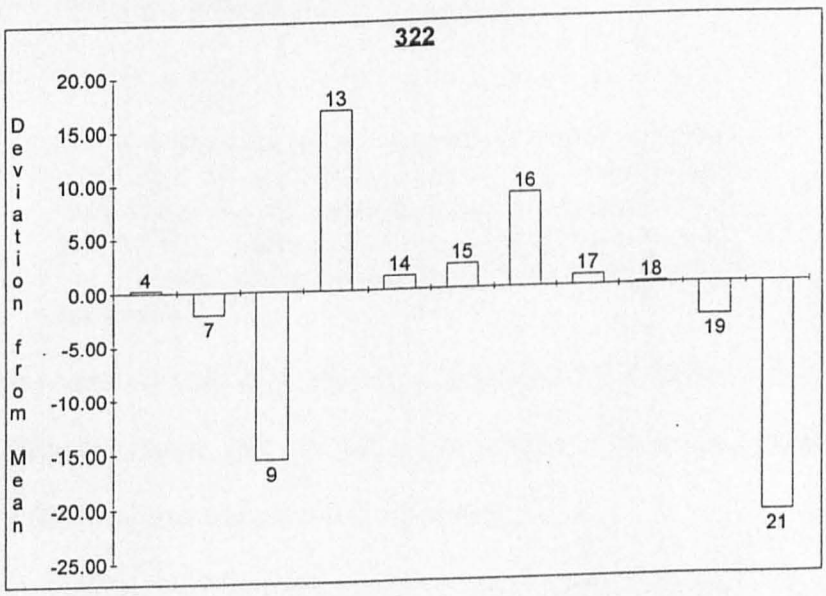
Outlier 24

322

D. deviates from the sample mean in his extremely optimistic predicted difference score and his massive deterioration in attainment change and course score on exit. A moderate level of work-related inadequacy is also evident. D.'s secondary school teachers saw him as a quiet but very pleasant boy - mature, assured and always courteous to peers and adults. He was well organised and thorough, with exceptional powers of concentration. His headteacher commented:

> "A sensible young person who wants to take subjects that will help his future career. He has also chosen ones which give him opportunities in several areas of work".

D. entered college with one GCSE subject at grade B and two at grade C. His only contribution to his Student Profile is that he plays football. No reports exist for D. who left college in the December of his first year, having achieved nothing. His future is unknown.



Outlier 25

325

R. is very optimistic about his eventual outcomes in that he differs from the sample mean predominantly on the predicted difference variable. R. does indeed make good attainment change and well above average course scores on exit, aided by moderate feelings of mastery and internal locus of control.

R. came to college from private education, his parents being at the time in the throes of divorce. Characterised by his former teachers as a "bubbly" personality with a "great deal" to say for himself, R. was further described as headstrong and very sociable. When motivated he would attack a project with great energy. R.'s headteacher said:

> "R. has the ability to gain good passes in most subjects, especially French and German, but his lack of self-discipline when it comes to academic matters, and poor organisation, could bring only bare passes. Well capable of pursuing an A-level course, but motivation will need to be strong".

He added:

> "R. is a boy who has much to offer, but will need real direction. He is probably right to leave as he showed little liking for the restrictions that a boarding school put on him. Having said that, as a day boy he took every opportunity to be at school in the evenings and at weekends".

R. came to college with one A grade, one C grade and six D grades at GCSE. He took a GCSE repeat course, with one A-level in German. From the start, letters went home about his behaviour and attitudes. For instance:

> "As R. will have told you, we have been concerned about his immature and disruptive behaviour in Miss

> X's lessons. I have decided he should be suspended from Miss X's lessons for a week.
> I was disturbed this morning to see R. and a friend rapidly disappearing towards a 'smoking area' in the college during a lesson. R. indignantly denies that he intended to smoke, but given that this is a roundabout route to the toilets and that R. is a heavy smoker, I find this difficult to believe. I would be happy to discuss this letter with you."

Further letters followed, with invitations to Parents' Evenings and requests to make appointments with staff. A letter from R.'s mother indicated glandular fever and an offer to help R. make up his backlog of work.

Reports during R.'s first year are colourful. For example:

> "R. is an immature and disorganised student. I suspect he does not possess the self-discipline required of a successful A-level student".

Another teacher said, however:

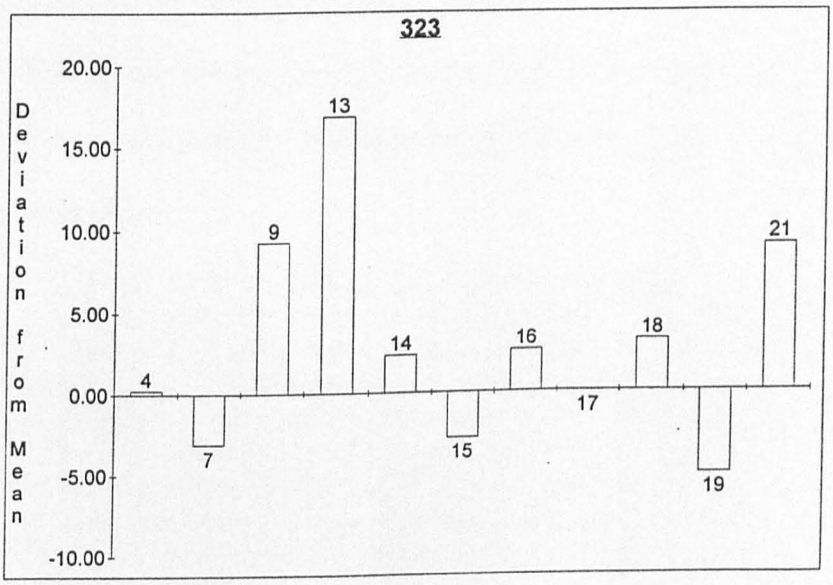
> "R. is certainly capable of doing well and I hope he sees the necessity of consistent effort"

By the end of his first year at college, R. obtained three further GCSE subjects at grade C and re-entered college in the following September to take a three A-level course, on a strict contract that he attended regularly. R. did manage to sustain a tolerable level of attendance and eventually gained an A, D and E grade in his three subjects. Applying for Higher Education, R. received an honest but positive report from college as follows:

> "R. still has problems with his self-discipline, and attendance at college has been rather erratic. However, when he does apply himself to activities, he comes across as being enthusiastic and perceptive, and can approach tasks in a very mature manner. I feel that if he chooses a course which motivates him he could perform very well in an undergraduate environment. R.

can demonstrate maturity, perception, enthusiasm and makes very valid and useful contributions in group situations. In this respect I support his application to you."

R. was accepted to do a language degree at a northern university.



Outlier 26

336

P. deviates from the sample mean in her high passivity score alongside positive change in attainment and well above average course score on exit. The staff in P.'s previous girls' school saw her as getting on well with other students but shy with adults, although she could be "coaxed round" to interesting conversation. P., coming from a Chinese family with little spoken English at home, found difficulty in expressing herself and staff felt that this affected her self-confidence. Whilst in her final year at secondary school P. developed a particular interest in the creative arts. Her headteacher wrote:

> "P. had not developed a strong interest in art, design or textiles when she chose her GCSE options. She does seem to have some ability in this area which has shown up during a non-exam module. She has also had two successful work experiences in practical surroundings, i.e. a hairdresser's and more importantly with a photographer. She thoroughly enjoyed the photography work and shows a great interest in art and drawing. For the above reasons I support her application for this area of study".

P. failed to gain any GCSE grades above a grade C and entered college to take a five GCSE re-take course. Her Student Profile showed her interest in art and pottery, as well as in music and sport. Her ambition was to do a National Diploma in Art, Design and Photography. P. found academic work a struggle, and her Geography teacher commented:

> "P. seems perpetually bewildered by coursework which has been completed very slowly. She must get herself organised and tackle each piece as it is set. P. would also find tasks easier if she listened carefully to instructions".

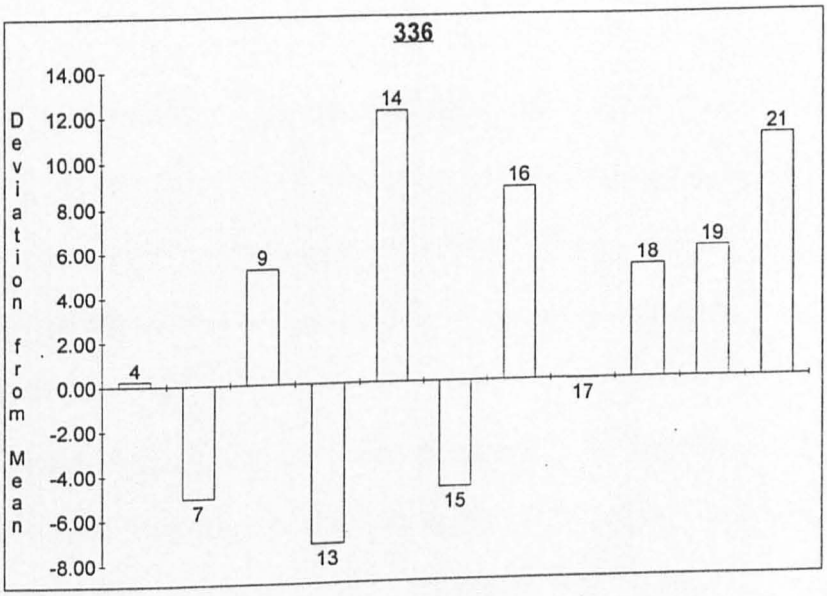
This view is echoed by P.'s other teachers, the exception being the Art and Design teacher, but even here the picture is a mixed one:

> "P. has made an excellent start to the course. Her classwork is of a high standard, but homework is rarely handed in and sometimes her attitude is a little abrupt. She needs to remedy these faults if she wants to achieve the high grade of which she is capable."

By March, staff were concerned that P. was not working to the best of her ability and they were concerned also that she would not prepare herself adequately for the summer examinations. The Art and Design teachers continued to praise her talents and at the end of her first year P. achieved an A grade in Art and Design and 3 C grades.

P. re-entered college in September to take 2 A-level subjects and 2 further GCSE subjects. She started her A-levels well, but began to show problems with attendance and punctuality. Again showing competence in her areas of strength, P.'s written work was proving inadequate for an A-level course.

Predictably, P.'s persistent absenteeism led to poor A-level results, with a grade D in Art and Design, a grade U in Design and Technology and N in General Studies. P. eventually applied to a local college of Further Education for an Art Foundation course but her ultimate destination is unknown.


336
Deviation from Mean
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
4
7
9
13
14
15
16
17
18
19
21

Outlier 27

339

M.'s pessimistic predicted difference score, lying alongside positive attainment change and above average course score on exit, distance him from the sample mean. M. is an unusual mixture of positive confidence, a strong sense of mastery and extroversion co-existing with feelings of work-related inadequacy and social dependency.

Described by his previous school as a pleasant, out-going pupil - sometimes "loud" - he usually worked well and joined in with most activities. He was the photographer for the school newspaper and a prefect. M.'s headteacher said of him:

> "In all, M. is an excellent pupil. His attendance and punctuality records are good".

M.'s GCSE grades at the end of year eleven gave him four grade Cs. He opted to follow a five GCSE course at college to enhance his number of grade C subjects before starting A-levels. On his Student Profile M. described interests in sport, scouting - as an Assistant Scout Leader - and computing. He aimed eventually to go to university.

M. made a satisfactory start to his GCSE year. Noted as "a little noisy", his teachers felt that he had the potential to do well if he would only realise the value of hard work. M.'s English teacher commented:

> "M. has good potential and he must ensure that he takes every opportunity to use his ability fully. He should be well capable of improving on his previous result in English if he can maintain his concentration and effort. We have confidence in him and we expect him to take the responsibility for his own future in this subject very seriously".

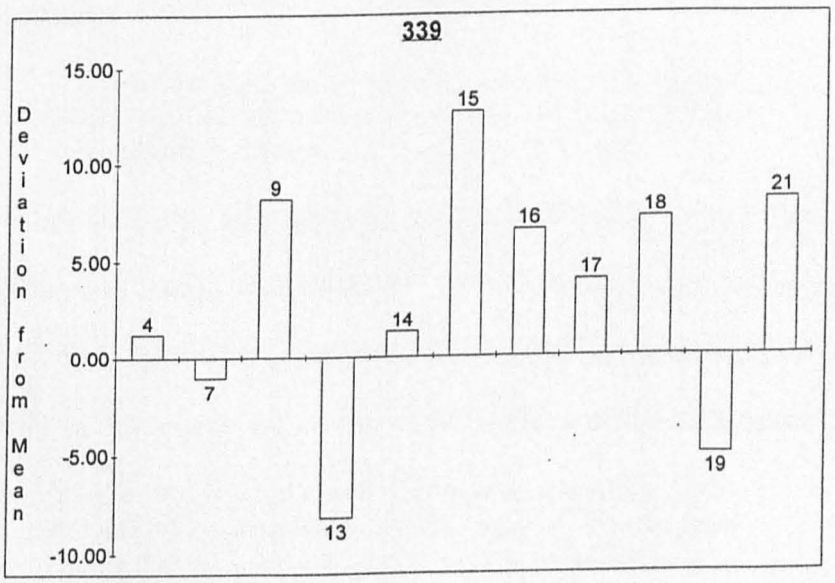
By March, M. was showing that he had indeed been taking his future seriously and his progress had been "very pleasing". Good grades were forecast and his liveliness was being kept under control. M.'s PSE teacher commented:

> "M. is a lively, out-going student who enjoys working with others. His attendance has been excellent and his contributions well accepted within the group. Next year he hopes to take A-levels and has expressed an interest in joining the forces".

M. did not achieve the B grades forecast for him in the summer, but he did gain five more C grades, and embarked upon a three A-level course of Physics, Chemistry and Biology. By November, M. had given up Chemistry and was soon seen to be struggling with Physics. In July, M.'s Physics teacher stated:

> "M. has had particular problems with the mathematical aspects of physics. Recently I feel that he has tended to "give up" on the subject and, if he wishes to continue at any level, he will need to commit himself fully to it".

M. finally achieved a grade C in GCSE Biology and left at the end of his lower sixth year. It is not known what happened to him.



Outlier 28

364

N. deviates from the sample mean in terms of low feelings of mastery, high passivity, positive attainment change and good course score on exit. N.'s previous school stated that she had great self-confidence and got on well with most people. She could be thoughtful and sensible but on the whole needed more urgency. N. was a "natural organiser" but seemed to have made no actual commitments. Not considered suitable for A-levels, it was felt that N. would benefit from full-time education if it was linked to the job she wished to do, so that it held interest for her. Comments made by her teachers were, for example:

> "I do not think N. is doing as well as she might. She is good at looking busy whilst not actually achieving a lot. She often seems tired in class".

And:

> "N. could do well in this subject if only she would apply herself. She is too fond of idling her time away doing the bare minimum".

A further comment:

> "N. has the potential to do well in this subject but at times tends to "fritter" her time away. N. must get her coursework up to date and do justice to herself".

N. obtained two grade Ds, four grade Es and an F at the end of her final year at school. She came to college and started a five GCSE repeat course. On her Student Profile she recorded that she enjoyed reading and netball, and her ambition was to study law. N.'s early reports were rather varied. Her personal tutor wrote:

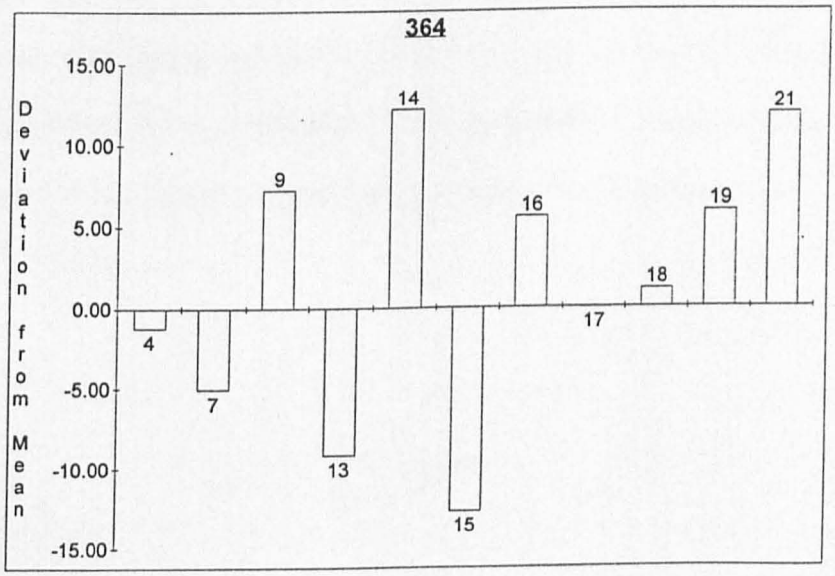
> "These reports show that N. is capable of working hard but that sometimes her motivation wavers. In a course lasting less than a year, a high level of sustained effort is vital if exam success is to be achieved".

N.'s Maths teacher commented:

> "N. is always cheerful but it is dangerously close to complacency and she cannot afford to let time slip by unused, as she has done this term. In routine work she needs to seek out her problems and improve them in practice during lesson time, and equally needs to use her time in class to the full in coursework assignments".

By March, N. was obviously taking the advice of her teachers and working hard. Her understanding was improving and she was expressing an interest in some aspect of caring or legal work.

N. achieved one grade C in the summer, and applied to a local college of Further Education for a course in Caring. Her final destination is unknown.



CHAPTER 9

CONCLUSION

This study was originally undertaken to answer certain pertinent and crucial questions about the nature of the learning experience for 16-19 year old students on a variety of courses in a Sixth Form College. From the evidence disclosed it is clear that the process is more complex than supposed, and that issues which initially appeared to be relatively straightforward and amenable to investigation raised more questions about the nature of the experience of these students than it was capable of answering.

Nonetheless, whilst recognising the limitations at all levels in the present study, some interesting and useful findings have emerged. The first section of this chapter reviews the main results reported in relation to the main aims of the study. The following sections in this chapter will discuss methodological issues, the contribution of the study to educational practice and implications for future research.

9.1 Findings in relation to the aims of the study

i) The relationship between academic self-concept, attainment and personality.

The notion that clear and coherent sets of relationships would be found to exist between attainment, self concept and personality was unfounded. The initial series of questions posed anticipated the discovery and verification of direct links between feelings of self-efficacy or mastery over expected outcomes (Bandura, 1989) and internal locus of control (Rotter, 1966; Nowicki and Strickland, 1973) and positive attainment and attainment change over a course of study. Some evidence can be produced from the data for many of the initial questions posed, but the multi-dimensional nature of the research data leads inevitably to conclusions relating to different types of students pursuing different goals, and to a more complex theoretical perspective. Certainly there is no evidence within this research that feelings of mastery induce positive attainment, although it must be acknowledged that on entry to the college a significant relationship between mastery and the four attainment variables could be seen. The research data shows that clusters with high mastery scores showed negative attainment change over the course of study, whereas groups with low mastery scores showed positive attainment change. This raises again the question of the role of anxiety as a motivator in areas of attainment. The views of Youngman and Lunzer (1977) and Clarke (1983) have already been discussed in Chapter 7. In terms of this research, using the Passivity and Dependency scales as measures of anxiety in that they contain a number of anxiety-related questions, there are some interesting endorsements to the importance of this dimension. Group A (Passive) shows high anxiety, high attainment on entry and good positive attainment

change. Group C (Dependent) shows high anxiety, low attainment on entry and poor attainment change. Group H differs on the anxiety variables from the previous two groups in a high level of passivity, but average level of social dependence linked to poor attainment on entry and positive attainment change. These findings would indicate that for this sample where initial attainment is high, anxiety acts as a stimulant to further improvement; where initial attainment is low then anxiety can act either as a stimulant to the student who is not dependent on others - and also feels adequate in the work situation - and produce positive attainment change, or as a negative influence on attainment to those who are socially dependent and inadequate in the work situation.

A second question, related to motivation, was also posed - to what extent does initial failure deter the student or act as stimulant? The research shows that of the students who came into college with poor C+ grades on entry, 8% made positive attainment change and achieved good course scores on exit. As Clarke and Youngman (1987) conclude, and this study reinforces, there is a need to study further the constructs of anxiety and motivation in the context of the educational process. Issues around the role of self-efficacy beliefs in enhancing perceived control of events and thus enhanced performance require further investigation, and cannot be addressed within the context of this current research with any degree of authority. These issues will be raised further, however, in Section 3 of this chapter in relation to the possibility of self-concept and attitude change and the implications for educational practice.

A third important question raised and answered within the context of this research is

the question of whether personality factors, as measured by the Student Self-Perception Scale, exert a substantial effect on performance independent of ability. Given the evidence of high mastery and initial attainment scores co-existing with deterioration in attainment, it is evident that factors other than the will and ability to attain are operating. Certainly the role of extroversion - admittedly a weak construct in this study - can be seen to have a negative relationship with positive attainment change, despite initial good C+ scores on entry for those groups showing above average extroversion scores. Also, given that some students in the sample would in fact fail to attribute their success to their own ability, and would attribute good grades to luck, chance or fate - i.e. those with a high external orientation on the locus of control scale, knowledge of one's own ability as a motivating factor in future attainment cannot be assumed (Seifert, 1994). An example within the data is Cluster A, with good grades on entry yet high external locus of control, feeling inadequate as learners, socially dependent and with low confidence.

The picture which emerges, then, is one of different groups of students showing different yet identifiable patterns of attainment and behaviours, with personality factors playing a varied yet identifiable role in performance. This must indicate the value and legitimacy of the clustering method. The methodological issues involved here will be discussed in Section 2 of this chapter, but given the correspondence between the three major studies discussed in Chapter 7, the notion of different students pursuing different goals for their own motivated "needs" must be convincing (Clarke and Youngman, 1987). The view is endorsed by a number of recent studies describe in Seifert (1994) who declares:

"Thus the evidence of multi-goal pursuits suggest that there are sub-groups of students displaying different patterns of characteristics".

ii) **Gender Issues**

A main focus of the research was to ascertain and confirm gender and ethnicity issues within the data. Findings of significance within the realm of ethnicity have been adequately discussed. Findings in the realm of gender differences, however, merit further examination.

Gender differences noted in other studies have been confirmed within this data. Male confidence in the outcomes of courses is stronger than females and is confirmed in reality by the fact that males made more positive change on course than did females. The relationship between internality on the locus of control variable and positive academic competence in the form of attainment in males was also confirmed (Nowicki and Duke, 1974). A compounding influence on this picture is the fact that males are also more optimistic in terms of predicted difference than females, with justification.

The female student in this research then, can at a general level be characterised as more passive, more externally controlled and achieving less well on course than the male. Maintaining superiority in total score on exit, the females in the sample nonetheless failed to maintain their superior level of C+ scores and total scores on entry. The three predominantly female groups in the sample - A (75% female), F (73.9% female) and H (72.4% female) showed no direct relationship between initial attainment and attainment change. Cluster A had good C+ scores on entry and

marginally positive attainment change, Cluster F had excellent C+ scores on entry and drastic negative attainment change and Cluster H had poor C+ scores on entry and impressively high positive attainment change. This seems to confirm Clarke's (1983) finding that in female sixth form college students performance is influenced as much by dispositional characteristics as intellectual ability. All three groups did, in fact, have very pessimistic predicted difference scores and marginal or negative levels of confidence.

The educational implications for females of these findings will be discussed in Section 3 of this chapter.

iii) **Prediction**

The question posed at the beginning of this thesis as to what indicators of performance we can use to create a predictive map of a student's educational future remains unanswered. The predictive power of the individual dispositional variables is, with marginal exception of extroversion, generally weak. This is not to undervalue or deny their collective potential to give us detailed knowledge of the individual student. The only firm conclusion that can be reached from this research is that for total attainment score on exit, total score on entry is the best predictor. This confirms many previous findings that previous attainment is the best predictor of future attainment (Summerfield, 1980; Youngman and Lunzer, 1977; Nisbet, Welsh and Entwistle, 1972).

Clarke and Youngman (1987) state that the most consistent findings suggest generally

that intellectual ability and previous examination performance are the strongest determinants of attainment, whilst within the dispositional domain of personality, extroversion and emotional stability claim some importance.

In terms of course score on exit, tutor prediction emerges as the best predictor. This is in contrast with the findings of Nisbet and Entwistle (1969) in which they found teacher prediction unreliable. The reasons for tutor prediction at sixth form level having increased reliability have been discussed in Chapter 7, and suffice it to comment here that the findings are reassuring.

The single personality variable emerging as a predictor of future attainment is extroversion. Again the ambivalence of this finding has been discussed in Chapter 7, but it is of interest to note the findings of Cassidy and Lynn (1991) in their research on achievement motivation in which they find that a direct predictor of educational attainment is dominance, which in its turn relates positively to extroversion. Placed alongside the work of Entwistle and Ramsden (1982), previously noted, there is clearly scope for further study here.

iv) **Summary of Findings**

1. That by employing an item-based cluster analysis relating to students' dispositional characteristics, groups of students showing different yet identifiable patterns of attainment and behaviour have emerged, with personality factors playing a varied yet identifiable role in performance.

2 That the role of anxiety is crucial to a student's success or failure within the educational process, acting either as a stimulant or deterrent to further effort, and that this role should be further investigated.

3 That identifiable gender differences emerge in the educational experience of males and females which give rise to various issues of female confidence, self-concept and aspiration.

4 That the best predictor of future attainment is previous attainment and that this will remain so until teaching methods eliminate the effects of individual differences in educational experience.

5 That the best independent predictor of attainment in terms of personality variables is extroversion, but the ambivalence of its role in predicting positive or negative attainment merits further investigation.

9.2 Methodological issues

The methodological limitations of the present study have in part been acknowledged. It would seem appropriate, however, to look in more depth at the methods adopted. Some discussion of methodology has already taken place in Chapters 3 and 7.

i) The current study

In terms of validity and reliability the measures used in this study seem to stand up well. There would appear to be a sound theoretical interdependency between the dispositional variables employed (Clarke, 1985). The weakness of the Extroversion scale of the SSPS is acknowledged, but the remaining scales are useful. Clearly, a longitudinal study would have been preferable, with follow-up studies and interviews with individual cases. This was not possible due to the shifting population within this type of institution. Nevertheless, in defence of the present study an attempt has been made to collect evidence in ways which previous research in the field has shown to be most helpful, that is, by the use of cluster analysis.

ii) Cluster analysis - an appraisal

The most significant methodological issue in relation to this study is the use of cluster analysis. Increasingly used in educational research, there are still some reservations about its legitimacy as a method, although these are diminishing with time and usage. Clarke and Youngman (1987) argue the case for cluster analysis, quoting Egan's (1984) criticisms of its use. Egan argues that the use of classification typing is unsatisfactory because exclusive allocation rules (logical or mathematical) do not

exist; because its application is frequently no more than ex post-facto explanation; and because the shorthand labels used for convenient identification of the types are open to misunderstanding. Clarke and Youngman (1987) argue that methodologically cluster analysis is not substantially different from most statistical or psychometric techniques where rules (or, more accurately, conventions) are not incontrovertible but rather exist to assist use and communication. Cluster analysis is seen by them as an accessible technique which is appropriate provided that both the nature and potential of the resultant classification can be satisfactorily demonstrated.

Brennan (1972) suggests that our understanding of "these complex patterns of attainment-related characteristics could be facilitated by methods of cluster analysis", and indeed as early as 1971 Entwistle and Brennan had been promoting the use of the method. Rejecting the "dimensional approach" consisting of correlation analyses followed by factor analyses or multiple regression techniques, Entwistle and Brennan (1971a) advocated the use of a method which would describe different types of successful students. The statistical procedure which they recommended as following this "typological" approach was cluster analysis. Using the method in a study of university students, Entwistle and Brennan (1971a) claimed that "at least at an intuitive level this cluster analysis makes sense". They felt that they had discovered meaningful types and that understandable causal processes could be detected underlying different levels of academic performance.

Interestingly, discussing the issue of demonstrating the validity of the clusters, Entwistle and Brennan (1971a) argued that whilst it was possible to obtain some

evidence of concurrent and predictive validity, it was not at present possible to think in terms of construct validity. Intervening studies as discussed in Chapter 7 of this thesis have now enabled construct validity to be demonstrated. Clarke and Youngman (1987), writing of their study of sixth form and Further Education students, concluded:

> "The level of similarity (across measures which are comparable) between the student types identified in this study and those which emerged during the course of the Rowntree Project is particularly interesting and encouraging in that a degree of reciprocation is shown to occur even though the measures employed and the research design were different".

Entwistle and Brennan (1971a) conclude:

> "It seems perfectly feasible to develop typological themes from the results of cluster analysis and so counteract the present emphasis on the dimensional approach both in empirical work and in theory building".

Further studies have subsequently embraced the usefulness of cluster analysis as demonstrated in the work of Seifert (1994) who quotes studies using the method by Meece (1994), investigating the possibility of multiple goals within individuals. A cluster analysis was performed upon students' responses to a series of goal items to identify differences on a number of motivational and cognitive constructs. Seifert (1994) concludes that "whilst factor analysis and correlation techniques have built a good foundation for achievement motivation theory, cluster analysis may be a useful technique for refining theory".

In his comparative study of factor analytic-correlational methodology and cluster analysis, Seifert (1994) used between-group contrasts to determine the agreement

between the two methods. He found agreement in the interpretation of the data, but also found several discrepancies between the two methods. He concluded that whilst factor analysis-correlational models are very useful in identifying important constructs and relationships among constructs which may culminate in some form of causal modelling, they may be hiding some patterns of behaviour, the results of which are detected by cluster analysis. Cluster analysis, he claims, suggests that interactions among constructs are possible and may need to be explained further.

The evidence is, then, that cluster analysis is acceptable as a valuable method in research which adopts a multi-faceted approach. Its use in this study is felt to be soundly based in that patterns of relationships between student characteristics and academic attainment are complex, and methods of cluster analysis can assist in making these patterns more visible.

9.3 Contribution of the study to educational practice

The picture which has clearly emerged from this and related studies is that of different yet identifiable groups of students pursuing different goals, driven by their own motivational "needs" (Clarke and Youngman, 1987) and displaying different patterns of characteristics (Seifert, 1994). These findings certainly have implications for educational practice at the 16-19 phase of provision. Discussion in this section will take place under three main headings - issues of provision; teaching and learning styles; and climate.

First though, a cautionary note about applicability. As discussed in Chapter 3, the research presented here is in the case study tradition, in that it represents findings relating to one institution only. Given however, that some of the findings, particularly the types emerging from the cluster analysis, and the SSPS scale, have been validated satisfactorily against other findings and instruments (Clarke and Youngman, 1987; Entwistle and Brennan, 1971; Nowicki and Strickland, 1973) applicability to other groups of students in other settings may be appropriate. As quoted in Chapter 3, Youngman (1979a) points out that as long as the standard considerations of reliability of measurement, replicability of procedure and analysis, and verifiability of interpretation are borne in mind, it should be possible to make a case study acceptably objective.

i) Issues of provision

Education post-16 is, for many young people, taking place in an atmosphere of

transition. The end of compulsory schooling gives them the opportunity for new choices to be made and new educational experiences pursued. Given the evidence presented here of the range of types of student entering the post-16 sector, the first requirement must be that of choice. Clarke (1983) argues for a range of provision to suit all needs - the "fit" between student and institution being crucial to a positive educational experience. Clarke's findings were that students who leave school to enter further education are those who exhibited types of behaviour which did not fit into the conventional school environment. As a result of this they had underachieved academically in school and needed a "fresh start".

The need, then, is for a choice of institutions to suit the "differing interactive patterns of students' dispositional characteristics". Clarke (1983) writing at a time when it was being suggested that the plurality of provision for 16-19 year olds be reduced because of falling rolls, argues for a range of choice - sixth form colleges, colleges of further education, tertiary colleges, school sixth forms - to persist, to allow a wider range of students to reach their full potential. In the 1990s the situation is that of increased staying on rates and, at present, a range of institutions from which to choose. However, the issues have changed. The range of student needs are ever more varied and complex in that greater numbers across the whole ability range are presenting themselves for education, and many students are having to stay on in education, as discussed by Cotterell (1990), for economic and social reasons and not as a first-choice activity. The challenge of this situation to teaching and learning styles will be discussed in the next section, but the pressing issues for the post-16 sector now are financial. The incorporation of all post-16 institutions into a new

sector funded by the government through the Further Education Funding Council has led to financial rationalisation which is seriously threatening provision and choice. Funding now depends upon successful outcomes of students on courses. Inevitably, the tendency will be to reduce opportunity and to only offer courses which have a high take-up and success rate. Likewise, students will only be allowed on to courses which they will certainly pass.

Linked to this issue is the tendency noted by Entwistle and Ramsden (1983) towards growing political and financial pressure on institutions to encourage students to take courses of immediate benefit to the technical and commercial future of the country.

The final issue raised within this section is that of retention rates. Whatever the type of provision, any post-16 institution must retain its students in order to maintain funding. Again, financial issues arise. In order to compete in the new educational "market-place", institutions must sell themselves not as services but as products. Advertisements, publicity - national and local, league tables of examination results, logos, sponsorship and active recruiting policies are all essential. The note of caution to be injected here is that of student disillusionment. Intense marketing creates images. In education, students can only in the end be impressed and satisfied by quality of provision and delivery. It is too soon to tell the effect of a market-driven educational system, but the implicit dangers as shown by increased drop-out rates are already being seen in sections of the post-16 sector.

ii) **Teaching and learning styles**

In order to accommodate the multiplicity of needs of the young people represented in this study, the curricular focus must be on process as well as content. Allocation on to appropriate courses and into appropriate subject areas will hopefully have taken into account basic academic requirements and negotiated preferences. Colleges have their own selection procedures and qualification thresholds which are publicised as part of the recruitment strategy. Interestingly, in this context, Clarke and Youngman (1987) recommended as a result of their studies of sixth form college and further education college students that when selecting for A-level courses it would seem more useful to take account of other student factors, in particular, dispositional characteristics. This finding is supported by a study of "drop-outs" from higher education by Kember et al (1992), in which they looked at the level of integration of students within the academic and social systems of the learning institution. They found that the identified constructs of learning motivation, language ability and the extent to which the student is able to integrate study demands with personal and family work and social commitments had a higher correlation than entry qualifications with the grades attained by students. These findings must surely indicate an area of further study.

Once on course, the focus becomes that of the quality of interaction within the teaching situation and the students' perception of this interaction. Given that students learn in different ways and for different reasons, the teacher must provide a learning environment in which this is taken into account. The implications for the wider implementation of active learning, student-centred approaches, optional activities,

workshops, individual and group support offered on a systematic yet negotiated basis, cannot be ignored. Linked to this are issues of teacher expectation, about which Wiseman (1973) says:

> "...the achievements and the aspirations of (students) are more immediately and more strongly affected by teacher expectations than by teaching method or by school organisation".

The role of regular and sensitive monitoring of progress is also essential, with tutor feedback and self-evaluation. Daines (1985) found that regular self-evaluation resulted in higher academic achievement, increased student motivation, engendered greater self-confidence, gave better awareness of the standard of attainment achieved, improved staff-student relationships and increased self-responsibility of learning. Entwistle and Ramsden (1983) also put the onus on to teachers for systematic re-appraisal of teaching and courses, and to adopt flexible and versatile approaches to the learning situation. Ramsden, Martin and Bowden (1989) echo these recommendations, noting that perceived school environments and students' learning are related in a systematic way. School environments offering supportive teaching, coherent structure, emphasis on autonomy and moderate stress on achievement are associated with learning involving an active search for understanding, organised study methods and avoidance of superficial approaches. Such a learning environment would benefit the individual student whatever their motivational and learning needs. The issue of learning styles is outside the scope of this research, but the relationship between learning styles and student types would be a logical extension of the current work.

Two further issues must be addressed in this section, both relating to self-concept -

the consideration of promotion of change in self-concept through an understanding and application of self-efficacy research (Bandura, 1977; 1989) and the related issue of female self-esteem in co-educational settings. To address the first issue, Foon (1988) raises the question of female opportunity within the co-educational settings, quoting evidence which shows that measured self-esteem of adolescent females in such settings is significantly lower than that of their male counterparts. Certainly this current research would endorse this finding. Foon quotes Sarah et al, (1986) who extends the argument further by stating that within co-educational schools the academic and social relations contribute to the subordination of females, lowering their assessment of their academic competence and ensuring lower academic performance. Foon (1988) concludes that attendance at single sex schools would appear to lead to high self-esteem. From a purely educational perspective, then, single sex schooling would be of benefit to females. From a social perspective, however, it may be less than beneficial. The question must remain open until further research has confirmed the findings, and alternative strategies for enhancing female self-esteem within a co-educational setting have been explored.

The final question, posed early in the thesis as a matter of crucial interest, is to what extent can we change people's self-beliefs particularly, in this context, about themselves as learners? There is a considerable body of research into the enhancement of self-concept, from the work of Staines (1958) who investigated the role of the teacher in determining self-image or "self-picture" through the curriculum, to the studies described by Gorrell (1990) in his work on the relationship between self-concept and self-efficacy theory. The question posed in this research was that

if coping skills were found to be weak, how could coping behaviour be initiated, enhanced and sustained to ensure successful outcomes and strengthen expectations of personal efficacy? Bandura (1989) would argue that by identifying and providing reinforcing experiences a student's enhanced belief in his or her capability to exercise control over events could induce positive change in attitudes and outcomes. Traditional self-concept theory as represented by Snygg and Combs (1949) would argue that changes in self-concept precede changes in behaviour, and that by intervening to raise self-concept, positive changes in performance such as academic achievement would take place. Gorrell (1990) sees self-concept as a by-product of experience. Efforts to enhance self-concept or school attainment should be focused on direct changes in the individual's behaviour. Gorrell links changes in self-concept to changes in effort and achievement - self-efficacy research giving the tools for this process in terms of feedback from others, self-monitoring, short-term goal selection and modelling of appropriate behaviour. The benefit for the individual is extensive, as once self-efficacy beliefs have been acquired and mastery expectations influence performance, behaviour will be affected in situations other than those in which it was generated. Once established, positive expectations about one's efficacy can generalise into new situations (Bandura, 1977).

Cotterell (1990) describes the application of self-efficacy theory within the classroom or "instructional environment". Task attainments, he states, shape student learning by organising student experience in the classroom and defining what skills are fundamental. The task environment then seeks to provide student self-efficacy by providing feedback and encouragement whilst allowing students to control the choice

of activity, the pace at which they work and their recording of progress. Cotterell reports that clear evidence of mastery was seen in all classrooms, and that the results were encouraging, but only extensive long-term work will demonstrate whether growth in self-concept has been achieved. Cotterell echoes the recommendations voiced earlier in this section of supportive relationships, flexible and relatively informal learning environments and an atmosphere of self-control and autonomy which will engender a broad sense of personal competence that will "enable (the student) to contribute effectively to society and be accepted as vital members of it".

iii) **Climate**

For 16-19 year old students a fundamental feature of the educational experience must be a feeling of ownership. Biggs (1985), in Overwalle, Segebarth and Goldchstein (1989), writing of the value of intervention programmes to improve the academic performance of students with learning difficulties states that such programmes are most useful when:

> "they facilitate students' analysis of their own learning strategies and when they promote the belief that they have control over their own learning".

Much of the previous discussion has centred upon the creation of an accepting, purposeful learning environment in which students can receive support in achieving their learning outcomes. Two further requisites for a successful and nurturing post - 16 environment which is capable of taking into account the range of student need and the diversity of student goals may be noted.

Firstly, the quality and availability of guidance, counselling and support systems is

vital. Learner support will facilitate successful outcomes, engender personal confidence and, with early diagnosis and encouragement, remediate learning difficulties. Guidance, counselling and welfare systems will signal to the student the level of care and concern operating within the institution and give practical help to the often insoluble family and personal problems which beset this age-group.

Secondly, a climate of support within the student population itself. Some institutions encourage systems of peer-counselling or "reciprocal" counselling between young people, training them to listen to each other with respect and share emotions in a non-judgemental way. It is believed by practitioners that playing the listening role effectively increases self-esteem and a sense of self-efficacy. Systems of peer-counselling in this country are under increasing scrutiny and there is considerable development in this field. Frequently more appropriate for the 16-19 age-group than adult intervention, the process gives responsibility and confidence to the students engaged in it. Whatever the type of institution, such activities lead to an enlightened and supportive climate in which the needs of the individual student can be recognised and met.

Wiseman (1973), talking of success in the "educational obstacle race", says that success may well have far less to do with intellectual ability than the type of person the competitor is and the type of "arena" in which s/he is competing. It is hoped that this study has contributed to our knowledge of both these dimensions.

9.4 Implications for further research

9.4.1. To extend this research at a national level to include all types of institution providing for 16-19 year old students, as a contribution to the development of typological theory.

9.4.2. To relate these findings of different types of students pursuing different learning goals to the various types of post-16 institution to enable the identification of factors leading to a better "fit" between student and learning environment.

9.4.3. To further examine the role of self-efficacy beliefs in enhancing performance in the learning environment and to identify practices which would facilitate this process.

9.4.4. To re-evaluate the data in terms of goal theory, identifying items of task (mastery) and ego (performance) orientation within the current research design to illuminate the relationship between achievement motivation, learning styles and learning environments in 16-19 year old students.

9.4.5. To examine the level of integration of students with the academic and social systems of the learning institution with a view to lowering the drop-out rate of students from further education.

BIBLIOGRAPHY

Adelman, C., Jenkins, D. & Kemmis S. (1977), 'Re-thinking case study: notes from the Second Cambridge conference' *Cambridge Journal of Education* 6, 139-150

Allport, G. W. (1937), *Personality: A psychological interpretation* New York: Holt, Reinhart and Winston

Atkins, M. J. (1982), 'Foundation Courses in a Sixth Form College: A Case Study' Unpublished PhD thesis, University of Nottingham

Bandura, A., Jeffery, R. W. & Gajdos, E. (1975), 'Generalising change through participant modeling with self-directed mastery' *Behaviour Research and Therapy* 13, 141-152

Bandura, A. (1976b), 'Self-reinforcement: Theoretical and Methodological considerations' *Behaviourism* 6, 135-155

Bandura, A. (1977), 'Self-efficacy: Toward a Unifying Theory of Behavioural Change *Psychological Review* Vol. 84, 2, 191-215

Bandura, A. (1977a), *Social learning theory* Englewood Cliffs, NJ: Prentice Hall

Bandura, A., Reese, L. & Adams, N.E. (1982), 'Microanalysis of action and fear aroused as a function of differential levels of perceived self-efficacy' *Journal of Personality and Social Psychology* 43, 5-21

Bandura, A. (1986), *Social foundations of thought and action: A social cognitive theory* Englewood Cliffs, NJ: Prentice Hall

Bandura, M. M. & Dweck, C. S. (1988), 'The relationship of conceptions of intelligence and achievement goals to achievement-related cognition, affect and behaviour' Manuscript submitted for publication

Bandura, A. (1988a), 'Perceived self-efficacy: exercise of control through self-belief' in J P Dauwalder, M Perrez & V Hobi (eds) *Annual Series of European Research in Behaviour Therapy* Vol 2, 27-59. Lisse (NL): Swets & Zeitlinger

Bandura, A. (1989),' Perceived Self-Efficacy in the Exercise of Personal Agency' *The Psychologist* Vol 2, 10, 411-424

Barker Lunn, J. C. (1969), 'The development of scales to measure junior school children's attitudes' *Br. J. Educ. Psychol.* 39, 64-71

Bar-Tal, D., Kfir D, Bar-Zohar & Chen, M. (1980), 'The Relationship between Locus of Control and Academic Achievement, Anxiety and Level of Aspiration' *Br. J. Educ. Psychol.* 50, 53-60

Battle, E. & Rotter, J. B. (1963), 'Children's feelings of personal control as related to social class and ethnic groups' *Journal of Personality* 31, 482-490

Bennion, R. C. (1961), 'Task, trial by trial score variability of internal versus external control of reinforcement' Unpublished doctoral dissertation. Ohio State University

Brennan, T. (1972), 'Numerical taxonomy: theory and some applications in educational research.' Unpublished PhD. thesis. University of Lancaster

Burns, R. B. (1982), *Self-Concept Development and Education* New York: Holt, Reinhart and Winston

Butler, R. & Orion, R. (1990), 'When pupils do not understand the determinants of their success and failure in school: relations between internal, teacher and unknown perceptions of control and school achievement' *Br. J. Educ. Psychol.* 60, 63-75

Cassidy, T. & Lynn, R. (1991), 'Achievement motivation, educational attainment, cycles of disadvantage and social competence: some longitudinal data' *Br. J. Educ. Psychol.* 61, 1-12

Cattell, R. B. & Eber, H. W. (1967), *Sixteen Personality Factor Questionnaires (16PF) Forms A and B (1967-68 Edition)* Champaigne Ill: Institute for Personality and Ability Testing

Cattell, R. B. (1972), 'The 16PF and basic personality structure: A reply to Eysenck' *Journal of Behavioural Science* 1, 169-187

Cattell, R. B. (1973), *Personality and mood by questionnaire* San Francisco: Jossey-Bass

Cervantes, R. A. (1976a), *Locus of control and achievement of Mexican-American pupils* D C Development Associates, Inc. San Antonio

Cervantes, R. A. (1976b), 'Self-concept, locus of control and achievement in Mexican-American pupils' Paper presented to the Third Annual Conference of Bilingual-Bicultural Education, San Francisco, February 1976

Chapman, J. W. & Boersma, F. J. (1983), 'A cross-national study of academic self-concept using the Student's Perception of Ability Scale *New Zealand Journal of Educational Studies* 18, 69-75

Clarke, M. J. (1983), 'The prediction of GCE 'O' and 'A' level performance of further education and sixth form college students' Unpublished M. Phil. thesis, University of Nottingham

Clarke, M. J. & Youngman, M. B. (1987), 'Dispositional associates of GCE performance in sixth form and further education college students' *Br. J. educ. Psychol.* 57, 191-204

Collins, J. L. (1982), 'Self-efficacy and ability in achievement behaviour' Paper presented at the annual meeting of the American Educational Research Association, N Y

Combs, A. W. & Snygg, D. (1959), *Individual behaviour* (Rev ed) New York: Harper

Connell, J. P.(1985), 'A new multi-dimensional measure of children's perceptions of control' *Child Development* 56, 1018-1041

Coolican, H. (1990), *Research Methods and Statistics in Psychology* London: Hodder and Stoughton

Coopersmith, S. & Feldman, R. (1974), 'Fostering a positive self-concept and high self-esteem in the classroom' in R H Coop & K White (eds) *Psychological concepts in the classroom* New York: Harper & Row

Cotterell, J. L. (1990), 'Adolescents and schools: lessons from the 1980s' *Adolescence - an Australian Perspective* Sydney, London, Orlando Toronto: Harcourt, Brace and Jovansirch Publishers

Crandall, V. C., Katkovsky, W. & Crandall, V. J. (1965), 'Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations' *Child Development* 36, 91-109

Cronbach, L. J. & Furby, L. (1970), 'How should we measure "change" - or should we?' *Psychological Bulletin* 74, 68-80

Cronbach, L. J. (1975), 'Beyond the two disciplines of scientific psychology' *American Psychologist* 30, 2, 110-127

Cullinan, P. (1969), 'Processes and problems in taxonomic studies' in: D. Griffiths (ed) *Taxonomies of Organisational Behaviour in Educational Administration* Chicago: Rand McNally

Dahlstrom, W. G., Welsh, H. G. & Dahlstrom (1975), *An MMPI handbook, Vol I: Clinical interpretation* Minnesota: University of Minnesota Press

Daines, J. M. (1977), 'An investigation of the variable self-evaluation and knowledge of results in a continuously assessed course of study' Unpublished M Phil thesis, University of Nottingham

Daines, J.M. (1985), 'Self Evaluation and Achievement' Unpublished PhD thesis, University of Nottingham

David, H. B. & Connell, J. P. (1985), 'The effect of aptitude and achievement status on the self system' *Gifted Child Q.* 29, 131-36

Deary, I. J. & Mathews, G. (1993), 'Personality traits are alive and well' *The Psychologist* Vol. 6 No.7 July 1993.

DFE, (1993), 'Participation in education by young people aged 16 and 17 in each local education authority and region of England: 1988/89 to 1991/92' *Statistical Bulletin: Issue no. 12/93*

DFE, (1993), 'Participation in education by 16-18 year olds in England: 1979/80 to 1992/93' *Statistical Bulletin: Issue no. 16/93*

DuCette, J. & Wolk, S. (1972), 'Locus of control and extreme behaviour' *Journal of Consulting and Clinical Psychology* 39, 253-258

Duda, J.L. (1992), 'Children's Achievement Goals and Beliefs About Success in Sport' *Br.J. educ. Psychol.*, 62, Part 3, 313-323

Dweck, C. S. & Elliott, E. S. (1983), in P H Mussen (General Ed) & E M Heatherington (Vol. Ed) *Handbook of Child Psychology: Socialisation, personality and social development* (4th Ed. Vol. 4) New York: John Wiley, 644-691

Egan, 0. (1984), 'Cluster analysis in educational research' *Br. educ. Res. J.*, 10, 2, 145-153

Entwistle, N. J. (1968), 'Academic motivation and school attainment' *Brit. J. educ. Psychol.*, 38, 181-188

Entwistle, N.J. & Welsh, J. (1969), 'Correlates of attainment at different ability levels' *Br. J. educ. Psychol.*, 39, 57-63

Entwistle, N. J. & Brennan, T. (1971), 'The academic performance of students - 2 types of successful students' *Br. J. educ. Psychol.* 41, 268-276

Entwistle, N. J., Nisbet, J., Entwistle, D. & Cormack, M. D. (1971), 'The academic performance of students. 1 - Prediction from scales of motivation and study methods' *Br. J. educ. Psychol.* 41, 258-267

Entwistle, N. J. & Wilson, J. (1977), *Degrees of excellence: The academic achievement game* London: Hodder & Stoughton

Entwistle, N. J. & Ramsden, P. (1983), *Understanding student learning* London: Croom Helm

Epstein, S. (1973), 'The self-concept revisited or a theory of a theory' *American Psychologist* 28, 405-416

Eysenck, M. W. & Eysenck, M. C. (1979), 'Memory scanning, introversion-extroversion and levels of processing' *Journal of Research in Personality* 13, 305-315

Eysenck, M. W. & Eysenck, H. J. (1980), 'Mischel and the concept of personality' *Br. educ. Psychol.* 71, 191-209

Eysenck, S. B. G., Eysenck, H. J. & Barrett, P. (1985), 'A revised version of the Psychoticism scale' *Person. Indiv. Diff.* 6 (i), 21-29

Feather, N. T. (1968), 'Change in confidence following success or failure as a predictor of subsequent performance' *Journal of Personality and Social Psychology* 9, 38-46

Foon, A.E. (1988), 'The relationship between school type and adolescent self-esteem, attribution styles and affiliation needs: implications for educational outcome *br. J. educ. Psychol.*, 58, 4-54

Freud, S. (1914), *The psychopathology of everyday life* New York: Macmillan

Fryear, J.S. & Carlson, J. (1976), 'Locus of control scores of black and white adolescent subjects' Unpublished manuscrip, Tulane University, (CNSIE)

Funder, C. & Colvin, C. R. (1991), 'Explorations in behavioural consistency: Properties of persons, situations, and behaviours' *Journal of Personality and Social Psychology* 60, 773-794

FEFC, (1993) 'Circular 93/20: Recurrent funding methodology 1994-95: Funding categories' *Further Education Funding Council*

FEFC, (1993) 'Circular 93/28: Assessing achievement' *Further Education Funding Council*

Glaser, B. G. & Strauss, A. L. (1967), *The Discovery of Grounded Theory: Strategies for Qualitative Research* Chicago: Aldine

Gordon, D. A. (1977), 'Children's beliefs in internal-external control and self-esteem as related to academic achievement' *Journal of Personality Assessment* 41, 383-386

Gorrell, J. (1990), 'Some contributions of self-efficacy research to self-concept theory' *Journal of Research and Development in Education* Vol 23, No. 2 Winter 1990.

Gross, R.D. (1992), *Psychology: The Science of Mind and Behaviour* (second edition). London: Hodder and Stoughton

Gurin, P., Gurin, G., Lao, R. C. & Beattie, H. (1969), 'Internal-external control in the motivational dynamics of Negro youth' *Journal of Social Issues* 25, 29-53

Harré, R. (1981), 'The positivist-empiricist approach and its alternative' in R Reason & J Rowan (eds) *Human Enquiry: A Sourcebook of New Paradigm Research* Chichester: Wiley

Harter, S. (1982), 'The perceived competence scale for children' *Child Development* 53, 87-97

Harter, S. & Connell, J. P. (1984), 'A model of the relationship among children's academic achievements and their self-perceptions of competence, control and motivational orientation' in J Nichols (ed) *The Development of Achievement Motivation* Greenwich CT: JAI

Higgins, E. T. & Bargh, J. A. (1987), 'Social condition and social perception' in M R Rosenszweig & L W Parker (eds) *Annual Review of Psychology* Vol 38, 369-425 Palo Alto, CA: Annual Review Incs.

Hoge, D.R., Smith, E.K. & Hanson, S. L. (1990), 'School Experiences Predicting Changes in Self-Esteem of Sixth and Seventh Grade Students' *Journal of Educational Psychology*, Vol 83, no.1, 117-127

James, W. H. (1957), 'Internal versus external control of reinforcement as a basic variable in learning theory' Unpublished doctoral dissertation, Ohio State University

Kaiser, H. F. & Rice, J. (1974), 'Little Jiffy Mark IV' *Educ. and Psychol. Meas.* 34, (i), 111-117

Kelly, G. A. (1955), *The psychology of personal constructs* Vol 1 New York: Norton

Kember, D. (1992), 'Student Progress in Distance Education: Identification of Explanatory Constructs' *Br. J. educ. Psychol.*, 62, Part 3, 285-298

Kenrick, D. T. & Funder, D. C. (1988), 'Profiting from controversy: Lessons from the person-situation debate' *American Psychologist* 43, 23-34

Kozéki, B. & Entwistle, N.J. (1984), 'Identifying dimensions of school motivation in Britain and Hungary' *Br. J. educ. Psychol.*, 54, 306-319

Lao, R. C. (1970), 'Internal-external control and competent and innovative behaviour among Negro college students' *Journal of Personality and Social Psychology* 14, 263-270

Lefcourt, T. H. & Ladwig, G. W. (1965), 'The American Negro: A problem in expectancies' *Journal of Personality and Social Psychology* 1, 377-380

Lefcourt, H. M. (1972), 'Recent developments in the study of locus of control' in B A Mather (ed) *Progress in experimental personality research* Vol 6 New York: Academic Press, 1-39.

Lord, F.M. (1963), 'Elementary models for measuring change' in C.W. Harris, (ed) (1963)

Maier, S. F. & Seligman, M. E. (1976), 'Learned Helplessness: Theory and evidence' *Journal of Experimental Psychology* 105, 3-46

Marcus, D. (1975), 'The effects of a behaviour modification programme on locus of control and interpersonal distance scores of children' Honours thesis, Emory University, 1975 (CNSIE)

Markus, H. & Nurius, P. (1986), 'Possible selves' *American Psychologist* 41, 954-969

Marsh, H. W., Smith, I. D. & Barnes, J. (1983), 'Multitrait-multimethod analyses of the Self-Description Questionnaire: Student-teacher agreement on multidimensional ratings of student self-concept' *American Educational Research Journal* 20, 333-357

Marsh, H. W. & Shavelson, R. (1985), 'Self-concept: Its multi-faceted, hierarchical structure' *Educational Psychologist* 20, (3), 107-123

Marsh, H. W., Byrne, B.M. & Shavelson, R.J. (1988) 'A multi-faceted academic self-concept: Its hierarchical structure and its relation to academic achievement' *Journal of Educational Psychology*, 80, 366-380

Marsh, H.W. (1989), 'Age and sex effects in multiple dimensions of self-concept: preadolescence to early adulthood' *Journal of Educational Psychology* 81, No 3, 417-430

Marsh, H.W. (1989b), 'Sex differences in the development of verbal and mathematics constructs: The High School and Beyond study' *American Educational Research Journal*, 26, 191-225

Marsh, H.W. (1990b), 'Causal ordering of academic self-concept and academic achievement: A multi-wave, longitudinal panel analysis'. *Journal of Educational Psychology*, 82, 646-656

Marsh, H.W. (1990d), 'The structure of academic self-concept: The Marsh/Shavelson model' *Journal of Educational Psychology*, 82, 623-636

Marsh, H.W. (1991), 'Failure of high-ability high schools to deliver academic benefits commensurate with their students' ability levels' *American Educational Research Journal* 28, 445-480

Marsh, H.W. (1992), 'Content specificity of relations between academic achievement and academic self-concept' *Journal of Educational Psychology*, 1992, Vol. 84, No.1, 35-42

Maslow, A. H. (1970), *Motivation and personality* (rev.ed) New York: Harper & Row

Matheney, K.B. & Edwards, R.C. (1974), 'Academic improvement through an experimental management system' *Journal of School Psychology*, 1974, 12, 222-232

Meece, J. (1994), 'The role of motivation in self-regulated learning' in D. Schunk & B. Zimmerman (eds)

Mischel, W. (1968), *Personality and Assessment* New York: Wiley

Mischel, W., Zeiss, R. & Zeiss, A. (1974), 'Internal-external control and persistance: Validation and implications of the Stanford Preschool Internal-External Scale' *Journal of Personality and Social Psychology* 29, 265-278

Mischel, W. (1981), 'A cognitive social learning approach to assessment' in T. V. Merluzzi, C. R. Glass & M. Genest (eds) *Cognitive Assessment* New York: Guilford Press

Mockett, S.P. (1992), 'The Changes in Attitude of Students Undergoing Physiotherapy Training' Unpublished M. Phil. thesis, University of Nottingham

Murray, H. A. (1938), *Explorations in Personality* New York: Oxford University Press

Newstead, S. E. (1992), 'A study of Two "Quick-and-Easy" Methods of Assessing Individual Differences in Student Learning' *Br. J. educ. Psychol.* 62, Part 3, 299-312

Nicholls, J.G. (1978), 'The development of the concepts of effort and ability, perceptions of own attainment, and the understanding that difficult tasks require more ability' *Child Development*, 800-814

Nicholls, J. G. (1984), 'Achievement motivation: conceptions of ability, subjective experience, task choice and performance' *Psychological Review* 91, 328-346

Nisbet, J.D. & Entwistle, N.J. (1966) *The age of transfer to secondary education.* London: University of London Press

Nisbet, J. & Entwistle, N. J. (1969), *The transition to secondary education* London: University of London Press

Nisbet, J.D., Welsh, J. & Entwistle, N.J. (1972), 'Age of transfer to secondary education: a postscript' *Br. J. educ. Psychol.*, 42, 233-239

Nisbet, J. & Watt, J. (1978), Rediguide 26 *Case Study* University of Nottingham, School of Education

Nowicki, S.Jr, & Roundtree, J. (1971), 'Correlates of locus of control in a secondary school population' *Developmental Psychology*, 1971, 4, 477-478

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

Nowicki, S. & Segal, W. (1974), 'Perceived parental characteristics, locus of control orientation and behaviour correlates of locus of control' *Developmental Psychology* 10, 33-37

Nowicki, S. & Duke, M. P. (1974), 'A locus of control scale for college as well as non-college adults' *Journal of Personality Assessment* 38, 136-137

Nowicki, S. (1976), 'The factor structure of locus of control at three different ages' *Journal of Genetic Psychology*, 1976, 129, 13-17 (PPNSIE, CNSIE, ANSIE)

Nurius, P. S. (1986), 'Re-appraisal of the self-concept and implications for counselling' *Journal of Counselling Psychology* 33, No 4, Oct 1986 429-438

Overwalle, Segebarth & Goldchstein (1989), 'Improving performance of freshmen through attributional testimonies from fellow students' *Br. J. educ. Psychol.*, 59, 75-85

Patton, M. Q. (1980), *Qualitative Evaluative Methods* London: Sage

Phares, E. J. (1955), 'Changes in expectancy in skill and chance situations' Unpublished doctoral dissertation, Ohio State University

Phares, E. J. (1957), 'Expectancy changes in skill and chance situations' *Journal of Abnormal and Social Psychology* 54, 339-342

Phares, E. J. & Lamiell, J. T. (1975), 'Internal-external control, interpersonal judgements of others in need, and attribution of responsibility' *Journal of Personality* 43, 23-38

Phares, E. J. (1976), *Locus of Control in Personality* Morristown (NJ): General Learning Press

Power, C. N. (1984), 'Factors influencing retentivity and satisfaction with secondary schools' *Australian Journal of Education* 28, 115-125

Purkey, W. W. (1970), *Self Concept and School Achievement*, New Jersey: Prentice Hall Inc., Englewood Cliffs

Purkey, W. W. & Novak, J. (1984), *Inviting school success: A self-concept approach to teaching and learning* (2nd edition) Belmont, CA: Wadsworth

Ramsden, Martin & Bowden (1989) 'School environment and sixth form pupils' approaches to learning' *Br. J. educ. Psychol.*, 59, 129-142

Reason, P. & Rowan, J. (1981), *Human Enquiry: A Sourcebook in New Paradigm Research* Chichester: Wiley

Richards, S. & Wang, A. Y. (1985), 'Generalisation of self-efficacy in children' Paper presented at the meeting of the Southeastern Psychological Association, Atlanta (March 1985)

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

Rogers, C. R. (1951), *Client-centred therapy: Its current practice, implications and theory* Boston: Houghton - Mifflin

Rogers, C. R. (1959), 'A theory of therapy, personality, and interpersonal relationships, as developed in the client-centred framework' in S. Koch (ed) *Psychology: A study of a science* Vol 3 New York: McGraw Hill

Rogers, C.R. (1969), *Freedom to learn.* Ohio: Merrill Publishing Co.

Rose, J. S. & Medway, F. J. (1981), 'Measurement of teachers' beliefs in their control over student outcome' *Journal of Educational Research* 74, 185-190

Rotter, J. B. (1954), *Social learning and clinical psychology* Englewood Cliffs, N.J: Prentice Hall

Rotter, J. B. (1955), 'The role of the psychological situation in determining the direction of human behaviour' in M R Jones (ed) *Nebraska Symposium on Motivation* Lincoln. University of Nebraska Press, 245-269

Rotter, J. B. (1960), 'Some implications of a social learning theory for the prediction of goal directed behaviour from testing procedures' *Psychological Review* 67, 301-316

Rotter, J. B., Liverant, S. & Croone, D.P. (1961),'The growth and extinction of expectancies in chance controlled and skilled tasks' *Journal of Psychology* 52, 161-177

Rotter, J. B. (1966),'Generalised expectancies for internal versus external control of reinforcement' *Psychological Monographs* Vol 80, No 1. Whole No. 609

Rotter, J. B., Chance, J. E. & Phares, E.J. (1972),*Applications of a social learning theory of personality* New York: Holt, Rinehart and Winston, Inc.

Rotter, J. B. & Hochreich, D. (1976), *Personality* Glenview, Ill: Scott, Foresman

Scheirer, M. A. & Kraut, R. E. (1979), 'Increasing educational achievement via self-concept change' *Review of Educational Research* 49, 131-150

Schneider, J. M. & Parsons, O. (1970), 'Categories on the locus of control scale and cross-cultural comparisons in Denmark and the United States' *Journal of Cross-Cultural Psychology* Vol 1, No. 2, June 1970, 131-138

Schunk, D. H. (1982), 'Progress self-monitoring effects on children's self-efficacy and achievement' *Journal of Experimental Education* 51, 89-93

Schunk, D. H. (1983), 'Ability versus effort attributional feedback: Differential effects on self-efficacy and achievement' *Journal of Educational Psychology* 75, 848-856

Schunk, D. H. (1985), 'Participation in goal-setting: Effects on self-efficacy and skills of learning-disabled children' *Journal of Special Education* 19, 307-317

Schunk, D. H. (1986), 'Verbalisation and children's self-regulated learning' *Contemporary Educational Psychology* 11, 347-369

Schunk, D. H. (1990), 'Motivation and efficacy in education. Research and new directions' *Journal of Educational Psychology* Vol 82 No 1, 3-6

Seifert, T. L. (1994), 'Characteristics of ego - and task - oriented students: a comparison of two methodologies' *Br. J. educ. Psychol.*, 65, 125-138

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

Silverman, L. H. (1976), 'Psychoanalytic theory: "The reports of my death are greatly exaggerated" *American Psychologist* 31, 621-637

Skinner, B. F. (1953), *Science and Human Behaviour* New York: Macmillan

Skinner, E. A., Wellborn, J.G. & Connell, J.P. (1990), 'What it takes to do well in school and whether I've got it: a process model of perceived control and children's engagement and acheivement in school' *Journal of Educational Psychology*, 1990, Vol. 82, No.1, 22-32

Snyder, M. (1986), *Public Appearances, Private Realities: The psychology of self-monitoring* New York: W H Freeman

Snygg, D. & Combs, A. W. (1949), *Individual behaviour: A new frame of reference for psychology* New York: Harper

Staines, J.W. (1958), 'The self-picture as a factor in the classroom' *Br. J. educ. Psychol.*, 28, 97-111

Strickland, B.R. (1973), 'Delay of gratification and internal locus of control in children' *Journal of Consulting and Clinical Psychology*, 1973, 40, 338

Summerfield, E. M. (1980), 'The relationship between social adjustment and attainment in secondary school pupils during the first two years after transfer (11-13 years)' Unpublished M Phil Thesis, School of Education, University of Nottingham

Sumner, R. & Bradley, K. (1977), *Assessment for transition: a study of new procedures*, Windsor, NFER

Wichern, F. & Nowicki, S. (1976), 'Independence training practices and locus of control orientations in children and adolescents' *Developmental Psychology* 12, 77

Wiseman, S. (1973), 'The educational obstacle race: factors that hinder pupil progress' *Educ. Res.*, Vol. 15, (1972-73), 87-93

Wood, R. E. & Bandura, A. (1989), 'Social cognitive theory of organisational management' *Academy of Management Review* 14, 361-384

Wooster, A.D. & Harris, G. (1972), 'Concepts of self and others in highly mobile service boys' *Educ. Res.*, 14, 195-199

Wooster, A. (1974), 'Acceptance of responsibility for school work by educationally subnormal boys' *British Journal of Mental Subnormality* 20 No 38, Pt 1, 23-27

Youngman, M. B. (1976), *Programmed methods for multivariate data Version 5* University of Nottingham, School of Education

Youngman, M.B. & Lunzer E.A. (1977), *Adjustment to secondary schooling*, University of Nottingham. School of Education

Youngman, M.B. (1978), 'Six reactions to school transfer' *Br.J.educ. Psychol.*,48, 280-289

Youngman, M. B. (1979a), Rediguide 28 *Essential Empirical Concepts* University of Nottingham, School of Education

Youngman, M. B. (1979b), 'Assessing behavioural adjustment to school' *Br.J. educ. Psychol.* 49, 258-264

Youngman, M. B. (1979c), *Analysing social and educational research data* Maidenhead: McGraw-Hill

Youngman, M.B. & Eggleston, F. (1979d), Rediguide 10 *Constructing Tests and Scales* University of Nottingham, School of Education

Youngman, M. B. (1980), 'Some determinants of early secondary school performance' *Br. J. educ. Psychol.* 50, 43-52

Zimbardo, P. G. (1988), *Psychology and Life* New York: Harper Collins

Appendix 1

Basic Statistics and Tests

i) Nowicki and Strickland's Locus of Control Scale (1973) with scoring

ii) Locus of Control Scale - item statistics

iii) Initial Test Booklet as used on the research sample

Appendix 1

i) NOWICKI AND STRICKLAND'S LOCUS OF CONTROL SCALE (1973) WITH SCORING

1 Do you believe that most problems will solve themselves if you **just don't fool with them**? (Yes)
2 Do you believe that you can stop yourself from catching a cold? (No)
3 Are some **kids** just born lucky? (Yes)
4 Most of the time do you feel that getting good **grades** means a great deal to you? (No)
5 Are you often blamed for things that just aren't your fault? (Yes)
6 Do you believe that if somebody studies hard enough he or she can pass any subject? (No)
7 Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway? (Yes)
8 Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do? (Yes)
9 Do you feel that most of the time parents listen to what their children have to say? (No)
10 Do you believe that wishing can make good things happen? (Yes)
11 When you get punished does it usually seem its for no good reason at all? (Yes)
12 Most of the time do you find it hard to change a friend's (mind) opinion? (Yes)
13 Do you think that cheering more than luck helps a team to win? (No)
14 Do you feel that it's nearly impossible to change your parent's mind about anything? (Yes)
15 Do you believe that your parents should allow you to make most of your own decisions? (No)
16 Do you feel that when you do something wrong there's very little you can do to make it right? (Yes)
17 Do you believe that most **kids** are just born good at sports? (Yes)
18 Are most of the other **kids** your age stronger than you are? (Yes)
19 Do you feel that one of the best ways to handle most problems is just not to think about them? (Yes)
20 Do you feel that you have a lot of choice in deciding who your friends are? (No)
21 If you find a four leaf clover do you believe that it might bring you good luck? (Yes)
22 Do you often feel that whether you do your homework has much to do with what kind of **grade** you get? (No)
23 Do you feel that when a **kid** your age decides to **hit** you, there's little you can do to stop him or her? (Yes)
24 Have you ever had a good luck charm? (Yes)
25 Do you believe that whether or not people like you depends on how you act? (No)
26 Will your parents usually help you if you ask them to? (No)
27 Have you felt that when people were mean to you it was usually for no reason at all? (Yes)
28 Most of the time, do you feel that you can change what might happen tomorrow by what you do today/ (No)
29 Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them? (Yes)
30 Do you think that **kids** can get their own way if they just keep trying? (No)
31 Most of the time do you find it useless to try to get your own way at home? (Yes)
32 Do you feel that when good things happen they happen because of hard work? (No)

33 Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters? (Yes)

34 Do you feel that it's easy to get friends to do what you want them to? (No)

35 Do you usually feel that you have little to say about what you get to eat at home? (Yes)

36 Do you feel that when someone doesn't like you there's little you can do about it? (Yes)

37 Do you usually feel that it's almost useless to try in **school** because most other children are just **plain smarter** than you are? (Yes)

38 Are you the kind of person who believes that planning ahead makes things turn out better? (Yes)

39 Most of the time, do you fell that you have little to say about what your family decides to do? (Yes)

40 Do you think it's better to be **smart** than to be lucky? (No)

Scoring

The score is the total number of items answered in an externally controlled direction. One point is given for each of the above responses.

Words in bold are anglicised as follows:-

just don't fool with them	= leave them alone
kids	= people
grades	= marks/results
school	= college
smart/plain smarter	= clever/more clever

Item Statistics

Nowicki and Strickland (1973) present biserial item correlations for males and females at the third, seventh and tenth grades (see Table 1). The majority of item-total relations are moderate but consistent for all ages.

In addition, Table 2 presents the percentage of responses scored in the external direction for these same grade levels for males and females.

Table 3 presents the comparison (of percent of external responses) between eighth grade black subjects and white subjects on CNSIE items. It can be seen that there were significant differences for items 1, 3, 7, 19, 23, 27, 28, 31, 32 and 37; these are the items that black subjedts responded to externally significantly more often than white subjects. In fact, in only one case did black subjects endorse an internal item significantly more often than white subjects (item 12).

Young (1974) has looke at the item variances in deaf adolescents and found that in comparison with hearing teenagers, there was more variance on items 3, 14, 15, 16, 18, 21, 23, 33 and 40.

Internal Consistency

Nowicki and Strickland (1973) reported estimates of internal consistency via the split-half method, corrected by Spearman-Brown r=.63 (grades 3, 4, 5); r=.68 (grades 6, 7, 8); r=.74 (grades 9, 10, 11); r=.71 (grade 12). These reliabilities are satisfactory in light of the fact that these items are not arranged according to difficulty. Since the test is additive and items are not comparable, the split-half reliabilities tend to underestimate the true internal consistency of the scale.

Others have reported information concerning the internal consistency of the CNSIE. Anderson (1976) reported KR^{20}=.68 for third grade students (n=80). Wyner and Blanchard (1976) reported coefficient alphas of between .65 to .70 in elementary school age children (short form of the CNSIE n=166).

Nowicki (1976) has reported the results of a factor analysis of children in elementary (n=333), junior high (n=399), and high school (n=379). The factors are presented in Table 4. Other factor analyses were reported by Rowe (1976) and Piotrowski (1976). In addition, Kendall, Finch and Little reported factor analyses of normal (n=107, mean age 10.7 years), emotionally disturbed (n=157, mean age 11.1 years) and juvenile delinquent (n=185, mean age 15.1 years) groups. While the factor analysis of normal was comparable to those done with previous normal groups, those computed for the emotionally disturbed and juvenile delinquent groups were substantially different (see Table 5).

Test-Retest Reliability

Nowicki and Strickland (1973) reported test-retest reliabilities sampled at three grade levels, six weeks apart; .63 for third graders ($n=99$), .66 for the seventh graders ($n=117$), and .71 for the tenth graders ($n=125$). These figures were approximated in 12th graders (Nowicki and Roundtree, 1971) who showed a test-retest reliability of .76 over 5 weeks. Stone (1976) reported an $r=.59$ ($n=77$) for the short form of the CNSIE for grades 3-6 (children 10-11 years of age) over 12 weeks.

Thomas (1973) reported significant test-retest reliability for the CNSEI based on 457 institutionalised children (age from 7-14) over a one year period. Likewise, Edwards (1972) found test-retest reliability of .63 over a nine month time period for children in grades 3-6 ($n=202$). Anderson (1976) reported a test-retest reliability coefficient of .67 over a 6 week period for grade 3 and 4 subjects ($n=80$).

Discriminative Validity

A prime goal of those who construct locus of control scales is to keep social desirability at a minimum. Nowicki and Strickland (1973) reported nonsignificant correlations between locus of control scores and social desirability for subjects in grades three to twelve. Likewise, nonsignificant correlations were found by Wyner and Blanchard (1976) with 166 children grades 3-6.

Intelligence is another variable that should be unrelated to LOC scores. Nowicki and Strickland (1973) and Nowicki and Roundtree (1971) report nonsignificant correlations between CNSIE scores and IQ scores.

It further appears that gender of the subject does not lead to different locus of control scores. The mean score of males and females is essentially the same when compared to equivalent age levels (see Tables 6 to 8 that present means and standard deviations).

It appears that the variables of gender, social desirability and intelligence may have minimal confounding effects on Children's Nowicki and Strickland locus of control scores. Further data is presented by Nowicki and Duke (1983).

Construct Validity (Further evidence)

In terms of convergent validity support for the CNSIE, Nowicki and Strickland (1973) reported data showing moderate relations between the CNSIE and other measures of locus of control. For example, with the Intellectual Achievement Responsibility scale (Crandall, Katkovsky & Crandall, 1965) there were significant correlations with the T+ but not the T- scores, with Black third ($n=182$) and seventh graders ($n=171$); (third grade, $r=.31$, $p<.01$; seventh grade $r=.51$, $p<.01$). In addition, the correlation with the Bialer-Cromwell scale was also found to be significant ($r=.41$, $p<.05$), in a sample of white children ($n=29$) aged nine through eleven.

If a measure of a construt such as locus of control has been found to be related to other variables in a theoretically consistent fashion then the measure gains some

degree of construct validation. A new measure may gain additional construct validity by showing empirical relations similar to those found using other measures if these other measures reflect implied theoretical relations.

The data to follow represents a sampling of studies attesting to additional evidence of construct validity for the CNSEI. The data will be divided up into the major areas of demographic, achievement competence, constitutional and personality characteristics.

Social Class: Nowicki and Strickland (1973) reported a significant relation between CNSEI scores and social class with internality being moderately but significantly related to higher social class. This relation was also found by several investigators (eg Ludwigsen & Rollins, 1970).

Race: In terms of race, it has been found that blacks score more externally than whites (Marcus, 1975; Nowicki, 1976; Fryre & Carlson, 1976). It can be seen in Tables 6, 7 and 8 that the expected movement of scores toward a more internal orientation with age is not followed by the black subjects. In fact, in most cases blacks become more external with age. It is difficult to separate the impact of lower social class on these race findings. Indians have also been found to score more externally than whites (Tyler & Holsinger, 1975; Hawk & Parsons, 1976).

Gender: It is interesting that males and females do not differ in any consistent fashion in mean response to the CNSIE regardless of age or race (see Tables 6, 7 and 8).

Achievement: There are a number of studies that support the theoretical assumption that internality is associated with academic achievement as well as to those behaviours associated with academic achievement, such as persistence.

Nowicki and Strickland (1973) reported significant correlations between internality and higher academic achievement for children from grades three through 12 (see Table 9 and also Wyner & Blanchard, 1976). Mount (1975)in a study of helplessness and locus of control orientation reported correlations ranging from -.35 to -.47 depending on the types academic achievement measure ($n=50$, $p=<.01$). The predicted relationship between internality and greater academic achievement holds not only for American children but also for Danish children (Afedo & Fonsbol, 1975), Hungarian children (Rupp & Nowicki, 1976) and Mexican Americans (Cervantes, 1976a, b).

In terms of persistence, as would be expected, internals persisted longer on tasks than did externals (Gordon, 1976; Short, 1976; Bloodworth, 1975; Weiner, 1975; and Walters, 1970). Other researchers have reported that internality is related to competence behaviours (see Strickland, 1975).

Constitutional: In addition to demographic and achievement data, another source of data useful in assessing the validity of the CNSIE comes from the area of constitutional differences. For instance, it makes theoretical sense to assume that those with handicaps of some sort will be more external than those individuals not so

affected. In fact, this is the case in the following areas: mental retardation (Zaman & Gordon, 1976); cerebral palsy (Eggland, 1973); dyslexia (Hill, 1971); physically handicaps (Sylvan, Branes & Crim, 1974); chronic illness (Tavormina, Kastner, Slater & Watt, 1975); deafness (Young, 1974); emotional disturbances (Kendall, Finch, Little & Ollendick, 1976; Hendrix, 1975; Elenewski, 1974; Fenhagen, 1973; Stein, 1974; Ludwigsen & Haskins, 1976).

There is also data to show that psychological maladjustment is related to externality (McClanahan, 1975). The most massive confirmation of this fact were results from a year long study of all institutionalised children in the state of Georgia (Thomas, 1974). A somewhat shorteneed form of the CNSIE was given to 2000 institutionalised and 1500 non-institutionalised control subjects. Thomas found among other things that those who were institutionalised were more external than their yoked controls.

Stone (1976) found that externals reported themselves to be more vulnerable to sickness and accidents, and Brantley (1976) reported that cleft-palate children were more external than normal children. Lastly, Loney (1976) showed that hyperkinetic/ aggressive boys were more external than comparably aged youngsters.

Personality: Locus of control has been related to other personality variables in a theoretically consistent fashion. For example, internality has been related to higher self-esteem (Gordon & Wilbur, 1973; Gordon, 1976; Roberts, 1971), higher self-concept (Cervantes, 1976; Morris, 1976; Gordon, 1976), higher moral development (Grotsky, 1973), greater popularity (Nowicki, 1973; Nowicki & Barnes, 1973), more honesty (Grotsky, 1973), leadership (Hawk & Parsons, 1975), shorter delay of gratification (Strickland, 1973), lower anxiety (Kendall, Keardorff, Finch & Graham, 1976), and less interpersonal distance (Duke & Nowicki, 1974; Morris, 1975; Ude, 1975).

Lastly, it appears that parent behaviours such as consistency, warmth and nurturance were associated with internality (Nowicki & Segal, 1972; Wichern & Nowicki, 1975; Wichern, Gordon & Nowicki, 1976; Gordon, 1976).

TABLE 1
Nowicki-Strickland Scale
and Item-Total Correlations with that Item missing for Subjects in the
Third, Seventh and Eleventh Grades of the Sample

Item	Male			Female		
	3	7	11	3	7	11
*+(Y) 1. Do you believe that most problems will solve themselves if you just don't fool with them?	.153	.219	.107	.323	.165	.140
(N) 2. Do you believe that you can stop yourself from catching a cold?	.140	.279	.065	.398	.176	.154
*+(Y) 3. Are some kids just born lucky?	.281	.497	.224	.431	.244	.501
(N) 4. Most of the time do you feel that getting good grades means a great deal to you?	.146	.101	.244	.079	.171	.270
+(Y) 5. Are you often blamed for things that just aren't your fault?	.204	.167	.255	.007	.409	.617
(N) 6. Do you believe that if somebody studies hard enough he or she can pass any subject?	.385	.026	.520	.263	.075	.205
*+(Y) 7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?	.165	.390	.409	.343	.328	.402
(Y) 8. Do you feel that if things start out well in the morning that it's going to be a good day no what you do?	.150	.077	.307	.215	.040	.095
*+(N) 9. Do you feel that most of the time parents listen to what their children have to say?	.222	.330	.240	.484	.056	.192
* (Y)10. Do you believe that wishing can make good things happen?	.126	.059	.083	.236	.285	.032

TABLE 1 (con't)

Item	Male			Female		
	3	7	11	3	7	11
+(Y)11. When you get punished does it usually seem its for no good reason at all?	.366	.324	.456	.244	.263	.225
+(Y)12. Most of the time do you find it hard to change a friend's opinion (mind)?	.113	.229	.208	.039	.272	.396
(N)13. Do you think that cheering more than luck helps a team to win?	.348	.362	.298	.017	.397	.352
*+(Y)14. Do you feel that it's nearly impossible to change your parent's mind about anything?	.456	.161	.417	.175	.396	.436
(N)15. Do you believe that your parents should allow you to make most of your own decisions?	.004	.234	.298	.172	.329	-.012
*+(Y)16. Do you feel that when you do something wrong there's very little you can do to make it right?	.078	.490	.306	.415	.568	.243
*+(Y)17. Do you believe that most kids are just born good at sports?	.284	.322	.136	.347	.130	.170
* (Y)18. Are most of the other kids your age stronger then you are?	.277	.337	.381	.175	.480	.151
*+(Y)19. Do you feel that one of the best ways to handle most problems is just not to think about them?	.368	.262	.506	.329	.367	.239
(N)20. Do you feel that you have a lot of choice in deciding who your friends are?	.086	.256	.143	.356	.385	.192
(Y)21. If you find a four leaf clover do you believe that it might bring you good luck?	.139	.179	.300	.186	.285	.347

TABLE 1 (con't)

Item	Male			Female		
	3	7	11	3	7	11
(N)22. Do you often feel that whether you do your homework has much to do with what kind of grades you get	.149	.003	.034	.065	.009	.156
*+(Y)23. Do you feel that when a kid your age decides to hit you there's little you can do to stop him or her?	.273	.049	.150	.177	.294	.464
(Y)24. Have you ever had a good luck charm?	.086	.163	.047	.075	.077	.037
(N)25. Do you believe that whether or not people like you depends on how you act?	.028	.016	.150	.148	.113	.252
(N)26. Will your parents usually help if you ask them to?	.230	.140	.366	.218	.000	.166
*+(Y)27. Have you felt that when people were mean to you it was usually for no reason at all?	.314	.144	.306	.500	.178	.165
+(N)28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?	.166	.152	.100	.283	.102	.415
*+(Y)29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them?	.367	.322	.455	.443	.608	.564
(N)30. Do you think that kids can get their own way if they just keep trying?	.154	.208	.129	.203	.005	.129
*+(Y)31. Most of the time do you find it useless to try to get your own way at home?	.164	.446	.530	.211	.342	.448

TABLE 1 (con't)

Item	Male 3	Male 7	Male 11	Female 3	Female 7	Female 11
(N)32. Do you feel that when good things happen they happen because of hard work?	.423	.318	.281	.290	.263	.245
*+(Y)33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?	.052	.336	.559	.310	.517	.226
(N)34. Do you feel that it's easy to get friends to do what you want them to?	.101	.099	.181	.276	.462	.600
*+(Y)35. Do you usually feel that you have little to say about what you get to eat at home?	.143	.353	.344	.289	.384	.275
*+(Y)36. Do you feel that when someone doesn't like you there's little you can do about it?	.122	.295	.416	.132	.473	.360
*+(Y)37. Do you usually feel that it's almost useless to try in school because most other children are just plain smarter than you are?	.456	.205	.625	.341	.308	.157
*+(N)38. Are you the kind of person who believes that planning ahead makes things turn out better?	.158	.343	.096	.531	.264	.458
*+(Y)39. Most of the time, do you feel that you have little to say about what your family decides to do?	.203	.269	.405	.343	.648	.365
(N)40. Do you think it's better to be smart than to be lucky?	.039	.273	.349	.435	.333	.316

* Items selected for abbreviated scale for grades 1-6.
\+ Items selected for abbreviated scale for grades 7-12.

TABLE 2

Percentage of external responses of white males and females at the third, seventh and tenth grades

Item	3rd Grade		7th Grade		10th Grade	
	Males	Females	Males	Females	Males	Females
(1)	10	27	25	18	22	15
(2)	52	52	50	53	51	69
(3)	67	65	32	41	45	42
(4)	12	6	2	3	14	9
(5)	67	68	81	64	66	75
(6)	30	25	16	18	33	32
(7)	18	20	20	13	19	22
(8)	29	39	36	24	26	26
(9)	27	36	38	35	52	51
(10)	30	38	29	26	17	22
(11)	34	18	37	32	35	38
(12)	85	29	73	78	72	75
(13)	83	68	28	36	42	19
(14)	54	59	38	40	47	39
(15)	40	47	42	35	26	10
(16)	60	59	46	35	31	25
(17)	29	38	25	21	47	42
(18)	38	59	40	26	40	29
(19)	52	52	12	17	21	15
(20)	25	27	27	12	22	26
(21)	34	29	37	37	19	42
(22)	9	2	8	18	31	23
(23)	66	61	29	20	19	25
(24)	47	36	71	71	50	62
(25)	36	20	6	12	14	7
(26)	11	11	46	1	14	9
(27)	47	43	34	49	42	44
(28)	28	73	38	41	31	32
(29)	74	81	23	37	31	44
(30)	42	66	73	68	35	48
(31)	53	50	63	55	36	43
(32)	46	47	35	32	22	28
(33)	49	45	31	21	21	31
(34)	80	70	58	69	58	60
(35)	56	36	46	37	15	19
(36)	47	47	37	23	26	25
(37)	29	31	12	9	19	7
(38)	64	57	36	28	26	28
(39)	54	64	46	28	33	37
(40)	15	32	13	20	19	9

TABLE 3

Comparison of black (n = 207) and white (n = 189) 8th grade subjects in percent of responses scored in external direction for each item

Item	Black Subjects	White Subjects
(1)	39	8
(2)	50	47
(3)	68	47
(4)	7	14
(5)	74	79
(6)	13	17
(7)	31	3
(8)	33	17
(9)	27	26
(10)	36	35
(11)	38	23
(12)	64	85
(13)	44	35
(14)	47	29
(15)	44	52
(16)	53	38
(17)	57	38
(18)	54	38
(19)	40	8
(20)	26	14
(21)	44	26
(22)	20	11
(23)	49	29
(24)	49	61
(25)	15	6
(26)	40	42
(27)	44	23
(28)	56	17
(29)	48	32
(30)	60	70
(31)	63	35
(32)	40	20
(33)	43	26
(34)	75	73
(35)	36	32
(36)	48	32
(37)	24	3
(38)	22	20
(39)	43	32
(40)	15	20

TABLE 4

Factor Analysis of Children's Locus of Control Scale Scores

Factor I

Females			Males		
Elem(n=158)	JHS(n=201)	HS(n=191)	Elem(n=173)	JHS(n=198)	HS(n=188)
(7) .45	(16) .42	(16) .58	(16) .64	(7) .46	(16) .42
(16) .46	(29) .46	(29) .48	(27) .47	(16) .42	(29) .41
(29) .51	(31) .43	(33) .51	(29) .48	(29) .50	(31) .42
(33) .44	(33) .42	(36) .52	(36) .45	(31) .42	(33) .57
(37) .45	(36) .45	(37) .41	(37) .42	(33) .45	(37) .51
(39) .44	(37) .42	(39) .51	(39) .44	(36) .54	(39) .48
	(39) .56			(39) .64	

Factor II

(1) .43	(1)-.44	(3) .52	(1) .43	(15)-.64	(25) .52
(6) .46	(8)-.60	(8) .61	(12)-.54	(21)-.50	(30)-.41
(17)-.43	(17)-.43	(17) .53	(22) .61	(25) .54	(40) .42
(25)-.45	(22) .50	(30)-.47	(25) .53	(26) .49	
(26) .59	(25) .52		(26) .50	(30)-.43	
(40) .42			(40) .44		

Factor III

(1)-.51	(12)-.54	(1)-.44	(2) .48	(10) .54	(1)-.23
(13) .48	(13) .47	(11)-.57	(15) .52	(11) .53	(10) .59
(15) .42	(21)-.42	(15) .48	(21) .46	(12)-.53	(22) .48
(34) .44	(34)-.41	(30)-.50	(35)-.53	(15)-.42	(24)-.24
(38) .54		(37)-.48		(21) .44	
				(34)-.44	

TABLE 5

Factor analyses of normals (n=107), emotionally disturbed (n-151), and juvenile delinquents (n=185).

Normals			Emotionally Disturbed			Juvenile Delinquents		
Factor	Item	Loading	Factor	Item	Loading	Factor	Item	Loading
(1)	12	.68	(1)	29	.65	(1)	21	.49
	5	.65		36	.56		10	.46
	3	.48		23	.46		8	.39
	14	.40		14	.40		17	.37
				31	.36			
(2)	40	.93				(2)	39	.86
	4	.36	(2)	11	.63		35	.45
				5	.54		31	.35
(3)	32	.73		27	.52			
	6	.55		7	.36	(3)	36	.74
							33	.62
(4)	29	.96	(3)	21	.61			
	13	-.43		10	.58	(4)	9	.58
							26	.46
(5)	33	.66	(4)	1	.65		15	-.41
	35	-.47		16	.54			
				19	.52	(5)	11	.67
(6)	2	.86		9	.40		14	.37
	11	.55						
			(5)	11	.66	(6)	19	.59
(7)	24	.67		3	.60		18	.59
	38	.47					1	.58
							20	-.50

TABLE 6

Mean scores of white elementary and high school children on the Children's Nowicki-Strickland Internal-External Control Scale

Author (s)	X Male	sd	# Ss	X Female	sd	# Ss	X Total	sd	Grade of Ss	Age of Ss
Eggland (1973)	14.90 11.70	3.70 3.50	22 19	15.30 12.50	3.60 4.60	16 25	15.00 12.10	3.60 4.10	1 4	7 10
Nowicki & Strickland (1973)	17.91 18.44 18.32 13.73 13.15 14.73 13.81 13.05 12.48 11.38	4.62 3.58 4.38 5.16 4.87 4.35 4.06 5.34 4.81 4.74	44 59 40 45 65 75 43 68 37 39	17.38 18.80 17.00 13.31 13.94 12.29 12.25 12.98 12.01 12.37	3.06 3.63 4.03 4.58 4.23 3.58 3.75 5.31 5.15 5.05	55 45 41 43 52 34 44 57 53 48			3 4 5 6 7 8 9 10 11 12	
Gordon, B. (1975)	16.57	4.19	60	16.13	4.32	53	18.39		5	10.2
Nowicki & Walker (1973)	18.67	4.67	40	18.04	5.01	38			3	
Strickland (1972)							(n=30) 17.63 (n=21)	3.92	3	
Duke & Lancaster (1976)							13.28		4	10
Tyler & Holsinger (1975)	17.03 14.42 13.27 14.11		35 45 52 44	16.60 13.97 11.97 11.85		35 34 34 27			4 7 9 11	9.6 13.1 15.0 17.0
Waters (1971)	17.68	4.61	40	18.03	4.11	40			5	

TABLE 6 (con't)

Author (s)	X Male	sd	# Ss	X Female	sd	# Ss	X Total	sd	Grade of Ss	Age of Ss
Matheny & Edwards (1974)							(n=72) 15.99	3.97	6	
							(n=88)			
Ludwigsen (1971)	13.15	4.90	40	13.80	5.95	40	16.41	3.42	6	
Stone (1974)							(n=200)		6	
Wichern (1975)	11.58	3.55	40	12.98	5.04	40	14.11	4.56	7	
Matheny & Edwards (1974)							(n=96)		7	13.0
Kueger (1973)	13.87	3.11	96	14.11	2.67	96	12.77	4.19	10	
							13.74	4.01	10	
Nowicki & Roundtree (1971)	11.68	4.83	49	12.01	4.88	38			11	
Nowicki & Segal (1974)	13.20	5.87	58	11.65	4.31	54			12	
Egan (1975)	16.83		171	16.73		192	(n=363) 16.79		12	
									3	

TABLE 7

Mean scores of ethnic and racial groups of children at the elementary and high school level on the Children's Nowicki-Strickland Internal-External Locus of Control Scale

Author (s)	X Male	sd	# Ss	X Female	sd	# Ss	X Total	sd	Grade of Ss	Age of Ss
Nowicki & Barnes (1973) Black Ss	16.48	3.48	261							14.6
Owens (1973) Black Ss	18.48		45	19.11		50			5	
Nowicki & Barnes (1974) Black Ss	22.41		55	24.26		54			7	
Nowicki & Walker (1973) Black Ss	23.21	5.68	14	22.68	6.01	14				5 & 6
Roberts (1971) Black Ss							(n=206) 21.23 (n=191) 21.81	4.82 5.59	3 7	
Tyler & Holsinger (1975) American Indians	19.11		57	18.80		45			7	
	15.14		64	16.81		62			4	10
	14.93		56	14.54		50			7	13
	12.07		30	12.91		34			9	15
									11	17
Werner (1975) Japanese	12.90	5.10	68	12.60	3.70	69	12.80	4.50		17.5
Mixture	13.70	4.20	27	14.20	4.80	25	13.90	4.40		17.5
Filipino	14.60	4.90	40	13.20	5.20	35	13.90	5.10		17.5
Hawaians	14.10	3.80	33	13.80	5.00	34	14.00	4.50		17.5

TABLE 7 (con't)

Author (s)	X Male	sd	# Ss	X Female	sd	# Ss	X Total	sd	Grade of Ss	Age of Ss
Portugese	17.50	4.80	15	12.70	4.20	14	14.40	4.90		17.5
Blum (1973)	(all Ss tested in Israel)									
Arab	16.83	3.24	20	16.41	3.25	22				9.2
Jew	15.09	4.18	22	14.11	3.27	32				9.3
Arab	9.96	3.80	76	12.81	4.81	38				15.7
Jew	9.13	4.35	32	8.95	4.22	58				15.8

TABLE 8

Mean scores of physically or emotionally disordered children the Children's Nowicki-Strickland Internal-External Locus of Control Scale

Author (s)	X Male	sd	# Ss	X Female	sd	# Ss	X Total	sd	# of Ss	Age of Ss
Elenewski (1974)										
White	15.13	3.56	15	16.13	5.32	31	16.06	3.89	46	14.8
Black (runaways)	20.67	1.16	3	16.79	4.89	14	16.33	5.14	17	15.1
Kendall/Deardorff Finch & Graham (1975) Emotional. disturbed	16.90		10							10
McRae (1975)										
High risk, Aggr.	19.10		12							
Eggland (1973)	21.20	3.50	4	20.80	3.10	5	21.20	3.50	9	7
Cerebal Palsy	17.80	6.91	9	17.50	.50	2	17.80	4.90	11	10
Stein (1974)										
Aggr. resident.	19.10	4.61	20							
Non-aggr. resid.	16.10	5.01	20							
White	12.80	3.39								
Spanish	17.08	3.65								
Black	19.28	5.34								
Duke & Lancaster (1976) Children living with one parent							15.77	3.89	30	10

TABLE 8 (con't)

Author (s)	X Male	sd	# Ss	X Female	sd	# Ss	X Total	sd	# of Ss	Age of Ss
Nowicki & Barnes (1973) Title I handicapped children: Black	21.52	5.62	67	22.01	5.13	39				
Fenhagen & Duke (1975) Deling.							15.16	3.98	18	14
Burgen (1975) Emotionally disturbed, institutionalized							19.06			9.7

TABLE 9

Correlations between Nowicki-Strickland Locus of Control and Achievement Test Scores for Subjects in Elementary and Secondary Schools

Grade	Male	Number	Female	Number
3	-.284*	(34)	-.178	(27)
4	-.118	(50)	-.195	(31)
5	-.398***	(42)	-.254*	(45)
6	-.272*	(33)	-.112	(32)
7	-.335**	(35)	-.306*	(34)
10	-.442***	(49)	-.034	(38)
12	-.451***	(38)	-.004	(48)

* = $p < .10$
** = $p < .05$
*** = $p < .01$

STUDENT SELF-PERCEPTION SCALE

(Nottingham University School of Education)

Dear Student,

This booklet contains a series of questions relating to how you see yourself, particularly in the college situation. Your answers will contribute to an important piece of research which will help educationalists create more effective and relevant learning programmes for 16-19 year old students.

All information will be treated in total confidence, and your identity will only be known to the researcher. As the analysis proceeds, results will be fed back to the college and individual results can be discussed with you if you wish.

There are three main sections to be completed below.

Please make sure that you have filled in all the relevant biographical details and appropriate boxes.

Thank you for your co-operation.

M. Summerfield

NAME ..... TUTOR GROUP .....

DATE OF BIRTH .....

COURSE .....(Please tick)

3 A Levels .....

2 A Levels + GCSE's .....

5 GCSE's .....

4 GCSE's + CPVE .....

SECTION ONE

STUDENT SELF-PERCEPTION SCALE

Below are some statements used by students to describe themselves in relation to college life, friends, family and work. I am interested in your immediate response to each separate item. Please work quickly through the statements and tick one box on each line to show if the statement is **Very True, Often True, Sometimes True** or **Not True** for you.

Remember – there are no right or wrong answers.

	Very True	Often True	Sometimes True	Not True
1. Some people are just born lucky				
2. I often feel that I do not have enough control over my life				
3. I would like the chance to make important decisions in my future job				
4. I came to college to be with my friends				
5. If I don't have good teachers I will not do well in college				
6. My parents expect too much of me				
7. I came to college to have a good social life				
8. I work hard for success rather than dreaming about it				
9. The course I am taking this year will help me to get a good job.....				
10. Staff at this college should put on more activities for the students, to make life more interesting				
11. I find it difficult to get on with my work because of the attitudes of fellow students				
12. If I have something to say, I usually say it				
13. Most of my teachers think that I am good at college work.....				

STUDENT SELF-PERCEPTION SCALE

(Nottingham University School of Education)

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This booklet contains a series of questions relating to how you see yourself, particularly in the college situation. Your answers will contribute to an important piece of research which will help educationalists create more effective and relevant learning programmes for 16-19 year old students.

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M. Summerfield

NAME ..... TUTOR GROUP .....

DATE OF BIRTH .....

COURSE .....(Please tick) 3 A Levels .....

2 A Levels + GCSE's .....

5 GCSE's .....

4 GCSE's + CPVE .....

SECTION ONE

STUDENT SELF-PERCEPTION SCALE

Below are some statements used by students to describe themselves in relation to college life, friends, family and work. I am interested in your immediate response to each separate item. Please work quickly through the statements and tick one box on each line to show if the statement is Very True, Often True, Sometimes True or Not True for you.

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2. I often feel that I do not have enough control over my life				
3. I would like the chance to make important decisions in my future job				
4. I came to college to be with my friends				
5. If I don't have good teachers I will not do well in college.....				
6. My parents expect too much of me				
7. I came to college to have a good social life				
8. I work hard for success rather than dreaming about it				
9. The course I am taking this year will help me to get a good job.....				
10. Staff at this college should put on more activities for the students, to make life more interesting				
11. I find it difficult to get on with my work because of the attitudes of fellow students				
12. If I have something to say, I usually say it				
13. Most of my teachers think that I am good at college work.....				

	Very True	Often True	Sometimes True	Not True
14. I knew that I would soon make friends at college if I gave it time...				
15. I like my subjects because they cause me to ask more questions about why things happen				
16. My daydreams are often about things that can never come true				
17. I came to college mainly to please my family				
18. I was afraid that no-one would speak to me when I came to college, and that I would be alone and friendless				
19. Staff at this college don't work us hard enough – they waste our valuable time with unnecessary waffle				
20. I enjoy making decisions				
21. My friends always seem to find college work easier than I do				
22. I get confused if I have too many things to do at once				
23. I am easily distracted from my studies by my friends				
24. I don't really know what I have to do to get a decent job				
25. If someone doesn't like me I find it hard to work out why				
26. I enjoy learning new subjects at a higher standard				
27. I usually feel that I am one of the best in my group				
28. I never seem to do as well as other members of my family				
29. I often think I would rather be unemployed than at college				
30. I find it difficult to organise my own work – at school they usually did it for me				
31. I came to college to gain time before deciding what to do				
32. I usually take the initiative in making new friends				
33. My teachers never seem to help me enough				
34. The more problems I encounter, the more depressed I become				
35. I find the teachers at this college patronising				
36. Men stand more chance of having a successful career than women				
37. I need my friends more than they seem to need me				
38. I never seem to get my own way				
39. Teachers make me nervous				
40. When I arrived at college I was excited to think of all the new people I would meet and the new things I would learn				
41. I have to persist with a problem even if people tell me to stop				
42. Problems never defeat me – there is always a way round them				
43. I am always afraid that other people will be disappointed in me				
44. People on my course are the type who will do really well in later life				
45. However hard I try something always stops me from doing what I want to do				
46. It is very important for me to "get on" in the world				
47. I know that I am going to fail my exams				
48. If people don't seem to like me I can accept the fact calmly				
49. I am a very outgoing person and like to make new friends				
50. I can cope with complicated tasks and ideas				
51. I find it hard to make decisions which involve other people				
52. Staff here humiliate you if you don't understand the work				
53. I would be good at managing other people				
54. I feel that because of my sex/ethnic group/disability/age I will not be as successful as I could be				
55. My spirits generally stay high no matter how many troubles I meet.				
56. I don't have much chance of doing what I want if adults don't want me to do it				
57. I know I can work under pressure				
58. Having to cope with all this work is making me feel ill				
59. I think I will be lucky if anyone ever gives me a job				
60. When something goes wrong for me I usually cannot work out why it happened				

	Very True	Often True	Sometimes True	Not True
61. I felt messed about when I came to college – I didn't know if I was coming or going				
62. Worrying about an exam or work that is overdue often prevents me from sleeping				
63. I don't know what my success at college depends on				
64. There is no way of knowing what determines whether or not you will pass your exams				

Please check that you have ticked one box on each line.

Now please proceed to Section Two.

SECTION TWO

PREDICTION OF RESULTS

In this section I would like you to indicate what you think your results will be when you take your examinations at the end of your course.

Please enter the names of the subjects you are taking in the appropriate box below, and in the box alongside indicate the grade you expect to get.

Use one or more of the sections, depending on the combination of subjects you are doing.
For RSA and CPVE, just tick the box and then estimate your result.

A LEVEL

SUBJECT (Please insert)	A	B	C	D	E	N	U

(Tick one box on each line)

GCSE

SUBJECT (Please insert)	A	B	C	D	E	F	G	U

(Tick one box on each line)

RSA TYPEWRITING STAGE ONE
(Please tick if taking this subject) .....

EXPECTED GRADE

DISTINCTION	
CREDIT	
PASS	
FAIL	

CPVE CERTIFICATE OF PRE-VOCATIONAL EDUCATION
(Please tick if taking this course) .....

EXPECTED RESULT

PASS	
FAIL	

Finally, please indicate how confident you are of your own predictions of your results by ticking one box below.

Very Confident ☐ Fairly Confident ☐ Not very Confident ☐ Not at all Confident ☐

Now please proceed to Section Three.

SECTION THREE

Section three consists of an American scale used on 16-18 year olds, with which the British Student Self-Perception Scale can be compared.

Please work quickly through the questions, putting a circle around the appropriate response – in this case YES or NO. Please check that you have encircled a YES or NO for each question.

LOCUS OF CONTROL SCALE

(Nowicki and Strickland – Emory University, Atlanta, Georgia)

1.	Do you believe that most problems will solve themselves if you leave them alone?	YES	NO
2.	Do you believe that you can stop yourself from catching a cold?	YES	NO
3.	Are some people just born lucky?	YES	NO
4.	Most of the time do you feel that getting good marks means a great deal to you?	YES	NO
5.	Are you often blamed for things that just aren't your fault?	YES	NO
6.	Do you believe that if somebody studies hard enough he or she can pass any subject?	YES	NO
7.	Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?	YES	NO
8.	Do you feel that if things start out well in the morning its going to be a good day no matter what you do?	YES	NO
9.	Do you feel that most of the time parents listen to what their children have to say?	YES	NO
10.	Do you believe that wishing can make good things happen?	YES	NO
11.	When you get punished does it usually seem that it is for no good reason at all?	YES	NO
12.	Most of the time do you find it hard to change a friend's opinion/mind?	YES	NO
13.	Do you think that cheering more than luck helps a team to win?	YES	NO
14.	Do you feel that it is nearly impossible to change your parents mind about anything?	YES	NO
15.	Do you believe that your parents should allow you to make most of your own decisions?	YES	NO
16.	Do you feel that when you do something wrong there is very little you can do to make it right?	YES	NO
17.	Do you believe that most people are just born good at sports?	YES	NO
18.	Are most of the other people of your age stronger than you are?	YES	NO
19.	Do you feel that one of the best ways to handle most problems is to just not think about them?	YES	NO
20.	Do you feel that you have a lot of choice in deciding who your friends are?	YES	NO
21.	If you find a four leaf clover do you believe that it might bring you good luck?	YES	NO
22.	Do you often feel that whether you do your homework has much to do with what kind of results you get?	YES	NO
23.	Do you feel that when a person of your age decides to attack you, there's little you can do to stop him or her?	YES	NO
24.	Have you ever had a good luck charm?	YES	NO
25.	Do you believe that whether or not people like you depends on how you act?	YES	NO
26.	Will your parents usually help you if you ask them to?	YES	NO
27.	Have you felt that when people were mean to you it was usually for no reason at all?	YES	NO
28.	Most of the time, do you feel that you can change what might happen tomorrow by what you do today?	YES	NO
29.	Do you believe that when bad things are going to happen they are just going to happen no matter what you try to do to stop them?	YES	NO
30.	Do you think that people can get their own way if they just keep trying?	YES	NO
31.	Most of the time do you find it useless to try to get your own way at home?	YES	NO
32.	Do you feel that when good things happen they happen because of hard work?	YES	NO
33.	Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?	YES	NO
34.	Do you feel that it is easy to get friends to do what you want them to?	YES	NO
35.	Do you usually feel that you have little to say about what you get to eat at home?	YES	NO
36.	Do you feel that when someone doesn't like you there's little you can do about it?	YES	NO
37.	Do you usually feel that it is almost useless to try in college because most other students are just more clever than you are?	YES	NO
38.	Are you the kind of person that believes that planning ahead makes things turn out better?	YES	NO
39.	Most of the time do you feel that you have little to say about what your family decides to do?	YES	NO
40.	Do you think it is better to be clever than to be lucky?	YES	NO

Have you filled everything in? Please check back to make sure.

Thank you very much.

Appendix 2

Student Self-Perception Scale

I Factor pattern matrices for SSPS
- i) Pilot version
- ii) 4 factor solution
- iii) 5 factor solution

II SSPS Scale Allocation

III SSPS with scoring

IV Product moment correlations of SSPS with the attainment and predictive measures

1 i) **SSPS - Factor pattern matrix (conventionally scaled)**
Pilot version (N=152)
Salients marked with an asterisk

	1	2	3	4
1	-0.13	0.34*	0.06	0.02
2	0.13	0.13	0.29*	0.10
3	0.08	-0.01	0.36*	-0.26*
4	0.44*	-0.05	0.18	0.01
5	0.00	-0.16	0.56*	0.05
6	-0.15	0.22	0.39*	0.06
7	-0.20	0.30*	0.28*	0.08
8	-0.06	0.25	0.09	-0.18
9	0.19	0.12	-0.67*	0.18
10	0.05	0.02	0.09	-0.05
11	0.32*	0.23	0.17	-0.29*
12	0.25	-0.18	-0.07	0.06
13	0.34*	0.18	0.06	-0.34*
14	-0.09	0.51*	-0.11	-0.06
15	-0.12	0.01	0.26*	0.29*
16	0.39*	-0.04	-0.20	0.15
17	0.34*	0.26	-0.18	0.05
18	0.10	0.05	0.10	-0.23
19	0.38*	-0.18	0.22*	0.14
20	0.35*	0.11	0.09	-0.28*
21	0.13	0.15	0.27*	0.02
22	-0.06	0.36*	-0.01	0.18
23	0.33*	-0.09	-0.08	-0.20
24	0.37*	-0.11	0.10	0.17
25	0.22	-0.42*	0.04	0.01
26	0.63*	-0.15	0.05	-0.02
27	0.11	0.22	0.04	0.51*
28	0.23	0.08	0.20	-0.34*
29	0.22	-0.07	0.14	-0.15
30	0.25	0.21	-0.07	-0.39*
31	0.26*	-0.04	0.30*	0.36*
32	0.07	0.16	0.46*	-0.15
33	0.15	0.51*	0.00	-0.06
34	0.01	0.17	-0.06	0.32*
35	0.46*	0.21	0.07	-0.27*
36	0.37*	0.07	-0.25*	0.22*
37	0.22	0.05	0.35*	0.19
38	0.11	0.49*	-0.13	-0.07
39	0.20	-0/04	0.16	0.02
40	0.10	0.05	0.32*	-0.05
41	0.13	0.25	0.11	-0.47*
42	0.18	0.14	-0.01	-0.03
43	0.13	0.50*	-0.04	-0,12
44	0.48*	-0.13	-0.12	-0.06
45	-0.12	0.43*	-0.04	0.08
46	0.23*	0.10	0.42*	0.12
47	-0.14	0.72*	-0.13	-0.13
48	-0.16	0.39*	0.05	0.09
49	0.25	-0.14	0.11	0.28*
50	0.10	0.23	0.17	0.10

	1	2	3	4
51	0.03	0.15	0.12	0.29*
52	0.24*	0.14	-0.26*	0.50*
53	0.24	0.18	-0.18	-0.22
54	0.49*	0.25*	-0.24*	-0.06
55	0.31*	-0.08	-0.04	-0.19
56	0.55*	0.11	0.06	0.00
57	0.10	-0.01	0.13	0.44*
58	0.11	0.10	-0.18	-0.50
59	0.21	0.08	0.07	-0.18
60	0.25*	0.07	0.11	-0.23*
61	-0.09	0.39*	0.06	0.23*
62	-0.01	-0.13	-0.18	0.51
63	0.35*	0.03	-0.04	-0.21
64	0.16	0.10	0.00	0.19
65	0.16	0.50*	0.04	0.10
66	0.22	-0.22	0.40*	0.08
67	0.05	0.36*	-0.13	-0.27*
68	0.07	0.09	-0.02	0.09
69	0.47*	-0.08	-0.17	0.11
70	0.59*	0.00	0.01	0.11
71	0.23	-0.13	0.35*	0.01
72	-0.02	0.61*	-0.04	0.08
73	0.55*	-0.25*	-0.22*	0.12
74	-0.07	0.12	-0.20	0.24*
75	-0.13	0.34*	0.08	0.20
76	0.39*	0.02	-0.01	0.15
77	-0.04	0.13	0.42*	0.18
78	0.48*	0.00	-0.06	0.12
79	0.12	-0.14	-0.21	0.21
80	0.22	0.33*	0.10	0.15
81	0.11	0.05	0.23	-0.05
82	0.25	-0.25	-0.14	0.04
83	0.09	0.18	0.28*	0.00
84	-0.16	0.20	0.24*	0.12
85	0.05	0.40*	-0.11	0.06
86	0.16	0.07	0.15	0.30*
87	0.01	0.61*	-0.03	0.01
88	-0.05	0.43*	-0.09	0.12

ii) **SSPS - Factor pattern matrix (conventionally scaled)**
4 factors (56 items)
Research sample (N=364)
Salients marked with an asterisk. Underlined item retained

	1	2	3	4
1	0.31	0.13	0.05	0.00
2	0.31*	0.00	0.23*	0.07
3	0.15	0.30*	-0.02	0.15
4	0.08	-0.02	0.14	-0.05
5	0.22	0.13	0.16	0.06
6	0.26*	0.03	0.33*	0.07
7	0.23	0.04	-0.06	0.08
8	0.20	0.45*	-0.29*	-0.02
9	0.12	0.32*	-0.14	-0.06
10	0.03	-0.03	0.27*	0.26*
11	-0.08	0.01	0.33*	0.20
12	-0.12	0.13	0.02	0.46*
13	0.24	0.62*	-0.12	-0.06
14	0.07	0.06	-0.16	0.43*
15	0.23	0.31*	-0.17	0.11
16	0.36*	-0.03	-0.02	-0.02
17	0.16	-0.04	0.34*	0.10
18	0.38*	0.12	0.03	-0.26*
19	-0.14	0.12	0.47*	-0.10
20	-0.09	0.33*	0.06	0.37*
21	0.34*	-0.30*	-0.07	0.15
22	0.53*	-0.20	-0.11	0.07
23	0.08	-0.30*	0.33*	0.24*
24	0.12	-0.14	0.26*	0.06
25	0.49*	0.17	-0.16	<u>-0.12</u>
26	0.15	0.56*	-0.04	-0.02
27	0.00	0.61*	0.26*	-0.07
28	0.23	-0.35*	-0.01	0.22*
29	0.08	-0.14	0.16	0.08
30	0.25	-0.11	0.12	0.13
31	0.10	-0.09	0.29*	0.03
32	0.03	-0.10	-0.13	0.58*
33	0.00	0.01	0.48*	0.02
34	0.63*	-0.02	-0.04	-0.03
35	-0.17	0.08	0.69*	-0.08
36	0.07	0.07	0.18	-0.08
37	0.54*	0.13	0.04	-0.18
38	0.28	0.00	0.11	-0.07
39	0.33*	0.14	0.23*	-0.17
40	0.33*	0.18	-0.26*	0.36* ?

	1	2	3	4
41	0.18	0.36*	0.10	0.02
42	-0.01	0.41*	0.07	0.20*
43	0.61*	0.15	-0.07	-0.07
44	0.26	0.11	-0.01	-0.02
45	0.37*	-0.07	0.27*	-0.01
46	0.30*	0.32*	-0.18	0.15
47	0.22	-0.35*	0.13	0.18
48	-0.28	-0.06	0.15	0.23*
49	-0.07	-0.01	0.00	0.60*
50	-0.15	0.60*	0.20*	0.07
51	0.23	-0.08	0.06	-0.10
52	0.07	0.07	0.44*	-0.12
53	-0.11	0.43*	0.18	0.21*
54	0.20	0.07	0.19	-0.03
55	-0.29*	0.22	0.05	0.21*
56	0.36*	0.04	0.16	0.11
57	-0.10	0.41*	-0.07	0.07
58	0.35*	-0.17	0.05	0.06
59	0.30*	-0.23	0.01	0.16
60	0.43*	-0.10	-0.07	-0.10
61	0.15	0.15	0.38*	-0.21*
62	0.59*	0.00	-0.09	0.06
63	0.23	-0.30*	0.11	0.22*
64	0.11	-0.22	0.08	0.16

iii) **SSPS - Factor pattern matrix (conventionally scaled)**
5 factors (52 items)
Research sample (N=364)
Salients marked with an asterisk. Underlined item retained

	1	2	3	4	5
1	0.20	0.14	0.04	0.00	0.14
2	0.21	0.01	0.23*	0.07	0.14
3	0.17	0.33*	-0.02	0.12	-0.03
4	-0.27*	-0.12	0.14	0.05	0.36*
5	0.18	0.14	0.16	0.05	0.06
6	0.33*	0.08	0.32*	0.03	-0.03
7	-0.20	-0.06	-0.06	0.19	0.45*
8	0.12	0.45*	-0.29*	-0.02	0.08
9	0.11	0.33*	-0.14	-0.08	0.00
10	-0.01	-0.04	0.27*	0.27*	0.04
11	0.17	0.07	0.33*	0.12	-0.26*
12	-0.09	0.12	0.02	0.45*	-0.06
13	0.08	0.60*	-0.12	-0.06	0.15
14	0.02	0.05	-0.16	0.44*	0.04
15	0.15	0.31*	-0.17	0.10	0.07
16	0.25	-0.02	-0.02	-0.01	0.15
17	0.11	-0.04	0.34*	0.10	0.07
18	0.06	0.07	0.02	-0.20	0.36*
19	-0.05	0.13	0.47*	-0.12	-0.11
20	0.04	0.36*	0.07	0.33*	-0.17*
21	0.49*	-0.21	-0.07	0.10	-0.10
22	0.56*	-0.12	-0.11	0.03	0.04
23	0.07	-0.30*	0.33*	0.25*	0.04
24	-0.20	-0.23	0.26*#-	0.16	0.35*
25	0.03	0.09	0.16	-0.02	0.51*
26	0.11	0.57*	-0.04	-0.04	0.02
27	-0.14	0.57*	0.26*	-0.05	0.10
28	0.28*	-0.30*	-0.01	0.20*	-0.02
29	-0.05	-0.18	0.16	0.12	0.15
30	0.05	-0.14	0.12	0.18	0.23*
31	-0.10	-0.14	0.29*	0.08	0.21*
32	0.09	-0.07	-0.13	0.56*	-0.07
33	0.04	0.02	0.34*	0.01	-0.03
34	0.54*	0.04	-0.05	-0.05	0.16
35	-0.14	0.07	0.69*	-0.08	-0.04
36	0.07	0.07	0.18	-0.09	0.01
37	0.06	0.05	0.03	-0.08	0.54*
38	0.21	0.01	0.10	-0.07	0.10
39	0.18	0.13	0.22*	-0.15	0.19*
40	0.06	0.14	-0.26*	0.41*	0.28*

	1	2	3	4	5
41	0.05	0.34*	0.10	0.21*	0.12
42	-0.20	0.35*	0.07	0.25*	0.16
43	0.44*	0.18	-0.07	-0.07	0.23*
44	0.18	0.12	-0.01	-0.02	0.10
45	0.37*	-0.02	0.27*	-0.03	0.05
46	0.31*	0.36*	-0.18	0.11	0.00
47	0.32*	-0.30*	0.13	0.15	-0.06
48	-0.07	-0.03	0.15	0.19	-0.24*
49	-0.08	-0.01	0.01	0.61*	-0.02
50	-0.11	0.59*	0.20*	0.05	-0.09
51	0.00	-0.12	0.05	-0.04	0.26*
52	0.03	0.06	0.43*	-0.11	0.06
53	0.06	0.52*	0.18	0.15	-0.21*
54	0.23	0.11	0.19	-0.06	-0.01
55	-0.46*	0.13	0.05	0.28*	0.12
56	0.47*	0.12	0.16	0.05	-0.07
57	-0.17	0.38*	-0.07	0.08	0.03
58	0.55*	-0.07	0.05	-0.02	-0.15
59	0.14	-0.24	0.01	0.20*	0.20*
60	0.21	-0.11	-0.08	-0.06	0.27*
61	-0.03	0.11	0.38*	-0,17	0.19*
62	0.69*	0.10	-0.09	-0.02	-0.04
63	0.23	-0.27*	0.11	0.22*	0.04
64	0.22	-0.17	0.08	0.13	-0.09

SSPS Scale Allocation (Research sample N=364)

Questions	Initial Scale (4 factors)	Final Factor Analysis (5 Factors)	Final Item Analysis	Final Scale	Question Number
1	2	0	0	-	-
2	3	3	3	3	1
3	1	2	2	2	2
4	3	5	5	5	3
5	3	0	0	-	-
6	2	1	1	1	4
7	3	5	5	5	5
8	1	2	2	2	6
9	1	2	2	2	7
10	2	4	0	-	-
11	4	3	3	3	8
12	1	4	4	4	9
13	1	2	2	2	10
14	1	4	4	4	11
15	1	2	2	2	12
16	3	0	0	-	-
17	2	3	3	3	13
18	1	5	5	5	14
19	2	3	3	3	15
20	1	2	2	2	16
21	4	1	1	1	17
22	4	1	1	1	18
23	3	3	3	3	19
24	2	5	5	5	20
25	4	5	5	5	21
26	1	2	2	2	22
27	1	2	2	2	23
28	3	1	1	1	24
29	2	0	0	-	-
30	3	5	5	5	2
31	2	3	3	3	26
32	1	4	4	4	27
33	2	3	3	3	28
34	4	1	1	1	29
35	2	3	3	3	30
36	2	0	0	-	-
37	4	5	5	5	31
38	4	0	0	-	-
39	4	3	3	3	32
40	1	5	0	-	-

Questions	Initial Scale	Final factor analysis	Final item analysis	Final scale	Question number
41	1	2	2	2	33
42	1	2	2	2	34
43	4	1	1	1	35
44	4	0	0	-	-
45	2	1	1	1	36
46	1	2	2	2	37
47	2	1	1	1	38
48	3	(-)5	0	-	-
49	1	4	4	4	39
50	1	2	2	2	40
51	3	5	5	5	41
52	2	3	3	3	42
53	1	2	2	2	43
54	2	0	0	-	-
55	1	(-)1	1	(-)1	44
56	3	1	1	1	45
57	1	2	2	2	46
58	2	1	1	1	47
59	3	5	5	5	48
60	3	5	5	5	49
61	2	3	3	3	50
62	4	1	1	1	51
63	2	(-)2	(-)2	(-)2	52
64	2	0	0	-	-

III STUDENT SELF PERCEPTION SCALE

Name..... Tutor Group.....

Course..... Date of Birth.....

Below are some statements used by students to describe themselves in relation to college life, friends, family and work. I am interested in your immediate response to each separate item. Please work quickly through the statements and tick one box on each line to show if the statement is Very True, Often True, Sometimes True or Not True for you.

Remember there are no right or wrong answers.

			Very True	Often True	Sometimes True	Not True
3	1. I often feel that I do not have enough control over my life	NEG				
2	2. I would like the chance to make important decisions in my future job	POS				
5	3. I came to college to be with my friends	NEG				
1	4. My parents expect too much of me	NEG				
5	5. I came to college to have a good social life	NEG				
2	6. I work hard for success rather than dreaming about it	POS				
2	7. The course I am taking this year will help me to get a good job	POS				
3	8. I find it difficult to get on with my work because of the attitudes of fellow students	NEG				
4	9. If I have something to say, I usually say it	POS				
2	10. Most of my teachers think that I am good at college work	POS				
4	11. I knew that I would soon make friends at college if I gave it time	POS				
2	12. I like my subjects because they cause me to ask more questions about why things happen	POS				
3	13. I came to college mainly to please my family	NEG				
5	14. I was afraid that no-one would speak to me when I came to college and that I would be alone and friendless	NEG				

			Very True	Often True	Sometimes True	Not True
3	15. Staff at this college don't work us hard enough - they waste our valuable time with unnecessary waffle	NEG				
2	16. I enjoy making decisions	POS				
1	17. My friends always seem to find college work easier than I do	NEG				
1	18. I get confused if I have too many things to do at once	NEG				
3	19. I am easily distracted from my studies by my friends	NEG				
5	20. I don't really know what I would have to do to get a decent job	NEG				
5	21. If someone doesn't like me I find it hard to work out why	NEG				
2	22. I enjoy learning new subjects at a higher standard	POS				
2	23. I usually feel that I am one of the best in my group	POS				
1	24. I never seem to do as well as other members of my family	NEG				
5	25. I find it difficult to organise my own work - at school they usually did it for me	NEG				
3	26. I came to college to gain time before deciding what to do	NEG				
4	27. I usually take the initiative in making new friends	POS				
3	28. My teachers never seem to help me enough	NEG				
1	29. The more problems I encounter, the more depressed I become	NEG				
3	30. I find the teachers at this college patronising	NEG				
5	31. I need my friends more than they seem to need me	NEG				
3	32. Teachers make me nervous	NEG				
2	33. I have to persist with a problem even if people tell me to stop	POS				
2	34. Problems never defeat me - there is always a way round them	POS				

			Very True	Often True	Sometimes True	Not True
1	35. I am always afraid that other people will be disappointed in me	NEG				
1	36. However hard I try something always stops me from doing what I want to do	NEG				
2	37. It is very important for me to "get on" in the world	POS				
1	38. I know that I am going to fail my exams	NEG				
4	39. I am a very outgoing person and like to make new friends	POS				
2	40. I can cope with complicated tasks and ideas	POS				
5	41. I find it hard to make decisions which involve other people	NEG				
3	42. Staff here humiliate you if you don't understand the work	NEG				
2	43. I would be good at managing other people	POS				
1	44. My spirits generally stay high no matter how many troubles I meet (-)	POS				
1	45. I don't have much chance of doing what I want if adults don't want me to do it	NEG				
2	46. I know I can work under pressure	POS				
1	47. Having to cope with all this work is making me feel ill	NEG				
5	48. I think I will be lucky if anyone ever gives me a job	NEG				
5	49. When something goes wrong for me I usually cannot work out why it happened	NEG				
3	50. I felt messed about when I came to college - I didn't know if I was coming or going	NEG				
1	51. Worrying about an exam or work that is overdue often prevents me from sleeping	NEG				
2	52. I don't know what my success at college depends on (-)	NEG				

SSPS - details of scoring:

Scale 1 (Passivity:12 items)	Total = 45
Scale 2 (Mastery: 15 items)	Total = 57
Scale 3 (Work Related Inadequacy:11 items)	Total = 44
Scale 4 (Extroversion:4 items)	Total = 16
Scale 5 (Social Dependence:10 items)	Total = 40

IV **Product moment correlations of SSPS with attainment and predictive measures**

Attainment	7	8	9	10	11	12	13	14	15	16	17	18
CENTRY 7	1.00											
TOTENT 8	.87**	1.00										
COURSEX 9	-.27**	-.17**	1.00									
TOTEX 11	.58**	.79**	.18**	1.00								
Prediction												
	-.50**	-.36**	.50**	-.04	1.00							
STUPRE 11	-.28**	-.17**	.81**	.10*	.49**	1.00						
TUTPRE 12	-.16**	-.17**	-.39**	-.34**	.30**	-.48**	1.00					
PREDIF 13												
SSPS												
PASSIV 14	-.16**	-.16**	-.01	-.15**	-.04	.03	-.05	1.00				
MASTERY 15	.22**	.22**	.09?	.23**	.13*	.05	-.00	-.34**	1.00			
INAD 16	-.18**	-.22**	.01	-.21**	.01	.05	.04	.57**	-.23**	1.00		
EXTRO 17	-.05	-.02	-.07	-.04	.05	.01	.18**	-.04	.10*	.06	1.00	
DEPEND 18	-.03	-.03	-.00	-.05	-.04	.05	-.02	.48	-.27**	.48**	.01	1.00

Significance indicated ** P<.01, * P<.05, ? P<.10
Leading zeros omitted
Values given to 2 decimal points

Appendix 3

Presentation of Results

1 a) Full sample data

b) Residual scores

2 Correlation matrix - full sample variables set

3 Fusion plot and dendrogram for 7 and 9 cluster solutions

4 Plots showing cluster scores of functions 3, 4 and 5, groups labelled

(a)

ID	SEX (M=1; F=2)	AGE (MONTHS)	COARSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COARSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIE (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
001	2	220	2	4	1	1	4	5	09	74	21	10	9	5	27	4	0	1	5	0	6	1	4	7
002	1	19	6	4	3	4	4	3	08	69	26	11	01		24	4	8	2	6	1	3	1	8	08
003	2	220	2	2	4	1	4	6	01	04	12	11	06	9	27	3	4	1	9	0	9	2	5	16
004	2	220	6	3	1	4	1	4	05	58	08	08	07	4	19	1	5	1	0	1	5	1	0	13
005	2	219	7	4	3	4	5	4	08	69	27	1	05		32	2	5	1	3		12	5	6	10
006	2	202	1	3	4	4	8		00	29	20	04	9		33	3	0	0	9		23	3	8	09
007	1	22	4	3	3	4	4	8	04	33	11	20	45		27	0	7	2	6		18	4	9	09
008	1	20	2	2	2	1	1	3	00	34	33	07	3		25	1	2	7	0	4	29	3	2	16
009	1	20	0	1	3	1	2	3	00	37	29	06	6		35	0	9	3	2		22	3	9	12
010	2	219	6	4	2	4	4	8	07	62	20	08	9		20	1	1	6	1	0	30	3	6	14
011	2	220	0	4	3	4	4	8	06	58	14	08	9		29	1	1	2	4		17	4	5	10
012	2	220	5	4	3	4	4	4	08	82	14	11	04		24	1	5	1	5		17	4	0	12
013	2	220	4	4	2	4	2	5	09	68	03	07	8		20	0	3	2	3		22	3	7	10
014	1	20	5	4	2	4	1	2	05	56	19	08	2		19	1	8	0	7		42	4	3	18
015	1	21	7	4	3	4	4	3	07	42	24	07	3		21	1	9	0	8		20	4	8	09
016	1	20	5	4	3	4	4	3	08	68	23	09	8		19	1	7	0	8		22	3	3	16
017	2	20	0	1	3	1	4	8	00	22	25	04	7		28	1	7	1	7		28	3	2	24
018	2	219	6	4	3	4	1	4	06	50	11	20	67		20	1	4	1	2		20	4	5	11
019	1	20	4	4	2	4	1	3	07	59	11	60	75		19	1	2	1	3		25	4	3	18
020	1	20	4	4	3	4	1	4	07	57	14	07	11		13	1	0	0	9		36	3	7	11

ID	SEX (M:1; F:2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
021	1	20	3	2	3	123	02	31	19	04	9	331	821	26	49	25	12	27	16
022	1	20	5	4	3	416	08	71	23	09	4	262	012	19	42	19	10	20	14
023	2	19	9	3	2	423	06	50	00	05	0	120	018	15	39	18	10	16	08
024	2	19	6	1	3	448	00	21	28	04	9	332	811	35	39	19	15	17	15
025	1	20	2	4	3	404	09	79	26	10	5	322	612	30	45	20	10	23	12
026	2	19	7	4	3	411	08	70	12	08	2	221	909	23	45	18	10	18	13
027	2	19	6	4	2	424	07	59	11	07	6	141	307	20	36	14	14	14	12
028	2	20	0	3	3	427	05	62	00	07	6	280	034	31	37	20	07	23	15
029	1	19	8	4	3	401	06	58	18	07	6	221	513	22	47	19	14	17	15
030	1	20	6	4	3	448	05	47	00	05	4	290	035	20	53	21	14	14	07
031	2	20	6	4	3	426	07	59	00	05	9	210	027	22	51	16	16	15	13
032	2	20	5	4	3	404	09	76	21	09	7	232	108	17	46	16	12	16	07
033	1	19	7	4	3	435	06	60	27	09	5	292	609	20	45	14	13	14	09
034	2	19	9	4	1	428	08	71	25	09	6	242	505	32	40	16	12	13	16
035	2	19	2	4	3	439	06	56	14	07	7	290	827	23	44	18	11	19	15
036	1	20	0	4	3	423	08	59	12	07	1	211	215	22	39	19	10	15	13
037	2	20	6	4	3	427	08	74	23	10	4	192	401	19	37	19	12	18	12
038	2	20	1	4	3	417	05	58	19	09	0	302	115	18	40	19	11	16	17
039	2	20	0	4	3	401	05	48	17	06	5	191	510	27	48	18	11	14	08
040	2	20	4	1	3	434	00	37	24	06	6	321	820	27	36	19	11	13	18

ID	SEX (M:1; F:2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
041	2	19	6	4	2	42	6	07	6	7	1	8	0	9	3	22	1	9	0	9	29	4	1	1	8	1	0	2	0	17
042	2	20	6	4	3	41	1	10	8	3	2	6	1	2	8	23	2	0	0	9	28	4	9	3	1	1	0	2	5	14
043	1	21	2	3	3	41	4	04	4	6	0	3	0	6	2	22	0	4	2	4	23	4	6	1	7	0	8	2	3	10
044	2	20	2	3	3	41	8	04	6	0	1	2	0	8	5	19	1	3	1	2	31	4	5	1	3	1	6	1	6	10
045	2	20	4	4	3	41	1	07	5	3	1	8	0	7	8	28	1	6	1	8	29	3	9	2	4	1	2	2	1	21
046	2	20	2	4	3	43	4	09	7	8	2	7	1	1	4	33	2	7	1	2	21	5	0	1	4	1	5	1	8	05
047	2	20	6	4	4	45	4	07	6	0	2	6	0	8	6	26	2	6	0	6	15	5	8	1	3	1	5	1	4	05
048	2	21	1	2	3	14	0	8	06	6	8	0	4	0	9	2	16	1	2	1	0	36	2	9	2	6	1	0	2	7	21
049	1	20	2	4	3	44	1	07	6	5	0	7	0	7	2	27	0	8	2	5	20	4	0	1	7	0	9	1	4	14
050	1	19	8	4	4	42	4	08	6	1	2	2	0	8	3	25	2	0	1	1	21	4	9	1	4	1	2	1	6	04
051	2	19	8	4	2	44	1	1	08	6	9	1	3	0	8	9	11	0	9	0	8	27	4	0	1	4	1	1	1	5	09
052	2	20	0	4	3	42	5	08	6	4	0	0	0	6	4	23	0	0	2	9	25	4	8	1	7	1	3	1	4	13
053	1	20	6	4	3	41	4	07	6	1	2	0	0	8	1	22	1	4	1	4	28	3	9	2	7	0	9	1	8	15
054	1	20	0	1	2	42	3	00	2	9	2	8	0	6	3	36	2	0	2	2	36	4	1	2	5	1	1	1	2	16
055	2	19	6	4	2	44	4	08	6	6	2	3	0	8	9	19	2	3	0	2	19	4	0	1	7	0	9	1	7	09
056	2	19	6	4	2	44	8	07	6	1	2	4	0	9	3	28	2	4	1	0	25	4	2	1	8	1	1	1	7	13
057	1	19	9	4	2	44	0	4	09	7	4	1	0	0	9	1	15	0	8	1	3	24	3	6	1	4	0	9	1	4	17
058	1	20	2	4	3	43	9	05	5	3	1	6	0	6	9	29	1	7	1	8	20	5	3	1	2	1	4	1	5	08
059	1	19	7	2	3	42	7	02	5	9	1	8	1	1	1	36	3	4	0	8	28	4	6	1	6	1	6	1	8	13
060	2	19	5	4	3	43	8	07	6	1	1	8	0	7	9	21	1	5	1	2	17	4	0	1	7	1	2	1	6	13

ID	SEX (M:1; F:2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
061	1	198	2	3	4	14	02	42	20	06	9	37	06	37	21	40	20	12	14	1F
062	1	205	2	3	1	01	02	43	36	08	4	33	37	02	32	41	13	11	15	18
063	2	203	4	3	32	2	09	69	25	09	4	24	16	14	24	49	12	13	14	09
064	1	208	3	3	43	9	05	36	00	04	3	19	00	25	20	31	23	10	19	09
065	1	202	1	3	22	3	00	19	29	04	8	27	24	09	23	38	27	13	20	11
066	1	200	4	3	42	4	05	48	12	06	0	22	15	13	21	43	17	13	17	16
067	1	198	4	3	40	4	09	77	23	10	0	25	21	10	16	50	13	13	19	07
068	1	203	2	3	44	8	01	43	16	06	6	31	17	20	23	35	25	13	18	12
069	1	195	4	2	42	4	05	56	17	08	6	20	13	13	27	37	19	14	18	12
070	2	198	1	3	44	8	03	51	28	08	5	34	22	18	24	45	35	14	13	19
071	1	198	4	3	40	8	08	60	21	08	1	21	10	17	24	45	11	81	11	17
072	1	206	4	2	42	5	09	77	21	09	8	21	14	13	19	42	14	10	16	09
073	2	215	4	2	44	8	08	69	15	09	3	25	20	11	19	43	12	13	12	07
074	2	206	4	2	43	7	07	60	12	08	8	14	11	09	33	37	22	13	19	12
075	2	202	4	3	42	0	08	70	27	11	4	37	25	18	21	47	19	07	21	17
076	2	206	4	2	42	0	08	67	26	10	0	23	23	06	23	37	17	08	24	12
077	1	204	4	3	42	4	08	60	20	08	0	21	15	12	17	52	16	14	13	08
078	1	204	3	3	41	4	04	47	19	07	3	29	12	23	24	50	16	15	12	13
079	2	206	4	2	42	8	06	60	18	08	5	20	13	13	26	38	18	14	16	21
080	2	212	2	3	42	4	00	19	23	04	8	23	27	02	37	45	30	12	21	17

ID	SEX (M:1; F:2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
081	2	218	4	3	4	39	07	74	10	089	16	07	15	27	39	20	09	17	10
082	2	218	2	3	4	23	02	40	21	075	28	22	12	24	40	18	12	18	12
083	1	202	4	3	4	27	09	77	25	102	24	25	05	23	55	12	11	12	16
084	2	196	2	3	2	08	01	45	21	072	19	19	06	21	40	15	13	12	14
085	2	204	4	2	4	18	09	68	21	098	21	20	07	27	42	20	15	17	12
086	2	196	3	2	4	43	04	49	00	049	24	00	30	34	32	28	09	24	22
087	1	195	4	3	4	04	08	71	26	097	21	21	06	22	40	19	09	19	16
088	1	199	2	4	2	48	03	46	26	079	28	25	09	13	58	14	16	12	11
089	1	200	4	3	4	23	08	65	12	084	15	11	10	27	45	25	10	16	16
090	2	204	4	3	4	34	08	67	22	089	21	22	05	30	30	22	09	20	22
091	1	201	4	3	4	23	08	59	12	071	22	21	07	27	37	18	09	14	09
092	1	199	4	3	4	14	08	65	23	088	24	21	09	19	52	20	12	14	18
093	1	205	4	3	4	20	08	64	19	083	20	18	08	22	41	27	11	19	11
094	1	200	2	3	4	18	00	55	22	084	26	27	05	27	31	24	13	22	12
095	2	208	3	3	4	33	04	48	03	070	19	06	19	20	46	18	10	10	06
096	2	202	4	1	4	27	06	65	12	092	20	18	08	24	38	20	12	21	12
097	1	201	4	3	4	48	08	72	24	096	21	23	04	29	43	14	15	24	17
098	1	198	2	3	4	04	01	37	30	073	28	22	12	22	42	16	10	16	07
099	2	195	2	4	4	08	01	43	19	076	29	14	21	20	49	16	12	18	15
100	1	197	2	3	4	39	01	46	30	076	28	23	11	17	45	16	15	15	14

ID	SEX (M=1;F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTTRE (0-37)	PREPIE (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
1101	1	11	9	4	3	4	27	08	6	11	9	09	2	18	13	11	1	3	18
1102	2	20	6	4	2	4	04	10	8	22	2	10	4	22	22	06	28	40	11
1103	1	19	6	2	3	4	08	01	4	23	4	08	2	35	35	06	19	40	13
1104	2	19	7	4	3	4	14	08	6	6	2	5	1	00	24	20	11	0	20
1105	2	19	5	2	3	4	48	00	4	12	5	0	7	9	32	18	20	19	45
1106	1	20	5	4	3	4	24	06	5	22	1	0	7	3	21	16	11	26	41
1107	2	20	2	4	3	4	14	06	6	5	5	1	4	0	6	9	20	15	11
1108	1	21	4	2	3	4	48	04	3	5	1	7	0	5	9	29	20	15	11
1109	2	20	1	4	2	4	3	08	7	12	4	0	9	5	20	20	06	25	41
1110	2	20	3	4	3	4	09	08	7	02	3	0	9	3	23	20	09	18	48
1111	1	21	6	4	3	4	36	05	5	6	0	3	0	7	2	14	06	14	23
1112	2	19	9	4	2	4	28	08	6	9	2	7	0	9	6	23	22	07	20
1113	2	20	4	4	3	4	32	05	5	6	1	7	0	7	3	20	21	05	25
1114	1	20	4	4	3	4	01	06	5	4	2	3	0	7	7	21	15	12	18
1115	2	20	1	2	3	4	48	00	2	8	0	6	2	9	6	33	24	15	21
1116	2	19	8	1	3	4	08	00	3	2	2	4	0	5	6	24	17	13	22
1117	1	19	9	4	2	4	25	08	6	5	2	5	0	9	7	20	25	0	1
1118	2	20	2	1	2	2	13	00	4	4	2	7	0	7	1	18	24	0	0
1119	1	19	5	4	2	4	13	07	6	2	2	3	0	9	0	19	1	8	07
1120	2	19	6	4	2	4	48	05	5	4	1	8	0	7	9	35	19	22	26

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
121	2	209	4	2	4	08	06	56	06	06	17	07	16	20	44	16	14	12	08
122	1	204	1	4	4	08	00	34	34	06	28	26	08	12	51	16	15	13	11
123	1	204	4	2	4	04	07	66	12	08	15	10	11	31	42	16	13	13	09
124	1	197	4	2	4	23	08	70	24	09	22	20	08	19	38	14	08	22	17
125	2	199	3	3	4	14	06	56	13	08	25	12	19	18	42	15	14	16	16
126	1	216	3	3	4	01	07	62	15	08	30	23	13	16	48	17	12	15	19
127	2	203	4	2	4	28	08	64	24	08	24	23	07	20	49	18	11	15	15
128	1	201	1	4	3	48	07	61	24	09	29	23	12	29	45	19	14	20	13
129	2	198	3	4	0	8	05	55	09	07	31	12	25	25	36	21	15	15	12
130	2	195	1	1	4	01	00	13	20	03	19	20	05	30	32	18	09	24	15
131	2	198	4	3	4	48	07	62	21	09	16	19	03	24	43	24	09	14	17
132	2	196	2	3	2	23	01	53	24	08	26	23	09	1	35	5	11	16	10	07
133	1	203	4	3	4	04	09	75	19	09	24	16	14	22	43	16	10	13	06
134	2	199	2	1	4	23	02	55	25	08	26	23	09	27	30	18	09	20	11
135	1	197	1	2	4	14	00	26	25	05	30	23	13	34	34	29	16	25	15
136	2	198	4	2	4	49	08	72	20	09	30	24	12	31	36	19	08	21	19
137	2	203	4	4	1	48	08	68	24	09	32	22	16	30	56	22	11	20	14
138	2	212	2	1	2	08	02	31	23	05	31	23	02	36	32	31	10	16	14
139	1	198	4	3	4	01	06	57	00	05	30	00	36	1	93	42	5	13	28	17
140	1	201	1	4	4	39	00	33	24	05	7	1	7	14	38	17	15	13	05

ID	SEX (M=1;F=2)	AGE (MONTHS)	COARSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COARSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	IND (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
141	2	20	2	4	3	43	3	09	7	52	41	05	2	42	30	7	1	45	11	8	11	5	14	07
142	1	20	0	4	3	43	4	09	7	52	30	98	2	42	1	09	1	75	0	1	30	9	12	09
143	2	20	1	4	2	44	3	08	5	92	30	82	2	01	1	08	2	11	4	8	1	6	15	15	10
144	1	21	1	6	4	34	0	4	07	6	4	18	0	8	2	2	2	64	0	1	8	0	8	11	7	13
145	1	20	0	4	3	42	5	08	6	4	0	8	0	7	9	2	9	44	1	2	8	1	7	11	5	13
146	2	20	1	6	4	34	5	3	07	5	7	0	8	0	6	5	2	20	7	2	1	2	48	1	7	13	16	07
147	1	20	0	4	3	43	4	08	6	92	1	09	0	2	1	1	9	0	8	2	3	40	1	8	1	1	1	5	14
148	1	20	2	3	4	43	9	02	4	9	0	6	0	9	8	2	9	0	1	3	4	1	8	4	3	1	7	1	6	14	16
149	2	20	6	4	3	43	3	09	8	02	4	1	0	4	2	3	2	5	0	4	2	9	5	4	2	1	1	5	1	6	11
150	2	21	1	3	3	42	3	04	5	0	1	0	4	6	1	7	0	0	2	3	3	7	3	1	2	0	1	1	1	8	12
151	2	20	6	4	1	44	3	09	7	52	3	0	9	8	2	1	2	1	0	6	2	0	4	1	1	2	1	0	1	6	13
152	1	20	6	4	2	40	4	08	6	8	2	6	0	9	9	3	1	2	3	1	4	2	5	4	7	1	9	1	0	3	0	16
153	1	20	6	1	3	44	8	0	4	2	3	2	0	5	6	3	7	3	3	1	1	3	0	4	0	2	6	1	2	1	8	15
154	1	22	4	2	3	40	2	0	0	0	0	0	0	0	0	0	3	3	0	0	3	9	1	9	4	4	1	6	1	3	1	9	09
155	1	21	1	4	3	41	4	07	6	0	2	0	0	9	3	2	9	1	5	2	0	3	5	4	7	2	0	1	1	6	1	2	14
156	1	19	9	3	3	42	3	05	4	8	0	7	0	6	9	2	5	0	3	2	8	2	6	3	4	1	8	1	4	1	4	15
157	2	19	6	3	3	42	6	07	5	6	0	8	0	7	1	2	3	0	2	2	7	3	9	3	9	1	9	1	3	2	0	17
158	2	19	6	3	2	43	9	04	5	6	0	0	5	6	2	8	0	0	3	4	2	7	3	6	1	1	9	1	4	2	2	12
159	2	20	3	2	3	42	1	03	4	4	3	1	0	7	5	3	2	3	4	0	4	2	2	4	5	1	9	1	6	1	9	12
160	1	20	6	4	3	40	4	09	7	8	1	6	0	9	4	1	8	1	6	0	8	2	2	4	5	1	5	1	1	0	1	7	08

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
1161	M	120	3	4	3	42	5	M	07	58	24	08	2	M	23	19	10	M	19	43	23	07	15	M	09
1162	2	205	2	3	4	39	1	02	44	22	07	1	3	4	2	6	1	4	2	4	3	7	1	9	1	6	2	3	07
1163	1	200	3	3	2	1	4	05	57	07	07	1	2	4	0	0	3	0	2	8	2	8	2	8	0	6	2	5	10
1164	2	203	2	2	2	39	0	34	82	1	07	5	3	1	2	4	1	3	3	3	3	8	2	8	1	3	2	9	17
1165	1	199	1	3	4	16	0	02	42	8	05	2	3	3	0	0	3	9	3	3	3	5	2	3	1	1	2	0	17
1166	2	201	4	3	4	27	0	56	51	2	07	7	1	8	0	9	1	5	1	8	4	5	1	7	1	5	1	8	13
1167	2	195	4	2	4	27	0	86	81	5	08	5	1	3	1	3	0	6	2	6	4	0	2	4	1	0	2	0	13
1168	1	205	2	3	4	23	0	25	1	2	6	0	8	9	2	1	2	2	0	5	2	1	4	2	1	8	1	2	12	08
1169	1	196	2	3	4	04	0	04	1	3	7	0	8	4	3	4	3	0	1	1	0	1	8	5	1	1	4	1	6	12	08
1170	2	206	4	4	4	43	0	86	1	1	8	0	7	9	1	9	1	4	1	1	2	8	3	6	1	8	0	9	15	12
1171	2	214	4	3	4	08	0	54	6	0	6	0	6	5	2	1	1	2	1	5	4	0	3	6	2	2	1	3	20	21
1172	2	206	4	2	4	43	0	97	6	2	1	1	0	3	2	1	1	8	0	9	3	8	4	3	2	5	1	2	24	13
1173	1	195	2	4	4	39	0	04	5	1	8	0	7	7	2	9	1	7	1	8	1	6	4	6	1	7	1	3	15	09
1174	2	205	2	3	4	23	0	04	4	2	6	0	7	7	2	7	2	6	0	7	2	5	4	5	1	5	1	2	16	11
1175	2	197	4	3	4	52	0	86	5	0	9	1	0	0	1	6	0	6	1	6	1	6	5	0	1	3	1	3	13	04
1176	2	196	4	3	4	05	0	86	5	2	1	0	9	5	2	2	2	2	0	6	2	0	4	1	1	6	1	3	14	10
1177	2	198	4	3	1	48	0	55	7	1	0	0	8	3	2	7	0	9	2	4	1	8	4	3	1	4	1	6	16	20
1178	2	203	4	2	4	39	0	97	3	2	1	1	0	2	1	9	2	3	0	2	2	4	3	7	2	1	0	7	16	23
1179	1	200	4	2	4	23	0	54	8	0	6	0	6	8	2	5	0	5	2	6	2	2	3	2	1	8	0	9	16	14
1180	1	224	4	3	4	48	0	64	8	2	5	1	0	5	2	1	1	9	0	8	1	9	4	3	1	1	7	1	0	15	12

ID	SEX (M=1, F=2)	AGE (MONTHS)	COARSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COARSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREPAR (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
181	1	20	2	2	3	42	3	4	9	0	0	8	2	4	0	2	9	1	7
182	1	19	9	4	3	24	8	0	8	6	3	2	2	0	8	5	2	3	4
183	2	20	4	4	2	13	2	0	8	6	9	2	7	0	9	6	2	2	6
184	1	19	6	1	3	44	8	0	0	2	7	2	6	0	6	0	3	2	2
185	1	20	0	4	1	44	3	0	7	5	8	2	2	0	8	7	2	0	1
186	1	21	1	1	2	34	4	8	0	0	3	5	2	2	0	6	3	3	5
187	1	20	4	2	3	43	9	0	1	3	5	1	8	0	5	9	3	4	2
188	1	20	5	4	3	42	3	0	5	5	9	0	9	0	7	5	1	5	0
189	2	20	1	4	2	43	3	0	8	6	9	2	5	1	0	2	2	0	2
190	1	21	1	4	3	42	5	0	5	5	3	0	7	0	6	0	1	6	0
191	2	19	8	4	2	42	8	0	8	6	6	2	2	0	8	8	1	8	2
192	1	19	6	2	4	11	4	0	3	4	4	2	6	0	7	5	2	7	2
193	1	19	7	4	3	14	4	0	8	6	0	1	2	0	8	4	2	6	1
194	2	20	0	2	3	13	3	0	0	3	6	1	9	0	6	2	2	7	1
195	2	20	5	4	2	14	6	0	7	6	0	2	2	0	9	4	3	0	2
196	1	21	1	2	4	34	1	8	0	6	4	6	1	8	0	6	4	1	6
197	1	20	4	2	3	42	4	0	1	4	4	2	2	0	7	9	3	4	2
198	2	19	6	4	4	44	8	0	6	5	9	1	1	9	0	9	5	3	1
199	2	20	3	1	2	44	8	0	0	2	1	1	0	4	2	0	1	4	2
200	1	19	7	1	4	40	8	0	0	3	6	2	9	0	6	5	3	7	2

ID	SEX (M=1;F=2)	AGE (MONTHS)	COMPSE (1-4)	CONF ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COMPSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	IND.D (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
201	2	20	4	2	4	1	5	3	1	8	0	7	1	2	0	1	8	0	8	2	2	4	5	1	9	1	5	1	2	0	6
202	2	19	9	4	2	4	3	2	0	9	7	9	2	5	1	0	4	2	4	2	6	0	4	2	6	4	3	1	8	1	2	2	0	1	8
203	2	20	4	4	3	4	4	8	0	7	6	2	1	3	0	7	6	2	7	1	4	1	9	2	4	4	0	2	1	1	4	2	5	2	4
204	1	19	9	1	3	4	0	8	0	0	2	5	3	2	0	5	7	3	4	1	3	2	7	1	7	4	1	2	3	1	3	1	7	1	9
205	1	20	2	1	4	4	1	4	0	0	2	0	2	3	0	4	3	3	3	2	7	1	2	3	2	5	7	2	8	1	5	1	4	1	6
206	2	20	3	4	3	4	2	0	0	8	6	7	2	6	0	7	6	2	4	2	5	0	5	2	1	4	4	1	9	0	9	1	3	1	3
207	1	19	5	4	3	4	1	6	0	8	6	2	1	8	0	8	0	2	1	2	0	0	7	1	8	4	4	1	8	1	1	1	2	1	4
208	2	20	4	3	1	4	4	5	0	4	5	8	0	6	0	8	3	3	6	0	7	3	5	3	5	3	1	1	7	1	1	0	9	2	3
209	1	20	1	3	3	4	2	5	0	5	5	2	0	8	0	8	6	2	8	0	8	2	6	2	2	3	7	1	6	0	9	1	3	1	6
210	1	19	7	4	3	4	0	8	0	7	6	0	2	4	0	8	4	2	1	2	2	0	5	2	7	3	9	1	3	1	1	1	8	2	0
211	2	20	6	4	3	4	0	8	0	7	6	4	2	1	0	9	2	2	9	2	0	1	1	5	2	0	4	2	1	6	1	3	2	1	0	9
212	2	21	5	2	3	4	3	9	0	1	3	8	2	8	0	7	1	3	4	1	8	2	2	2	8	4	1	2	1	1	2	1	6	2	5
213	2	19	7	1	3	2	0	8	0	0	3	3	2	4	0	5	7	2	8	2	6	0	8	2	8	4	5	1	8	1	3	1	6	1	3
214	1	21	2	4	2	4	4	4	0	7	6	5	0	3	0	6	8	2	1	0	5	2	2	3	2	4	2	2	5	1	4	2	4	2	4
215	1	20	4	4	3	1	1	6	0	8	6	4	2	1	0	8	5	2	3	1	4	1	5	2	0	4	0	1	3	1	4	1	3	0	7
216	1	20	5	3	3	4	1	5	0	5	4	8	0	6	0	6	1	1	9	0	8	1	1	7	2	1	3	4	1	6	1	0	1	1	4
217	2	20	4	2	3	4	2	3	0	2	4	1	3	3	0	8	0	3	7	3	4	0	9	2	0	4	6	1	8	1	3	1	3	0	8
218	2	20	0	4	3	4	3	9	0	9	7	5	2	3	1	1	0	6	2	3	1	9	1	1	0	1	8	4	7	1	6	1	0	1	6
219	1	19	7	2	3	4	0	8	0	1	3	7	3	2	0	7	5	2	6	2	3	0	9	1	9	4	2	2	1	1	5	1	6	1	9
220	2	19	5	4	3	4	2	5	0	5	5	0	0	7	0	5	7	1	5	0	7	1	1	4	2	6	4	8	1	7	0	9	1	8	1	3

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIE (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
221	1	20	3	4	1	16	09	78	26	1	1	1	33	25	1	4	23	45	17	08	21	05
222	1	20	3	4	3	1	14	8	07	56	07	06	3	1	4	06	1	4	2	1	4	9	1	6	1	6	1	4	1	5
223	2	19	9	1	2	4	0	7	01	49	27	08	3	2	3	2	8	0	1	3	6	3	8	2	0	1	1	2	5	2	1
224	1	20	0	4	2	4	4	7	07	59	22	08	1	2	2	1	7	1	1	2	1	4	1	1	8	1	0	1	6	1	4
225	2	20	0	4	3	4	3	9	07	62	22	09	1	2	1	1	6	1	1	2	0	4	3	1	4	1	1	4	0	8
226	2	20	5	4	3	4	1	2	05	55	11	09	1	3	0	0	6	3	0	1	8	4	6	1	3	1	4	1	5	0	9
227	1	20	4	3	3	4	0	8	05	53	15	07	5	2	2	0	7	2	1	1	6	4	3	1	2	1	6	1	5	1	2
228	1	19	8	2	3	1	1	4	00	38	38	08	2	3	5	2	6	1	5	2	1	3	8	1	5	1	5	1	6	0	6
229	1	20	3	2	3	4	4	8	04	50	29	08	5	3	3	2	3	1	6	1	9	3	4	1	6	1	0	1	7	1	1
230	1	20	4	4	3	4	4	3	08	66	14	08	0	2	4	1	7	1	3	2	7	4	3	2	1	1	0	9	2	2	1	9
231	1	1	9	6	2	3	4	4	8	00	40	23	07	0	2	9	2	3	1	2	2	2	4	1	1	9	1	0	9	1	8	1	5
232	1	20	3	4	3	4	3	9	07	57	22	10	6	2	9	2	3	1	2	1	6	3	6	1	1	8	1	0	1	6	1	4
233	1	20	1	4	3	4	1	4	05	54	17	08	4	3	0	2	0	1	6	2	2	5	8	1	9	1	3	1	5	1	3
234	1	21	1	4	3	1	1	23	08	63	14	07	7	2	1	1	6	1	1	1	9	3	9	1	1	1	2	1	6	1	0
235	1	20	0	3	3	4	2	4	03	41	14	07	5	2	9	1	2	2	3	3	0	5	0	2	4	1	1	2	1	1	1
236	1	20	6	4	3	4	2	5	09	76	18	09	4	3	2	1	3	2	5	2	0	5	5	1	4	1	2	1	2	0	6
237	2	20	4	1	2	4	2	3	01	41	33	07	4	3	3	3	3	0	6	2	0	4	0	1	5	1	0	1	9	1	6
238	1	21	2	4	4	4	1	6	05	72	03	08	2	2	0	0	5	2	1	1	9	3	6	1	8	1	0	1	8	1	4
239	1	21	0	3	3	4	2	3	03	36	05	06	3	2	0	0	5	2	1	2	4	3	3	2	0	1	4	1	6	1	5
240	2	20	1	4	3	4	3	0	07	65	17	09	7	3	0	1	4	2	2	1	8	5	0	1	3	1	4	1	3	0	8

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
241	2	202	3	4	1	4	06	57	00	05	7	15	00	21	35	25	28	05	20	20
242	2	198	2	3	4	1	4	00	42	27	07	6	28	25	09	22	5	21	6	16	13	12
243	1	198	4	3	4	0	4	10	83	23	11	06	25	16	18	20	4	16	7	14	13	10
244	1	204	4	3	4	2	4	07	59	23	08	2	26	20	12	18	4	8	12	10	14	07
245	2	195	1	3	4	0	4	02	49	30	08	6	28	28	06	38	36	20	06	26	20	20
246	2	198	4	3	4	3	6	08	72	31	10	3	22	23	05	21	38	16	13	16	16	16
247	2	199	2	3	4	1	6	03	47	33	08	0	32	30	08	18	37	16	14	12	06	06
248	1	195	4	1	4	5	5	04	46	00	05	3	27	00	33	16	38	19	16	13	05	05
249	1	203	1	4	4	0	8	00	09	27	03	6	36	18	24	17	35	16	1	1	1	10
250	1	202	2	4	4	4	8	01	42	26	07	3	36	29	13	23	43	18	13	14	1	14
251	2	204	3	3	4	3	2	08	59	16	07	5	13	13	06	20	41	15	13	15	15	13
252	2	202	4	3	4	1	4	06	54	04	07	1	12	05	13	30	42	22	12	15	15	18
253	2	197	4	3	4	3	4	09	78	27	11	3	32	24	14	17	50	16	12	14	16	16
254	2	198	2	3	4	4	8	03	47	33	08	0	34	32	08	15	44	13	13	11	10	10
255	2	217	3	3	4	1	4	04	52	10	06	2	28	00	34	17	35	16	14	18	12	12
256	1	201	1	3	1	2	3	00	00	00	00	3	7	17	26	30	5	3	14	13	13	14
257	2	205	4	3	4	2	6	08	65	23	09	5	22	20	08	24	5	3	15	11	18	15
258	1	206	4	2	2	1	9	08	64	21	09	0	29	1	22	29	3	9	23	06	12	12
259	2	213	2	4	2	4	4	00	1	20	00	1	6	26	00	32	4	3	4	4	26	12	17	20
260	1	195	1	3	1	2	3	00	3	13	00	6	1	3	5	22	1	9	22	4	1	1	8	1	1	1	4	13

ID	SEX (M:1; F:2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	IND (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
261	V	120	04	34	40		08	70	20	09	7	V	23	15	14	V	27	38	20	11	22	6	V	21
262		120	31	34	23		00	32	32	07	1		42	32	16		28	41	20	13	14			16
263		121	44	34	14		04	47	00	04	7		26	00	32		23	45	14	13	15			07
264		220	11	42	24		05	45	08	07	0		25	11	20		36	34	26	11	02	5		21
265		220	53	24	20		04	46	07	07	4		18	07	17		25	34	19	11	22	0		16
266		220	62	34	01		02	38	32	07	0		34	32	08		18	36	20	08	12			11
267		219	94	24	08		08	69	06	08	2		28	09	25		29	40	20	11	51	8		13
268		120	53	24	48		05	54	16	07	3		19	14	11		26	37	20	11	01	8		15
269		220	94	24	23		05	45	03	04	8		19	03	22		25	40	18	09	11	4		17
270		219	73	24	23		05	52	06	07	3		16	02	20		17	37	16	09	11	6		11
271		219	71	34	14		02	43	33	07	6		30	29	07		31	45	20	11	32	0		17
272		219	53	34	08		06	51	12	06	3		19	00	25		20	45	16	11	51	8		18
273		219	72	21	23		03	48	36	09	0		34	36	04		32	35	18	10	11	4		21
274		220	03	34	29		04	43	06	05	8		20	01	25		30	36	25	11	22			19
275		121	33	34	24		03	61	02	09	7		18	02	22		20	32	19	11	21	4		10
276		119	94	21	14		07	57	17	07	4		21	14	13		43	36	32	06	31			19
277		220	22	34	23		03	48	24	07	9		24	20	10		22	38	15	11	41	7		12
278		220	23	34	48		06	58	07	07	1		19	01	24		34	42	23	11	22			18
279		220	52	34	48		00	29	11	80	5		26	27	05		35	29	22	11	19			11
280		121	83	34	48		07	50	06	05	6		22	00	28		17	35	21	11	11			10

ID	SEX (M:1; F:2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREPAIR (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
281	1	120	4	3	1	24	0	65	0	20	0	70	2	4	1	3	1	7	2	4	9	1	4	1	2	1	6	11
282	2	221	7	3	3	4	2	4	0	6	6	0	1	2	0	8	1	1	9	1	2	1	3	1	8	3	7	1	3	1	1	1	1	08
283	2	197	1	3	4	1	4	0	0	1	9	2	2	0	4	1	2	8	2	2	1	2	3	3	4	9	2	0	1	3	3	2	24
284	2	220	2	4	3	4	3	9	1	0	7	6	2	1	6	0	8	3	2	0	1	1	4	1	2	2	5	4	0	2	3	1	2	1	9	1	6
285	2	220	6	1	3	4	1	4	0	0	1	2	2	5	0	3	7	2	7	2	5	0	8	2	4	3	1	2	2	1	4	3	0	1	4
286	1	120	3	4	3	2	4	8	0	7	6	7	2	7	1	1	1	4	0	2	7	1	9	1	6	5	3	1	8	1	0	1	3	0	7
287	2	197	1	3	4	0	8	0	0	4	3	3	1	0	7	4	2	8	3	0	0	4	2	2	3	6	1	7	1	4	1	7	1	1	6
288	2	200	4	3	4	1	4	0	7	6	3	1	7	0	8	0	2	1	1	2	1	5	2	1	4	3	1	6	1	1	1	8	1	3	1	3
289	1	218	4	3	4	2	4	3	0	7	4	2	0	7	0	5	5	2	9	1	2	2	3	1	7	5	0	1	1	4	1	5	1	4	1	0
290	2	201	1	4	2	4	2	0	0	8	6	8	2	1	0	8	9	2	0	1	7	0	9	1	1	9	3	9	1	4	0	8	1	3	0	4
291	2	217	3	3	4	2	0	7	5	1	0	7	0	6	5	1	1	1	3	0	4	2	1	4	2	1	1	8	1	1	1	7	0	4
292	2	198	4	3	4	2	7	5	7	1	9	0	7	6	2	2	2	3	0	5	1	9	2	9	2	0	0	8	2	2	1	7
293	2	202	4	2	4	4	3	0	8	6	6	2	2	0	8	8	2	1	2	1	0	6	1	8	4	1	1	4	1	4	1	6	0	2
294	2	204	2	3	4	2	8	0	2	3	5	3	1	0	7	3	2	9	3	0	0	5	2	7	5	0	1	1	6	1	2	1	3	1	4
295	1	196	4	3	4	1	4	0	8	6	3	2	1	0	9	8	2	3	1	4	1	5	1	8	4	7	2	0	1	1	0	1	5	1	3
296	2	196	1	3	4	0	8	0	0	3	6	2	0	0	5	6	3	3	1	4	2	5	2	2	3	4	1	3	1	0	1	1	3	1	6
297	2	201	3	3	4	3	1	0	5	5	0	6	5	0	7	9	2	2	0	6	2	4	1	9	4	4	1	8	1	3	1	2	0	7
298	1	196	4	3	4	3	4	0	3	0	9	7	8	1	9	0	9	7	2	4	1	6	1	4	1	8	5	5	2	2	1	6	2	1	1	2
299	1	201	1	3	2	2	3	0	0	2	7	2	5	0	5	2	2	6	1	7	1	5	2	7	3	5	1	5	0	8	1	8	1	1
300	1	198	4	3	4	1	6	0	7	5	5	2	7	0	9	7	2	6	2	6	0	6	2	5	4	8	2	6	0	9	2	1	1	1

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
301	1	20	5	4	3	41	13	08	42	05	06	7	22	04	24	1	45	01	31	21	16	06
302	2	20	1	4	3	42	8	08	7	12	6	09	7	26	25	07	1	9	40	1	40	8	16	08
303	2	19	4	3	44	6	1	06	5	5	00	05	5	32	00	38	1	34	9	1	3	1	2	12	09
304	1	19	6	4	3	42	7	07	6	9	08	07	7	23	15	14	2	04	9	1	3	1	6	14	11
305	1	19	9	1	3	22	3	00	2	5	28	06	3	35	19	22	2	24	3	1	5	08	13	20	
306	1	19	9	3	3	42	5	05	5	5	12	08	2	1	9	1	3	12	2	44	3	1	4	12	13	08	
307	2	20	2	4	3	44	3	07	5	8	11	08	0	20	02	24	1	74	1	1	4	1	1	1	14	04	
308	2	19	7	1	3	42	3	00	3	6	28	07	0	32	27	11	2	43	5	22	1	0	18	15	
309	1	20	2	1	3	42	4	01	2	6	28	05	4	33	28	11	1	65	3	27	1	6	10	17	
310	1	19	8	3	2	42	7	05	6	5	14	11	01	26	07	25	1	94	4	1	6	1	10	16	11
311	2	19	8	3	42	39	04	4	2	07	04	9	17	00	23	1	55	2	1	6	1	14	16	10	
312	2	20	1	4	3	4	1	3	08	6	00	30	6	3	1	1	03	1	4	3	4	37	3	1	06	20	17
313	1	19	8	4	3	44	20	0	8	6	2	15	07	5	2	1	1	3	1	4	1	9	3	5	1	5	1	4	12	15	
314	2	19	8	3	3	1	33	0	4	5	6	22	09	3	2	8	1	6	1	8	3	2	4	4	2	1	1	4	1	5	19
315	2	19	8	2	3	44	26	0	1	4	5	2	10	7	7	2	5	2	6	05	3	0	3	5	2	3	1	2	21	18	
316	1	19	6	2	2	44	8	00	4	3	2	9	09	1	2	6	2	8	04	3	5	3	3	2	4	08	1	7	18		
317	2	20	9	3	2	44	06	0	6	5	7	07	07	1	2	1	1	1	16	2	3	3	4	1	6	07	2	1	16		
318	2	19	5	4	3	41	8	09	7	5	20	1	1	3	35	1	52	6	1	9	4	8	1	5	1	6	1	3	14		
319	1	20	2	1	3	44	24	00	3	7	1	6	06	7	3	4	1	8	2	2	1	7	4	0	1	8	1	2	1	3	11	
320	2	20	1	4	2	44	08	0	8	6	2	1	90	94	2	2	1	9	09	1	9	4	7	1	1	8	1	1	1	6	15	

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
321	1	20	6	4	3	21	3	07	6	11	7	09	1	14	07	13	23	49	17	31	6	05
322	1	20	6	2	3	4	23	03	5	00	0	05	0	33	00	39	25	44	29	3	17	10
323	1	20	33	3	4	5	0	02	4	5	09	08	1	36	04	2	26	39	21	1	22	0	8
324	2	20	22	3	4	2	4	03	4	5	3	5	09	2	34	06	30	41	23	1	1	4	20
325	2	20	6	4	2	4	05	08	5	9	1	7	07	6	1	3	1	3	06	25	43	19	13	18	13
326	1	1	9	4	3	4	1	4	07	6	5	2	3	08	8	33	20	19	18	42	15	08	12	06
327	2	1	9	8	2	3	4	3	3	00	3	8	1	6	06	5	34	1	32	7	29	4	2	1	9	1	4	09	18
328	1	1	9	7	4	3	4	08	07	5	5	2	2	07	7	24	20	1	0	15	5	4	1	4	1	4	1	1	07
329	2	1	9	5	4	3	4	23	07	5	8	2	3	08	7	21	22	05	24	43	23	09	23	16
330	2	1	9	6	2	2	4	48	02	4	4	00	04	44	34	37	03	1	8	3	7	1	5	08	1	3	1	1
331	2	20	8	4	2	4	23	05	6	00	8	06	8	1	4	08	1	2	26	30	22	1	3	17	1	1
332	1	20	4	4	2	1	34	09	7	8	2	7	1	23	2	8	20	1	4	21	4	8	1	7	1	5	1	6	11
333	2	1	9	6	2	2	4	07	01	3	5	2	0	08	2	21	1	8	09	26	35	1	5	1	2	2	2	17
334	1	1	9	7	2	3	4	8	00	4	1	2	3	07	1	34	24	1	6	22	4	8	1	7	1	2	1	5	11
335	2	20	5	4	3	4	24	06	5	3	2	2	0	6	0	29	1	9	1	6	41	4	0	2	9	1	3	2	0	13
336	2	20	1	2	2	3	3	3	00	3	7	2	5	0	7	5	27	1	26	07	40	3	7	3	2	1	2	2	2	19
337	2	1	9	6	4	3	3	3	3	06	5	5	0	5	0	6	0	2	00	22	4	1	8	3	6	2	4	1	1	1	9	18
338	2	20	6	2	3	4	24	02	4	9	2	9	0	7	8	32	30	08	1	8	3	7	1	1	6	1	2	1	5	13
339	1	20	4	2	4	23	9	04	6	9	2	8	1	04	2	72	70	6	25	56	25	1	6	24	08	10
340	1	1	9	8	2	3	4	24	00	4	5	1	9	08	4	35	1	42	7	1	8	4	0	20	1	5	1	7	10

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIF (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
341	2	19	3	4	1	4	05	54	12	08	26	07	26	24	34	17	12	16	15
342	2	19	7	2	3	23	04	43	30	07	28	29	05	26	42	25	14	30	16
343	2	20	3	2	2	48	01	42	26	07	31	18	19	26	28	19	09	17	23
344	1	19	9	4	3	51	07	61	21	08	19	17	08	22	53	19	13	16	07
345	2	19	8	2	4	42	03	51	27	08	25	27	04	21	34	13	08	14	23
346	1	20	5	3	3	24	04	46	05	06	22	05	23	17	42	19	13	19	11
347	1	19	7	4	3	04	09	72	26	09	35	22	19	15	57	14	15	17	12
348	2	19	8	4	2	25	09	70	15	08	20	07	19	29	38	17	13	19	13
349	1	20	8	4	2	20	07	54	08	07	13	08	11	26	37	20	07	18	16
350	2	20	2	1	3	48	01	45	30	08	34	26	14	37	46	27	15	24	19
351	2	19	7	4	3	47	08	67	26	09	22	25	03	21	41	15	14	14	12
352	2	20	4	4	3	28	08	70	33	10	25	23	08	23	44	14	10	18	16
353	1	19	9	2	3	04	01	44	26	07	28	28	06	16	46	17	13	11	08
354	2	20	1	4	3	27	09	70	21	09	22	15	13	24	32	14	10	18	11
355	1	19	9	4	3	23	10	83	21	11	22	20	08	21	45	13	14	15	10
356	2	20	0	4	3	23	08	69	21	11	20	21	05	22	37	14	10	16	09
357	1	19	8	1	3	24	00	31	31	06	35	31	10	23	36	14	10	16	11
358	2	21	2	3	3	10	08	69	00	07	14	00	20	21	37	18	10	15	17
359	2	20	4	4	3	43	08	68	18	08	19	18	07	19	41	14	14	13	09
360	2	19	8	2	3	48	00	46	27	09	30	27	09	28	38	23	09	19	16

ID	SEX (M=1; F=2)	AGE (MONTHS)	COURSE (1-4)	CONF (1-4)	ETHNIC (1-4)	SCHOOL (1-55)	CENTRY (0-10)	TOTENT (0-83)	COURSEX (0-38)	TOTEX (0-128)	STUPRE (0-42)	TUTPRE (0-37)	PREDIE (0-42)	PASSIV (0-45)	MASTERY (0-60)	INAD (0-44)	EXTRA (0-16)	DEPEND (0-40)	LOCUS (0-25)
361	2	20	5	4	3	42	0	8	7	11	33	1	0	4	24	24	0	6	13
362	1	20	5	2	3	3	0	11	0	4	4	5	3	5	0	7	2	1	2
363	1	21	3	4	3	4	2	3	0	5	3	6	1	1	0	4	7	1	0
364	2	19	5	2	1	1	3	3	0	0	3	6	2	7	0	7	5	2	3

1 b) **Residual scores**

Case	Prediction	True	Residual
1	97.70	95.00	-2.70
2	92.89	101.00	.10
3	65.95	69.00	3.04
4	82.31	74.00	-8.31
5	92.89	105.00	12.10
6	54.41	49.00	-5.41
7	58.26	45.00	-13.26
8	59.22	73.00	13.77
9	62.11	66,00	3.88
10	86.15	89.00	2.84
11	82.31	89.00	6.68
12	105.39	104.00	-1.39
13	91.93	78.00	-13.93
14	80.38	82.00	1.61
15	66.92	73.00	6.07
16	91.93	98.00	6.06
17	47.68	47.00	-0.68
18	74.61	67.00	-7.61
19	83.27	75.00	-8.27
20	81.35	71.00	-10.35
21	56.33	49.00	-7.33
22	94.81	94.00	-0.81
23	74.61	50.00	-24.61
24	46.72	49.00	2.27
25	102.51	105.00	2.48
26	93.85	82.00	-11.85
27	83.27	76.00	-7.27
28	86.15	76.00	-10.15
29	82.31	76.00	-6.31
30	71.73	54.00	-17.73
31	83.27	59.00	-24.27
32	99.62	97.00	-2.62
33	84.23	95.00	10.76
34	94.81	96.00	1.18
35	80.38	77.00	-3.38
36	83.27	71.00	-12.27
37	97.70	104.00	6.29
38	82.31	90.00	7.68
39	72.69	65.00	-7.69
40	62.11	66.00	3.88
41	90.96	93.00	2.03
42	106.36	128.00	21.63
43	70.76	62.00	-8.76
44	84.23	85.00	0.76
45	77.50	78.00	0.49
46	101.55	114.00	12.44
47	84.24	86.00	1.76
48	91.93	92.00	0.06
49	89.04	72.00	-17.04
50	85.19	83.00	-2.19

Case	Prediction	True	Residual
51	92.89	89.00	-3.89
52	88.08	64.00	-24.08
53	85.19	81.00	-4.19
54	54.41	63.00	8.58
55	90.00	89.00	-1.00
56	85.19	93.00	7.80
57	97.70	91.00	-6.70
58	77.50	69.00	-8.50
59	83.27	111.00	27.72
60	85.19	79.00	-6.19
61	66.92	69.00	2.07
62	67.88	84.00	16.11
63	92.89	94.00	1.10
64	61.14	43.00	-18.14
65	44.79	48.00	3.20
66	72.69	60.00	-12.69
67	100.58	100.00	-0.58
68	67.88	66.00	-1.88
69	80.38	86.00	5.61
70	75.57	85.00	9.42
71	84.23	81.00	-3.23
72	100.58	98.00	-2.58
73	92.89	93.00	0.10
74	84.23	88.00	3.76
75	93.85	114.00	20.14
76	90.96	100.00	9.03
77	84.23	80.00	-4.23
78	71.73	73.00	1.26
79	84.23	85.00	0.76
80	44.79	48.00	3.20
81	97.70	89.00	-8.70
82	64.99	75.00	10.00
83	100.58	102.00	1.41
84	69.80	72.00	2.19
85	91.93	98.00	6.06
86	73.65	49.00	-24.65
87	94.81	97.00	2.18
88	70.76	79.00	8.23
89	89.04	84.00	-5.04
90	90.96	89.00	-1.96
91	83.27	71.00	-12.27
92	89.04	88.00	-1.04
93	88.08	83.00	-5.08
94	79.42	84.00	4.57
95	72.69	70.00	-2.69
96	89.04	92.00	2.95
97	95.77	96.00	0.22
98	62.11	73.00	10.88
99	67.88	76.00	8.11
100	70.76	76.00	5.23

Case	Prediction	True	Residual
101	90.00	92.00	1.99
102	105.39	104.00	-1.39
103	66.92	82.00	15.07
104	90.00	100.00	9.99
105	65095	79.00	13.04
106	76054	73.00	-3.54
107	79.42	69.00	-10.42
108	60.18	59.00	-1.18
109	94.81	95.00	0.18
110	93.85	93.00	-0.85
111	80.38	72.00	-8.38
112	92.89	96.00	3.10
113	80.38	73.00	-7.38
114	78.46	77.00	-1.46
115	53.45	62.00	8.54
116	57.30	56.00	-1.30
117	89.04	97.00	7.95
118	68.84	71.00	2.15
119	86.15	90.00	3.84
120	78.46	79.00	0.53
121	80.38	60.00	-20.38
122	59.22	68.00	8.77
123	90.00	84.00	-6.00
124	93085	94.00	0.14
125	80.38	89.00	8.61
126	86.15	88.00	1.84
127	88.08	88.00	-0.08
128	85.19	92.00	6.80
129	79.42	78.00	-1.42
130	39.02	33.00	-6.02
131	86.15	90.00	3.84
132	77.50	89.00	11.49
133	98.66	94.00	-4.66
134	79.42	86.00	6.57
135	51.52	51.00	-0.52
136	95.77	99.00	3.22
137	91.93	98.00	6.06
138	56.33	53.00	-3.33
139	81.35	57.00	-24.35
140	58.26	57.00	-1.26
141	98.66	105.00	6.33
142	98.66	98.00	-0.66
143	83.27	82.00	-1.27
144	88.08	82.00	-6.08
145	88.08	79.00	-9.08
146	81.35	65.00	-16.35
147	92.89	90.00	-2.89
148	73.65	98.00	24.34
149	103.47	104.00	0.52
150	69.80	46.00	-23.80

Case	Prediction	True	Residual
151	98.66	98.00	-0.66
152	91.93	99.00	7.06
153	66.92	56.00	-10.92
154	26.51	0.00	-26.51
155	84.23	93.00	8.76
156	72.69	69.00	-3.69
157	80.38	71.00	-9.38
158	80.38	56.00	-24.38
159	68.84	75.00	6.15
160	101.55	94.00	-7.55
161	82.31	82.00	-0.31
162	68.84	71.00	2.15
163	81.35	71.00	-10.35
164	72.69	75.00	2.30
165	49.60	52.00	2.39
166	89.04	77.00	-12.094
167	91.93	85.00	-6.93
168	75.57	89.00	13.42
169	65.95	84.00	18.04
170	85.19	79.00	-6.19
171	70.76	65.00	-5.76
172	99.62	130.00	3.37
173	69.80	77.00	7.19
174	68.84	77.00	8.15
175	89.04	100.00	10.95
176	89.04	95.00	5.95
177	81.35	83.00	1,65
178	96.74	102.00	5.25
179	72.69	68.00	-4.69
180	72.69	105.00	32.30
182	73.65	82.00	8.34
181	87.12	85.00	-2.12
183	92.89	96.00	3.10
184	52.49	60.00	7.50
185	82.31	87.00	4.68
186	60.18	63.00	2.81
187	60.18	59.00	-1.18
188	83.27	75.00	-8.27
189	92.89	102.00	9.10
190	77.05	60.00	-17.50
191	90.00	88.00	-2.00
192	68.84	75.00	6.15
193	84.23	84.00	-0.23
194	61.14	62.00	0.85
195	84.23	94.00	9.76
196	70.76	64.00	-6.76
197	68.84	79.00	10.15
198	83.27	95.00	11.72
199	46.72	42.00	-4.72
200	61.14	65.00	3.85

Case	Prediction	True	Residual
201	77.50	71.00	-6.50
202	102.51	104.00	1.48
203	86.15	76.00	-10.15
204	50.56	57.00	6.43
205	45.75	43.00	-2.75
206	90.96	76.00	-14.96
207	86.15	80.00	-6.15
208	82.31	83.00	0.68
209	76.54	86.00	9.45
210	84.23	84.00	-0.23
211	88.08	92.00	3.91
212	63.07	71.00	7.92
213	58.26	57.00	-1.26
214	89.04	68.00	-21.04
215	88.08	85.00	-3.08
216	72.69	61.00	-11.69
217	65.95	80.00	14.04
218	98.66	106.00	7.33
219	62.11	75.00	12.88
220	74.61	57.00	-17.61
221	101.55	111.00	9.44
222	80.38	63.00	-17.38
223	73.65	83.00	9.34
224	83.27	81.00	-2.27
225	86.15	91.00	4.84
226	79.42	91.00	11.57
227	77.50	75.00	-2.50
228	63.07	82.00	18.92
229	74.61	85.00	10.38
230	90.00	80.00	-10.00
231	64.99	70.00	5.00
232	81.35	106.00	24.65
233	78.46	84.00	5.53
234	87.12	77.00	-10.12
235	65.95	75.00	9.04
236	99.62	94.00	-5.62
237	65.95	74.00	8.04
238	95.77	82.00	-13.77
239	61.14	63.00	1.85
240	89.04	97.00	7.95
241	81.35	57.00	-24.35
242	66.92	76.00	9.07
243	106.36	106.00	-0.36
244	83.27	82.00	-1.27
245	73.65	86.00	12.34
246	95.77	103.00	7.22
247	71.73	80.00	8.26
248	70.76	53.00	-17.76
249	35.17	36.00	0.82
250	66.92	73.00	6.07

Case	Prediction	True	Residual
251	83.27	75.00	-8.27
252	78.46	71.00	-7.46
253	101.55	113.00	11.44
254	71.73	80.00	8.26
255	76.54	62.00	-14.54
256	26.51	0.00	-26.51
257	39.04	95.00	5.95
258	88.08	90.00	1.91
259	38.06	16.00	-22.06
260	56.33	61.00	4.66
261	93.85	97.00	3.14
262	57.30	71.00	13.69
263	71.73	47.00	-24.73
264	69.80	70.00	0.19
265	70.76	74.00	3.23
266	63.07	70.00	6.92
267	92.89	82.00	-10.89
268	78.46	73.00	-5.46
269	69.80	48.00	-21.80
270	76.54	73.00	-3.54
271	67.88	76.00	8.11
272	75.57	63.00	-12.57
273	72.69	90.00	17.30
274	67.88	58.00	-9.88
275	85.19	97.00	11.80
276	81.35	74.00	-7.35
277	72.69	79.00	6.30
278	82.31	71.00	-11.31
279	54.41	53.00	-1.41
280	74.61	56.00	-18.61
281	74.61	70.00	-4.61
282	84.23	81.00	-3.23
283	44.79	41.00	-3.79
284	86.15	83.00	-3.15
285	38.06	37.00	-1.06
286	90.96	111.00	20.03
287	67.88	74.00	6.11
288	87.12	80.00	-7.12
289	66.92	55.00	-11.92
290	91.93	89.00	-2.93
291	75.57	65.00	-10.57
292	81.35	76.00	-5.35
293	90.00	88.00	-2.00
294	60.18	73.00	12.81
295	87.12	98.00	10.87
296	61.14	56.00	-5.14
297	74.61	79.00	4.48
298	101.55	97.00	-4.55
299	52.49	52.00	-0.49
300	79.42	97.00	17.57

Case	Prediction	True	Residual
301	86.15	67.00	-19.15
302	94.81	97.00	2.18
303	79.42	55.00	-24.42
304	92.89	77.00	-15.89
305	50.56	53.00	2.43
306	79.42	82.00	2.57
307	82.31	80.00	-2.31
308	61.14	70.00	8.85
309	51.52	54.00	2.47
310	89.04	101.00	11.95
311	66.92	49.00	-17.92
312	84.23	63.00	-21.23
313	86.15	75.00	-11.15
314	80.38	93.00	12.61
315	69.80	77.00	7.19
316	67.88	91.00	23.11
317	81.35	71.00	-10.35
318	93.66	113.00	14.33
319	62.11	67.00	4.88
320	86.15	94.00	7.84
321	85.19	91.00	5.80
322	74.61	50.00	-24.61
323	69.80	81.00	11.19
324	69.80	92.00	22.19
325	83.27	76.00	-7.27
326	89.04	88.00	-1.04
327	63.07	65.00	1.92
328	79.42	77.00	-2.42
329	82.31	87.00	4.68
330	68.84	44.00	-24.84
331	84.23	68.00	-16.23
332	101.55	123.00	21.44
333	60.18	82.00	21.81
334	65.95	71.00	5.04
335	77.50	60.00	-17.50
336	62.11	75.00	12.88
337	79.42	60.00	-19.42
338	73.65	78.00	4.34
339	92.89	104.00	11.10
340	69.80	84.00	14.19
341	78.46	88.00	9.53
342	67.88	73.00	5.11
343	66.92	75.00	8.07
344	85.19	82.00	-3.19
345	75.57	85.00	9.42
346	70.76	68.00	-2.76
347	95.77	99.00	3.22
348	93.85	85.00	-8.85
349	78.46	76.00	-2.46
350	69.80	87.00	17.19

Case	Prediction	True	Residual
351	90.96	93.00	2.03
352	93.85	103.00	9.14
353	68.84	77.00	8.15
354	93.85	91.00	-2.85
355	106.36	113.00	6.63
356	92.89	114.00	21.10
357	56.33	68.00	11.66
358	92.89	74.00	-18.89
359	91.93	86.00	-5.93
360	70.76	92.00	21.23
361	94.81	104.00	9.18
362	69.80	80.00	10.19
363	61.14	47.00	-14.14
364	61.14	75.00	13.85

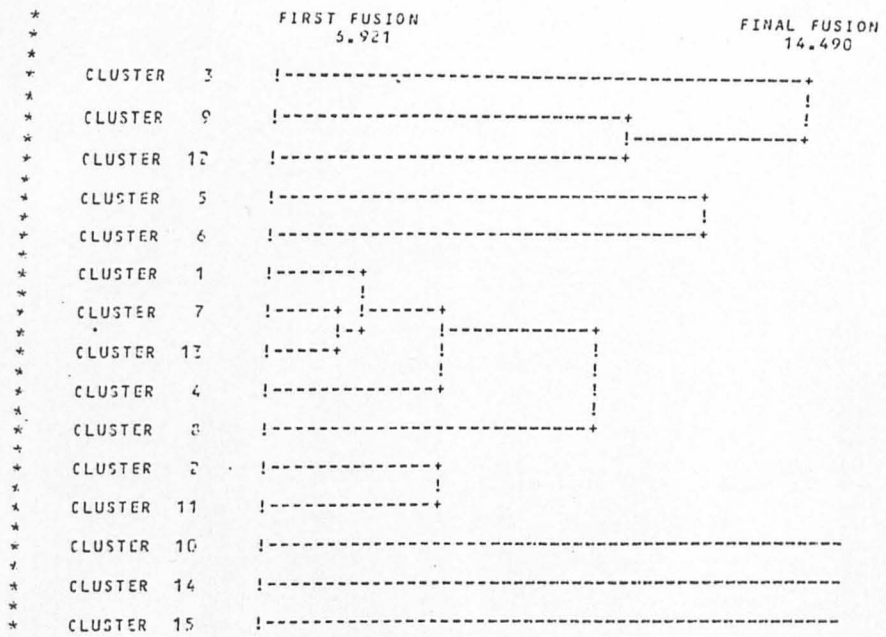
2. Correlation Matrix - Full Sample Variable Set

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21
Sex 1	1.0000																			
Age 2	-0862?	1.0000																		
Course 3	0234	1071*	1.0000																	
Conf 4	-2373**	0205	-1503**	1.0000																
Ethnic 5	0745	0696	1555**	-0175	1.0000															
School 6	1300*	-0111	0334	-0048	-0462	1.0000														
Centry 7	0536	0773	9012**	-1406**	1413**	-0133	1.0000													
Totent 8	0723	-0082	7869**	-1286*	1161*	-0005	8755**	1.0000												
Coursex 9	-0212	-2655**	-3879**	0747	-1512**	-0337	-2728**	-1702**	1.0000											
Totex 10	0449	-1331*	4896**	-0635	0265	0287	5856**	7911**	1874**	1.0000										
Stupre 11	-1469**	-1586**	-5253**	2600**	-1331*	1112*	-5049**	-3658**	5029**	-0485	1.0000									
Tupre 12	0685	-1729**	-3805**	0472	-0945?	0165	-2830**	-1706**	8177**	1094*	4915**	1.0000								
Predif 13	-1704**	1095*	-0707	1651**	0157	0797	-1608**	-1778**	-3996**	3498**	3073**	-4812	1.0000							
Passiv 14	1569**	0019	-1652**	-3191**	-1269*	-0046	-1674**	-1694**	-0145	-1514**	-0482	0366	-0582	1.0000						
Mastery 15	-1870**	-0178	2274**	3647**	-0087	0111	2280**	2247**	0992?	2328**	1338*	0517	-0089	-3435**	1.0000					
Ind 16	-0015	-0009	-1928**	-0934?	-0153	0343	-1866**	-2251**	0121	-2161**	0163	0568	0431	5743**	2385**	1.0000				
Extro 17	-0757	-0228	-0384	1275*	-0716	-0109	-0529	-2087	-0751	-0414	0563	0189	1838**	0443	1017*	0601	1.0000			
Depend 18	0963?	-0200	-0508	-1381**	-0744	-0449	-0395	-0371	-0049	-0531	-0441	0583	-0284	4850**	-2778**	4814**	0198	1.0000		
Locus 19	1601**	-1306*	-1978**	-2029**	-0618	-0089	-1800**	-1770**	0525	-1176*	0539	0216	-0132	5210**	-3456**	3972**	-1251*	3687**	1.0000	
Resid 21	-0134	-2206**	-2406**	0646	-0985?	0555	-2025**	-0557	5250**	5618**	3912**	4014	-3472**	0203	0665	0418	-0304	-0342	0487	1.0000

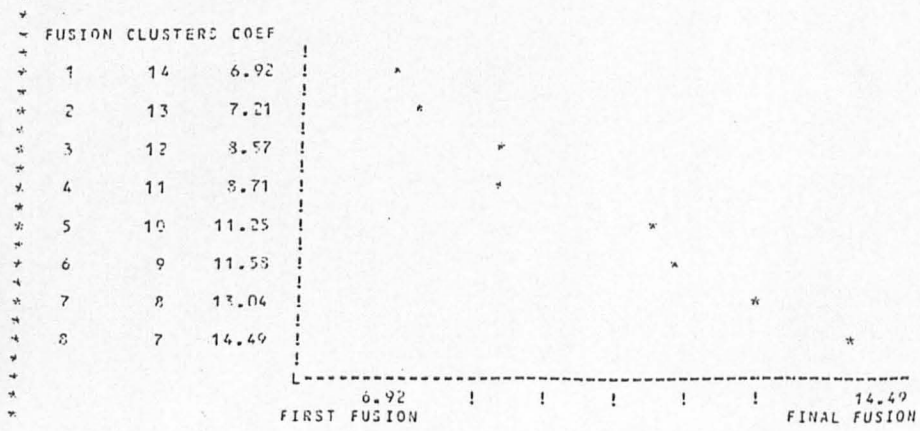
1. Decimal point and leading zero omitted
2. Cluster variable 20 omitted as not meaningful
3. Significance indicated ** P<.01, * P<.05, ? P<.10

3. Dendrogram and Fusion Plot for 7-Cluster Solution

DENDROGRAM



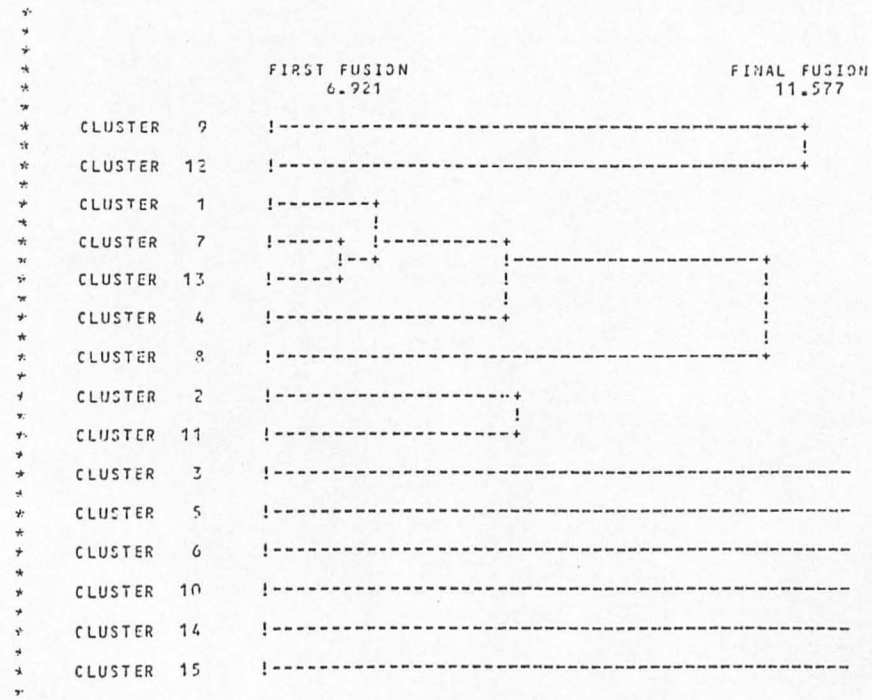
FUSION PLOT



END OF LISTING OF FILE :TEZMDY.SOURCELIBRARY(4,A,1).OUT2(3) FOR USER :TEZMDY AT 1994/11/16 12:03:11

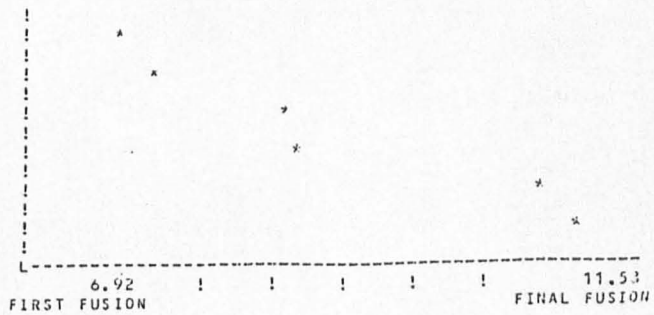
Dendrogram and Fusion Plot for 9-Cluster Solution

DENDROGRAM



FUSION PLOT

FUSION	CLUSTERS		COEF
1	14		6.92
2	13		7.21
3	12		8.57
4	11		8.71
5	10		11.25
6	9		11.56



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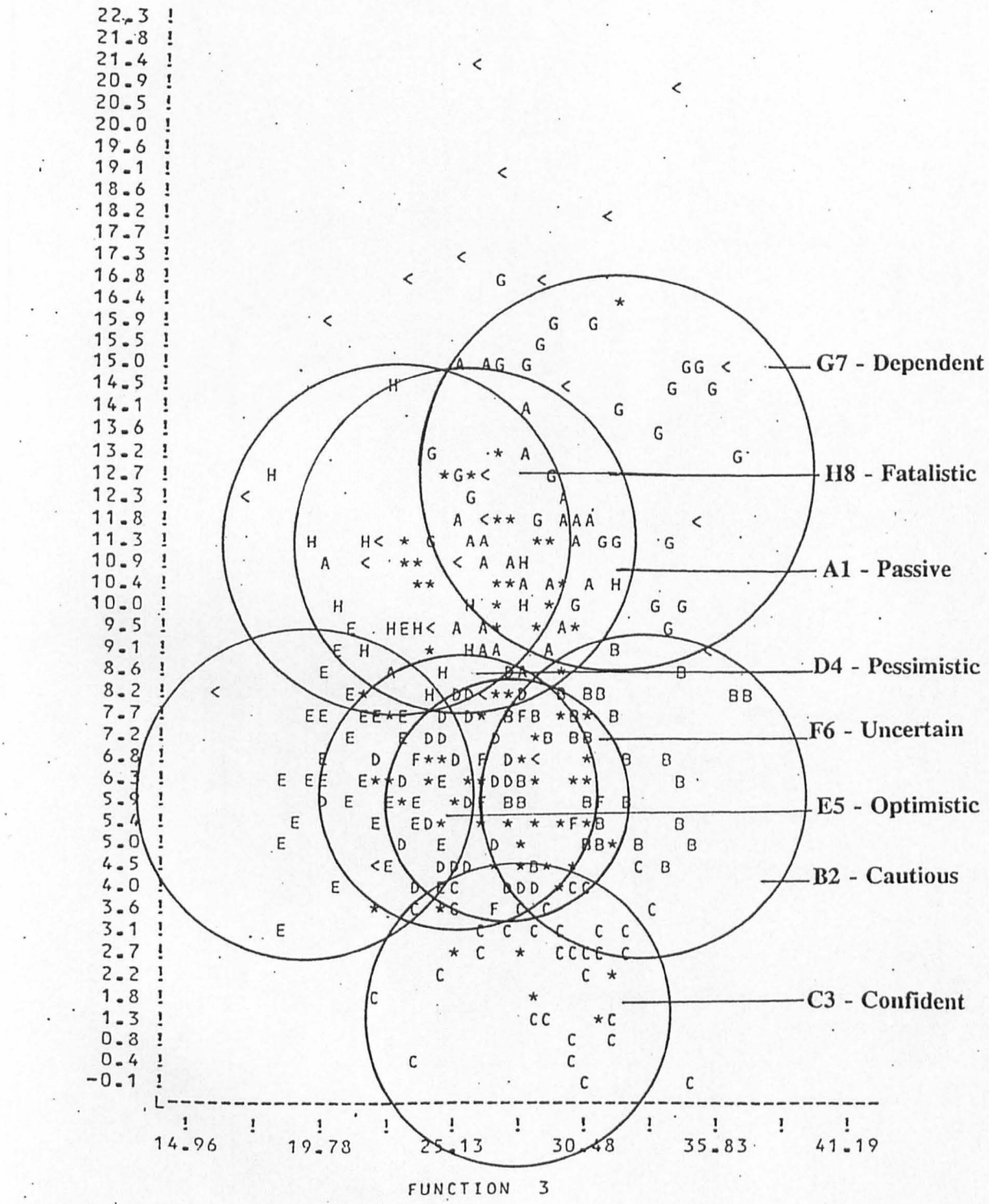
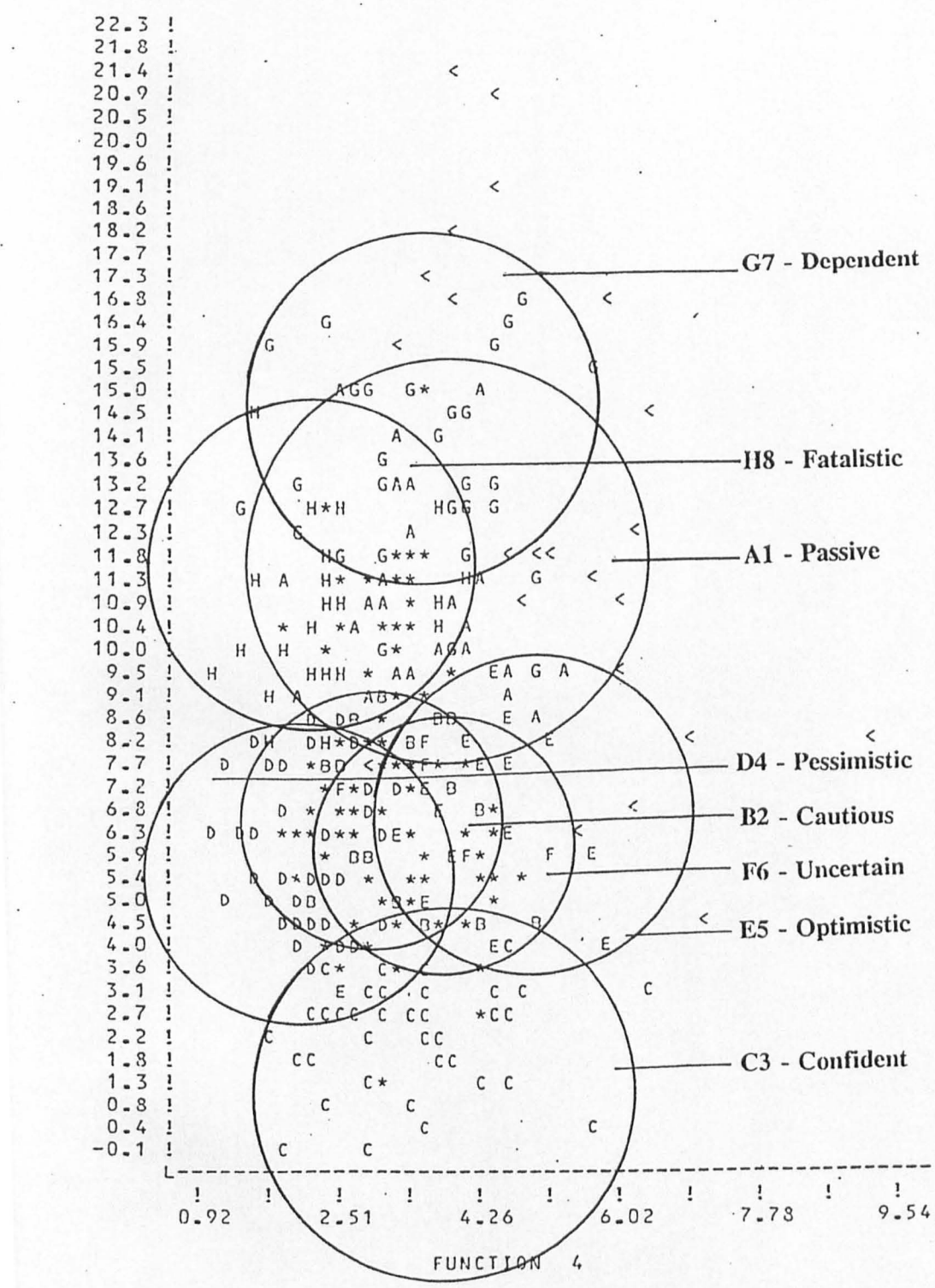
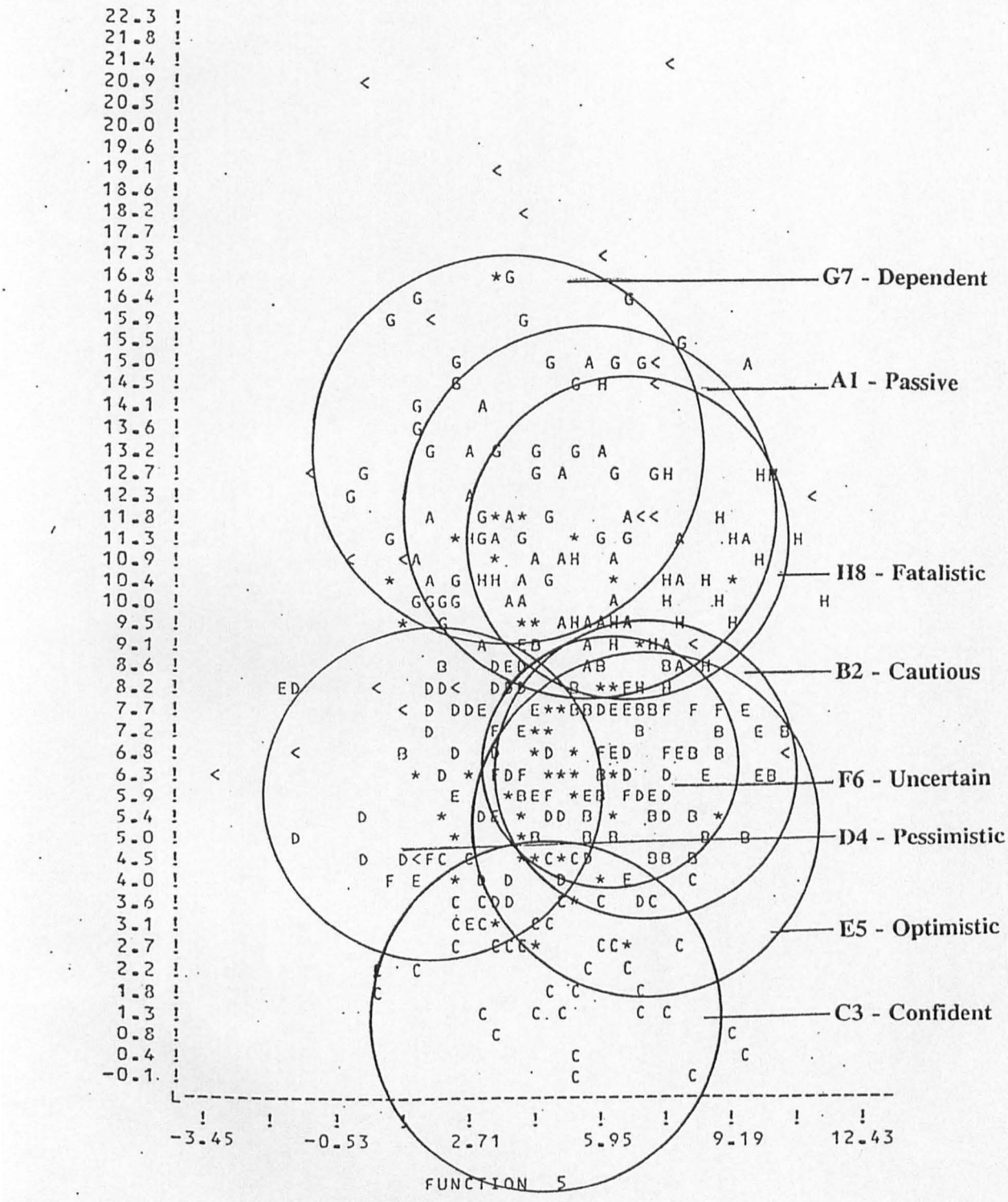
4. FUNCTION 1 AGAINST FUNCTION 3 WITH GROUP MEMBERSHIP LABELLED



FUNCTION 1 AGAINST FUNCTION 4 WITH GROUP MEMBERSHIP LABELLED



FUNCTION 1 AGAINST FUNCTION 5 WITH GROUP MEMBERSHIP LABELLED



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