ALTERNATIVE SELECTION MEASURES FOR UNIVERSITY UNDERGRADUATE ADMISSIONS

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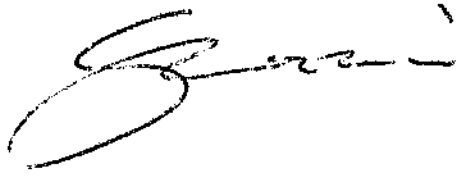
DECLARATION

I hereby declare that this dissertation is my own work. It is being submitted for the degree Master of Education (Educational Psychology) in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.



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ABSTRACT

The pressing need in South Africa to discern on a fair basis the merits of disadvantaged students from deprived educational backgrounds has been documented. Dynamic measures of testing which are designed to assess potential and learning processes rather than manifest ability, show much promise in this regard.

The present study proposed that a learning processing paradigm which incorporates learning potential would best facilitate the inquiry into alternative selection measures. This dynamic approach to selection accounts for the modifiability of students' cognitive processes and consequent performance. This study aimed to assess the effectiveness of both traditional and learning process selection measures among a group of both advantaged and disadvantaged students.

A sample of advantaged and disadvantaged students in the Faculty of Commerce were assessed near the beginning of the academic year on nine different predictors of academic success. The traditional predictors were school marks, intelligence, home background, motivation and inductive reasoning. Learning processing measures were study processes, learning and study skills, learning processes and learning potential.

The findings of the present study clearly demonstrated that the traditional measures were invalid predictors of future academic success for the disadvantaged students. Matric results and the test of intellectual functioning were however found to be significantly related to academic performance of advantaged students. The assumption of modifiability of students was supported through a moderator effect by enhancing predictability of disadvantaged students on the basis of the traditional inductive reasoning test. The single best predictor of academic success for the group of students as a whole was the learning process measure.

The results suggest that it is wrong to admit disadvantaged students to the university on the basis of manifest functioning. The findings provide support for extending the learning potential and learning processing paradigm into academic prediction and to move more firmly into the educational-modifiable approach.

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LIST OF COMMON ABBREVIATIONS

Matriculation Authorities

DET	Department of Education and Training
HRSC	House of Representatives (Coloured Education) Senior Certificate
JMB	Joint Matriculation Board
TED	Transvaal Education Department

Universities

RAU	Rand Afrikaans University
UCT	University of Cape Town
Wits	University of the Witwatersrand

Institutions

AATD	Anglo-American Testing Division
HSRC	Human Sciences Research Council
NIPR	National Institute for Personnel Research

Selection Measures

BQ	Biographical Questionnaire
IM	Interview Measure
LASSI	Learning and Study Strategies Inventory
LP	Learning Potential
LSP	Learning Process Measure
MAT	Mental Alertness Intelligence Test
MATRIC	Matriculation Results
PRT/T	Pattern Relations Test Traditional
PRT/E	Pattern Relations Test Enriched
SPQ	Study Process Questionnaire of Biggs

Criterion Variables

ACC	Accounting Results of June
BS	Business Studies Results of June
MATH	Mathematics Results of June
STAT	Statistics Results of June

Students

ADV	Advantaged students
DISAD	Disadvantaged students

Degrees

BA	Bachelor of Arts
BCom	Bachelor of Commerce
BSc	Bachelor of Science

CLARIFICATION OF TERMS

ADVANTAGED STUDENT - A student who has matriculated under any other educational authority other than the DET.

DISADVANTAGED STUDENT - A student who has matriculated under the DET.

LEARNING APPROACH - A typical way of learning over time characterised by a combination of motive and strategy.

LEARNING MOTIVE - The enduring set of interests for learning.

LEARNING POTENTIAL - The amount by which a student's performance improves as a result of instruction. It is the difference between the traditional static test score and the enriched score using mediated learning.

LEARNING PROCESS - What a student does in order to learn. It is investigated through a student's report of what he is doing, related to the outcome, which is exhibited by his performance in a task.

LEARNING STRATEGY - The learning procedure that a student employs when he/she works through a specific well-defined and structured learning material.

LEARNING STYLE - Refers to the more general procedures that a student adopts when studying.

METACOGNITION - one's knowledge concerning one's own cognitive processes and the active monitoring and regulation of those processes in relation to the learning material.

METALEARNING - The application of metacognition to the area of student learning. It refers to students' awareness of their motives in performing a learning task and their consequent selection of strategies to go about achieving their particular goal.

CHAPTER 1

INTRODUCTION

The university is seen as the key avenue to certain influential and prestigious careers. In a heterogeneous society such as South Africa, there is a need for university admission criteria to discern on a fair basis the merits of students who have matriculated from disadvantaged communities. Even after statutory racism is removed, the prevailing selection procedures may still discriminate against those students who arrive at university with an inferior background.

A potentially viable approach to the selection of sociopolitically and educationally disadvantaged students in South Africa is a Multiple Method Selection Procedure which is non-discriminatory and looks at manifest performance as well as potential for performance. Traditional attempts at predicting university success from aptitude and intelligence tests have met with limited success (Hartman & Bell, 1978; Slack & Porter, 1980). In South Africa school results have found not to be predictors of university success for disadvantaged students (Shochet, 1968). An alternative model is required to enhance the reliability of selection procedures.

The aim of this study is to propose a new approach to selection which takes cognisance of products of knowledge as well as processes involved in acquiring knowledge. Selection is placed within a broad "People-in-Systems" framework as well as in a "learner-in-process-of-learning" paradigm. Attention is given to the individual's life setting and sociopsychological characteristics, which are determining factors in influencing the process of interactions between the individual and the academic and social systems of the university.

The rationale underlying the present study is that a Multiple Method Selection Procedure leads to an understanding of the constituents underlying academic success as well as establishing predictive validity. The contextual determination of approaches to learning; past, present and future, are placed within a broad socio-political paradigm which allows selection, remediation and teaching to be on a continuum. Prediction is both quantitative and qualitative including both potential for learning and knowledge of processes underlying successful learning. The examination of both potential and processes would

enhance identification of strengths and weaknesses and point to subsequent intervention through academic support programmes.

1.1 Sociopolitical Context of the Present Study

The system of formal education in South Africa is concomitant with colonialism and its segregated nature has followed a structural-historical process. Education became fragmented along racial lines into four schooling systems for whites, indians, coloureds and blacks respectively. The funding and control of schooling was also restructured according to racial, economic and social differences (Cross, 1986).

The racial structure of South African society is indistinguishable from its class structure, with whites occupying the middle class structure and blacks the working class. The pattern of racial and class development was consolidated in the mid-twentieth century through a process in which white schools were developed and black schools neglected. To quote Alexander (1986) :

> "between 1890 and 1982, no South African government ever questioned the fundamental purpose of education in South Africa which was to prop up and perpetuate the system of white supremacy".

Running parallel to the developments in school education have been important developments in tertiary education. In legislation enacted in 1959 the government imposed apartheid on what were then known as the 'open' universities (Wits and UCT), which had hitherto been free to admit black students. Under this legislation, no blacks could be admitted, except with the written permission of the government (The Star, 1988). As a result the number of black students at those universities declined. Wits, for example, had 74 black students in 1959 which by 1969 had decreased to 5. Five separate "ethnic" university colleges were created and achieved full university status in 1969 (Horrel, 1971).

The 'open' universities continually opposed this infringement on academic freedom and in particular the way the government used its discretion by the issuing of permits in admitting black students to white universities. By the end of the 1970's, however, given the country's need for trained black manpower, the number of black students at white universities began to increase again. Not only were more permits granted, but the government

turned a blind eye to the fact that black students were sometimes being admitted without permission (Kane-Berman, 1990).

During this period there was a very sharp increase in the number of black scholars matriculating. A large number of these matriculants were from urban schools and it became clear that the rural 'ethnic' universities could not accommodate all of these scholars. The government reacted by pushing through legislation in 1981 to create a multi-campus black university to serve higher education in black urban areas. These black universities known as "Vista" proliferated throughout the country. In addition, in 1983, the government introduced legislation to replace permits with quotas, but this was widely condemned and never put into practice. The non-implementation of this legislation gave the 'open' universities free reign to admit students. At the same time, however, the government introduced a subsidy formula that would make the universities more selective in admitting students. In terms of the subsidy, half would be given when students register and the other half only when those enrolled had passed individual courses.

The issue of selection for universities has become very relevant in that the most able of matriculants of all ethnic groups need to be identified. The response of the 'open' universities was to increase matriculation requirements for admissions. However, very few black matriculants receive the necessary matriculation exemption each year (9.8% in 1983, compared to 46.6% of white matriculants). In 1983 the Senate of Wits passed a motion giving the Deans of Faculties the discretion to admit students below the automatic admissions level. There is thus an urgency to find selection criteria to aid the university in exercising its discretion so as to not disadvantage black students.

1.2 Issues in the Selection of Disadvantaged Students for University Education

The legacy of South Africa's education system is a three percent rate of university entry for white students as compared with a 0,3 percent rate of entry for blacks. Thousands of advantaged students achieve a C-aggregate in matric, whereas at the end of 1990, of 230 000 students passing through DET schools, fewer than 1 000 achieved a C-aggregate, fewer than 100 a B and fewer than 10 an A. Those with a C-aggregate are in the top 0,5 percentile. In modern western educational settings,

past academic performance is a good predictor of future academic performance. This is because within these homogeneous settings, most candidates have been exposed to more or less comparable opportunities (Taylor, 1987). This does not however apply to all groups in South Africa where large discrepancies in the quality of education are found (Hartshorne, 1983; Molteno, 1984). The per capita amount spent on black children is significantly lower than that spent on white education. Evidence of the impoverishment of black education is demonstrated in the large proportion of unqualified teachers, untenable pupil-teacher ratios and authoritarian teaching styles. The greatest disadvantage faced by children coming out of the black education system is not lack of knowledge as much as prolonged exposure to inappropriate styles of learning which rely on parrot-fashion swotting as opposed to understanding. Another problem students carry through from the black education system is the ethos prevalent in black schools of having a low level of expectation which leads to an attitude of despondency and defeat. Given the vast disparity between white and black education in South Africa serious doubt can be placed on the use of school results for admissions to university (Schochet, 1986).

Research has in fact found current academic achievement in black schools to be a poor predictor of post-school academic performance (Visser, 1978; Hall, 1979). School performance prediction studies have been criticised for focusing on the end product of learning to the exclusion of assessing learning processes involved in academic success. The lack of predictive validity of black school results, instead of providing the impetus for the development of dynamic and process models of intellectual functioning, has led researchers to the use of standard tests of ability and aptitude to predict academic performance. It appears that achievement and aptitude testing (high school grades and psychometric tests) form the main backbone of selection research (Rutherford and Watson, 1991).

1.3 Current Approaches to Prediction of University Academic Success in South Africa

Selection is a concomitant of the total educational process employing methods towards social and educational goals. Recent changes in the methods of university admission are associated with the acceptance of

public education as a political necessity, and to some extent with the dependence today of universities on finance by governments.

In the main, there are five methods of selection for entry to universities. Most universities have a single admittance criterion usually purporting to determine in some sense aptitude for academic study. The methods include (1) examinations of the British type where the criterion is the school examination result in a restricted range of subjects; (2) school grade averages combined with standardised aptitude tests as in the USA; (3) psychological tests of ability and personality; (4) personal interviews by boards of admission or by tutors of colleges, including standardised interviews and; (5) accrediting as employed in New Zealand and elsewhere where headmasters of schools make a professional judgement in granting university entrance to suitable candidates. In South Africa it is generally accepted that the matriculation exam results are the best readily available predictor of success at university, and the matric certificate is generally used as the single criterion for admission. A major problem facing selectors of university students in South Africa is that of the differing matriculation bodies where research has shown that DET results are unreliable as predictors (Potter and Jamotte, 1985). Also, DET students in the lower brackets of matric achievement perform better at university than TED students with similar matric results (Classen and Orkin, 1983).

A number of studies have attempted to explain more of the variance in academic prediction by supplementing school results with aptitude tests. The results confirm that such tests do not significantly add to the variance explained by school results (Houston, 1983; Slack & Porter, 1980). In South Africa, the validity and usefulness of conventional tests for large numbers of the student population is particularly questionable (Skuy & Shmukler, 1987). Educational institutions are increasingly becoming aware of the need to provide additional, enriching instruction for disadvantaged students. Enrichment has taken the form of "Cram Colleges", academic support programmes and bridging courses. Selection for such programmes is still based primarily on pupils' academic performances at their segregated schools and on traditional intelligence measures.

There is a need to develop appropriate selection procedures for disadvantaged students in order to assess those who are most likely to benefit

from enriched instruction. Selection criteria require a rethink of some of the fundamental assumptions underlying the concepts of ability, mental development and potential.

1.4 Feuerstein's Structural Cognitive Modifiability - Theory and Research

Traditional prediction studies in higher education fail to address the concept of learning within the context of the learner's cultural background and experience. A promising approach which represents a fundamental change in paradigm is Feuerstein's Theory of Cognitive Modifiability. He provides a framework that accounts for deficient cognitive functioning within population groups often defined as disadvantaged. This approach to testing and prediction places emphasis on potential rather than manifest performance (Brown, 1979; Murray, 1989; Vygotsky, 1962). Such an approach posits that low socio-economic individuals have not had the appropriate experiences to allow them to compete on an equal level with others in society.

According to Feuerstein (1979) a learning potential paradigm emphasizes the modifiability of performance and stresses the notion of educability rather than a static notion of functioning. He argues that cognitive ability is to a large extent determined by the social experiences of the individual (Feuerstein & Hoffman, 1982). Two types of learning are identified : the first is learning through direct exposure to the environment. The second is learning that is facilitated and directed by a mediator who interprets the environment for the learner. Such mediated learning experiences can improve the cognitive abilities of a learner during any stage of development. Emphasis is placed on the processes involved in the acquisition of cognitive skills rather than fixed conceptions of ability. Current levels of functioning are rather conceptualised as mere indicators of the extent to which a learner received appropriate mediated learning experiences.

A few studies in South Africa have attempted to adapt Feuerstein's approach to cognitive modifiability in terms of academic prediction and selection (Murray, 1988; Schochet, 1986). Such studies do reveal that it is possible to operationalise Feuerstein's learning potential theory for admissions purposes. However this approach has not significantly enhanced academic prediction in that it is difficult to establish that the cognitive

skills advanced by Feuerstein are in any way related to the processes of acquisition, integration and application of knowledge within the academic context (Culverwell, 1989). Furthermore, Feuerstein is based on an educational-modifiable approach which specifically rejects predictive approaches in that they imply an immutable concept of intelligence. It is necessary to extend this link between modifiability and the predictive validity of intelligence measures to incorporate the context within which the students work. This calls for an understanding of the learner's perspective and requires an awareness of the content of academic learning as well as focussing on how the learner approaches such material to be learnt.

1.5 Abilities Found to be Relevant to Success in Commercial Subjects

A variety of cognitive abilities are required for achievement in commercial subjects. Commercial subjects range from social science disciplines such as economics to pure science disciplines such as mathematics, statistics and accounting. Commercial study involves mental processes that intersect more than one academic discipline. According to Marzano and Costa (1988) information is shared in two primary forms: (1) factual or declarative knowledge, and (2) as process or procedural knowledge. Declarative knowledge is knowledge of facts and is essential in learning such subjects as commercial law and business economics. Procedural knowledge is knowledge of how to perform the process of learning. Such process skills are specific and are required for learning subjects such as statistics and accounting. A number of thinking skills theorists have identified and described cognitive processes required for academic performance (Costa, 1985; Ennis, 1985). Figure 1 contains a brief description of 22 such cognitive processes (Marzano and Costa, 1988).

FIGURE 1

GENERAL COGNITIVE PROCESSES

1. Categorizing: placing elements into superordinate and subordinate groups based on identified characteristics.
2. Comparing and contrasting: identifying similarities and dissimilarities among elements.
3. Creating analogies: identifying and creating sets of elements with similar relationships between the components within each set.
4. Creating metaphors: identifying or creating relationships between elements that are commonly considered unrelated.
5. Dialectic thinking: identifying and articulating a set of values contrary to your own for a particular set of information.
6. Encoding: storing information in long-term memory in such a way that it is easily retrieved.
7. Establishing criteria: setting and articulating standards for judging the logic or value of something.
8. Extrapolating: identifying how the basic theme in one piece of information is similar to and different from the basic theme in another piece of information.
9. Identifying errors: recognizing and articulating fallacies that result from unwarranted assumptions and fallacies that result from ambiguity.
10. Identifying patterns and relationships: identifying the component parts of a whole and articulating the relationships among the parts.
11. Inferring: deducing or inducing unstated information from stated information or filling in gaps in stated information using prior knowledge.
12. Ordering: identifying the attributes of elements in relative or absolute terms and then ranking or sequencing them according to those attributes.
13. Predicting: making a statement about the future and then investigating the outcome of the prediction as it relates to the original statement.
14. Reference: identifying explicit or implicit information as cued by syntax, pronouns, synonyms, or subordinate and superordinate terms.
15. Restructuring: reorganizing stated information into a new pattern or format that is different from that which is explicit in the information.
16. Retrieving: calling up information from long-term memory into short-term memory.
17. Representing: creating a graphic or pictographic mental or visual representation of information.
18. Summarizing: combining information parsimoniously into a cohesive statement.
19. Transposing: translating information from one code to another.
20. Valuing: identifying and articulating personal values relative to information.
21. Verifying: confirming or disconfirming the truth of something.
22. Visual matching: linking a picture or symbol with a linguistic label.

An analysis of Figure 1 reveals the similarity between the general cognitive abilities and the cognitive functions posited by Feuerstein (1979) necessary for sound thinking. He isolates a number of cognitive functions which could be deficient at three different stages of problem-solving:

1. Input phase. This includes all impairments concerned with quantity and quality of data gathering (e.g. impulsivity).

2. Elaborational phase. This includes factors that impede the learner's use of data available (e.g. lack of strategies for hypothesis testing).

3. The output phase. This includes those impairments that result in

inadequate communication of final solutions (e.g. blocking).

For a full list of these cognitive functions see Appendix 1.

Commercial subjects thus require information to be stored in both the declarative and procedural modes which includes cognitive functions at any of the phases described according to Feuerstein. The cognitive functions are in service to the basic cognitive operations, and if the functions are deficient they can cause a breakdown in one or more of these operations. Such an operation is a strategy or set of rules in terms of which information is organised, transformed and manipulated (Feuerstein, 1979). Operations such as categorising, comparing, extrapolating and inferring (cognitive processes 1, 2, 8 and 11 in Figure 1) form part of the prerequisite cognitive structures necessary for successful performance in commercial subjects. Feuerstein also recognised that problem-solving tasks are presented in a variety of modes, such as verbal, numerical and figural, or a combination of modalities. Commercial subjects are presented in all these modalities and it appears that identification of cognitive processes in different modalities could aid understanding of successful learning. Such an understanding could also be used to assess those cognitive processes that are potentially amenable to change. The implication is that methods and approaches used by students can be changed by intervention strategies. This necessitates a change in methodological procedures used in selection and leads to a paradigm based on information-processing.

1.6 Towards an Information-Processing Paradigm

Traditional selection measures are end-product orientated where the emphasis is on the description of different aspects of reality. With regard to research into human learning a new approach has developed which is not directed so much to end-product or reality as it is, but more so to how people view the learning process (Marton & Säljö, 1976). Learning is seen as a decision-making process in which the student chooses his own method of learning. According to Marton & Svensson (1979) learning consists of three major dimensions:

i) it always occurs in a context which has specific demand characteris-

tics;

ii) it involves the learner's own awareness of the act of learning; and

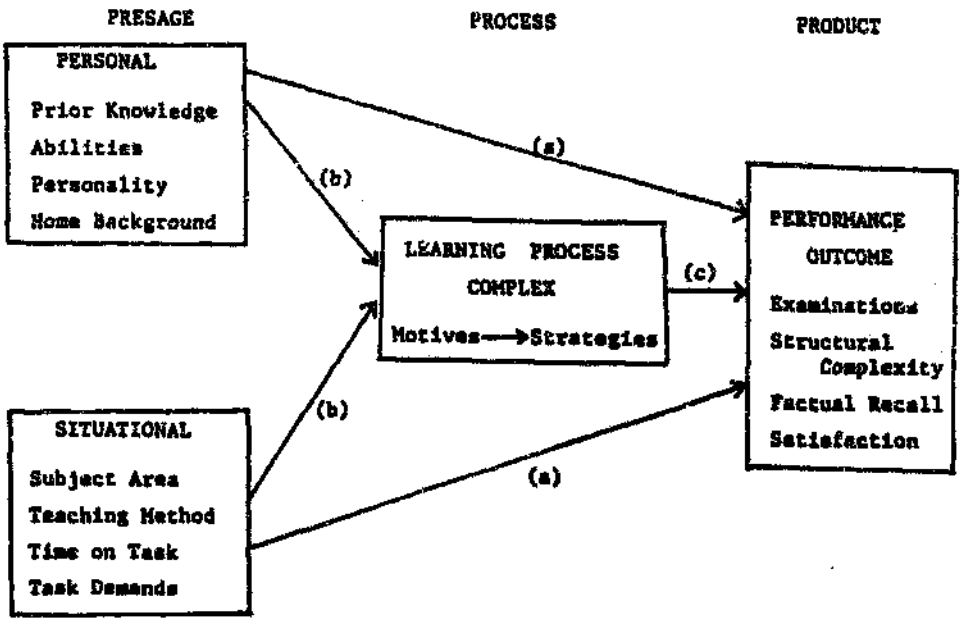
iii) it concerns itself with a specific content or subject matter.

Effective learning at university therefore requires, first that students are aware of task demands and of their intentions of how, or even whether, to meet those demands, and second, that they exert control over their own cognitive resources.

Biggs (1978) describes a three-stage model of student learning the essentials of which are outlined in Figure 2.

FIGURE 2

GENERAL MODEL OF STUDENT LEARNING



The dynamic link between personal, situational, process, and outcome variables involves a metacognitive process whereby the learner needs to be aware of his own cognitive processes and products. Effective learners are able to organise new knowledge into effective metacognitive

structures, enabling them to employ these adequately in solving a variety of problems.

The information-processing paradigm insists therefore on taking cognisance of unobservable data such as students' beliefs and perceptions. It concentrates on the personal independence of the learner and her ability to become aware of why she is using a particular study technique. Such an approach examines the underlying processes intrinsic to the acquisition of knowledge.

Selection using this approach looks at individual difference in information-processing and helps to identify vulnerability in student approaches to learning. Such an approach facilitates the measurement of learning potential and the modifiability of students. The concept of modifiability has important implications in the South African context where traditional predictors of academic success have demonstrated little or no relationship to tertiary academic success. An education-modifiable approach to selection also points to the manner in which the university can best facilitate success by adapting teaching strategies and course demands. The present study is an attempt to use an information-processing paradigm to identify those students who have the resources as well as the potential to succeed at university.

CHAPTER 2

THE STUDY

2.1 Rationale and Aims

The need to develop fair and appropriate methods of selecting disadvantaged students has been documented. A promising approach which reflects an emphasis on potential rather than present functioning, is Feuerstein's concept of learning potential. Learning potential needs to be taken into consideration to predict which students will in future benefit most from an enriched educational environment such as the university. There is a large body of research on the relation between learning potential and academic performance (Brown & Campione, 1985; Campione, Brown & Ferrara, 1982). The only studies to have investigated learning potential at a tertiary educational level are Shochet (1986) and Boeyens (1989).

Neither of these studies has investigated learning potential within a broader assessment framework which incorporates information about a student's metacognitive skills as well as knowledge about their own cognition (Flavell, 1985).

It would appear that a confluence of Feuerstein's tenets and recent developments in learning strategies and metacognition would enhance prediction of successful university students. An assessment of a student's awareness into their own thinking is also seen as a useful adjunct to selection in that selection, remediation and teaching are thereby placed on a continuum, rather than three discrete exercises as is the current situation.

The limitations of the present use of traditional criteria for selection of disadvantaged students in South Africa, was discussed. The need to explore alternative criteria together with the promising findings of learning potential and metacognitive variables, are factors which prompted the present study. In addition, there is a need to introduce a standardised dynamic assessment instrument with domain-specific skills appropriate to selection of commerce students in particular.

The present study is therefore a move away from the exclusive reliance on a single, static criterion for selection to multiple methods of identification. The accuracy of prediction of academic performance will be enhanced through incorporating learning potential and learning strategies into the selection procedure.

2.2 Hypotheses

The following hypotheses were tested :

HA1 : learning potential is a better predictor of academic competence for the disadvantaged students than a traditional measure of general intelligence.

HA2 : learning potential is a better predictor of academic competence for the disadvantaged students than school marks.

HA3 : learning potential together with the learning process measures is a better predictor of academic competence for both advantaged and disadvantaged students than only learning potential or static measures used alone.

2.3 Methodology

2.3.1 Sample

The subjects are all 26 students enrolled in the Pre-University Bursary Scheme (PBS) in 1991. The PBS within the Commerce Faculty is a bridging year which facilitates the matching of : matriculants in need of academic support, bursary donors and employers who wish to develop the human potential of future managers. These students have been selected primarily by sponsors on the basis of previous school marks and traditional intelligence measures.

Table 1 shows the sex distribution for the sample. Table 2 shows the age distribution of the sample. As neither age or sex is taken into account in selection decisions at Wits University neither of these variables are included as predictor variables

in the present study.

Table 1 :

DISTRIBUTION OF SAMPLE BY SEX

MALE	FEMALE
N = 14 = 54 %	N = 12 = 46 %

Table 1 indicates that there are more males than females in the sample. This is in keeping with the general sex distribution in the overall B Com 1 population.

Table 2 :

DISTRIBUTION OF SAMPLE BY AGE

AGE	N=	%
17	4	15
18	10	38
19	6	23
20	3	12
21	1	4
22	1	4
25	1	4

This distribution shows that most students in the sample fall in the 18 years age range. The mean age of the sample is 21,9 years old. Again this approximates the overall B Com 1 distribution. For economic reasons corporate sponsors tend to select the least disadvantaged matriculants from the black school system. With

regard to school results the mean matric rating is 22,87 points with a range of 16 - 29 points, and a standard deviation of 2,89.

The present study hinges around a major subject variable which can be termed level of disadvantage, namely advantaged students versus disadvantaged students. All students who received their secondary school education under the Department of Education and Training were termed disadvantaged. These students received an inferior school education when compared to students schooled under the other educational authorities or those that received private schooling.

Table 3 shows the distribution of the sample by matriculation authority.

Table 3 :

DISTRIBUTION OF SAMPLE BY MATRICULATION AUTHORITY

Matric Authority	N=	%
HSRC	4	15
JMB	1	4
NSC	3	12
DET	18	69

The table indicates that there are more DET students (N = 18) than students matriculating from other authorities (N = 8). A primary research question of the present study is whether the categorisation of disadvantaged and advantaged meaningfully distinguishes between the two categories in relation to academic prediction.

2.3.2 Instruments

Two different batteries of instruments were used in an attempt

to cover those factors outlined in Biggs model (Figure 1) linked to academic performance; namely, (1) a selection battery of static tests which would assess those personological factors comprising enduring personal characteristics such as intelligence, home background, cognitive styles, and previous experience. Such tests are termed static in nature in that they assess current levels of functioning without providing evidence regarding the processes that may have operated or failed to bring about improved performance or functioning; (2) a selection battery of dynamic tests which assess both situational as well as learning process factors (see Figure 1). Such instruments make use of a learning-oriented approach to testing (Resnick, 1979) and assess the cognitive processes involved in various task performance.

The interest here is not so much in evaluating an individual's current state of knowledge or skill as in estimating her readiness for change. The contrast between the two batteries is between product and process-based assessments of individual differences. In dynamic testing the emphasis is on cognitive processes engaged in by students during problem-solving and studying and on the determination of the specific thinking strategies used in mastering cognitive tasks.

2.3.2.1 The Selection Test Battery : Static Instruments

Five instruments were used in static testing; (1) a Biographical Questionnaire (BQ), (2) an Intelligence Test (MAT), (3) an inductive reasoning test (PRT/T), (4) an interview measure (IM), and (5) the Matriculation Marks (MATRIC).

The Biographical Questionnaire (Appendix 2) was adapted from the Arts Faculty Questionnaire and has two broad scales measuring both presence of disadvantage and qualities of the applicant. Presence of Disadvantage is evaluated further through sub-scales of language and educational disadvantage. The qualities of the applicant are evaluated through the subscales of motivation and

career suitability. There are three main assessment areas which correspond to the criteria evaluated during the interviewing process (IM), viz., language and educational disadvantage, motivation and career suitability (Appendix 3). The BQ laid the foundation for background information pertaining to the interviewing which took place at a later date. For an outline of the rating form used for both the BQ and IM see Appendix 4. The actual questionnaire itself comprises 45 questions and requires approximately 45 minutes to complete. Appendix 3 delineates which questions correspond to the various scales and sub-scales.

The Mental Alertness Test (MAT) of the NIPR is a group test of general intelligence. It is designed for individuals with an education of at least matriculation (see Appendix 5 for a sample of some of the test items). Although the test's manual does not cite any validation studies on black samples, it is used extensively for selecting black candidates for educational opportunities. It is regarded as a measure of general reasoning ability (Wilcocks, 1973). It is a group test consisting of 30 varied items, each with 5 alternatives and includes verbal analogies, numerical and letter series, etc.
The time limit of the advanced version is 35 minutes.

The Pattern Relations Test (PRT/T) is a test of inductive reasoning and reasoning by analogy. These are abilities previously identified as having possible relevance to the prediction of success in quantitative subjects such as accounting, mathematics and statistics at university. It is similar in structure to the advanced form of the Raven's Progressive Matrices but is more complex. The former test was favoured in that previous studies using the Raven's Matrices encountered a ceiling effect at tertiary level (Shochet, 1986). Feuerstein has continuously regarded the cognitive skills measured by such tests as both important and modifiable. This made the test

useful for the purpose of dynamic testing in that an analysis of the test in terms of Feuerstein's cognitive map (Appendix 1) indicated that it was primarily internally consistent. The modality remained figural throughout the test and the principles learned in earlier items on the enriched condition (PRT/E) could be transferred and applied subsequently. The test appeared at an appropriate level of complexity and had been normed on first year white students. Appendix 6 outlines the cognitive processes necessary for solving the test and which guided the process of mediation.

The PRT/T consists of 30 items containing a 3 x 3 figural matrix governed by a set of rules. The student is required to select from six alternatives what appropriate figure should fix the last figure in the matrix which is always left blank. See Appendices 7, 8 and 9 for the instructions of the PRT/T, for samples of the items and for the answer sheet handed out to the students.

The Interview Measure (IM) was an adapted form of that used by the Anglo-American Testing Division (AATD). The AATD presently use such a format (Appendix 10) in selecting PBS students. The IM was carried out on a one-to-one basis by a trained interviewer who was an ex-PBS student herself. The interviewer used the BQ to gather background information and carried out the interviewing at the residences where each PBS student had booked an appropriate time. The IM looked at the same three measures as the BQ and followed a semi-structured format. Each student was allowed a time of 25 minutes to respond in the interview situation to the 16 questions. The interviewer then rated the student and made relevant comments to the degree of suitability.

The selection criterion in the Faculty of Commerce is that of school results. A rating of 23 points is required for automatic admission to the first year of the B Com

(General) degree and a rating of 24 points required for the B Com (Accounting) degree. Students, if deemed to have academic potential, could be admitted with less than 23 points at the discretion of the Dean of the Faculty. This could involve interviews or the writing of additional tests.

The admission rating for commerce is calculated on six matriculation subjects. It was important to include this variable in the present study (MATRIC) to account for school academic achievement. The points awarded at Wits University are shown in Table 4.

Table 4 :

POINTS FOR CALCULATING ADMISSION RATINGS

Matric Symbol	Points: Higher Grade	Points: Standard Grade
A	6	4
B	5	3
C	4	2
D	3	1
E	2	0
F	1	0

2.3.2.2 The Selection Test Battery : Dynamic Instruments

Four instruments were used in dynamic testing :

(1) The Pattern Relations Enriched Condition (PRT/E), to determine learning potential; (2) The Learning Process Measure (LSP), to determine processes of learning; (3) The Study Process Questionnaire of Biggs (3); to establish learning strategy and, (4) The Learning and Study Strategies Inventory (LASSI) to determine study processes.

The Pattern Relations Test was used twice in accordance with the Feuerstein principle of first assessing the individual's manifest level of functioning. Thus the score on the PRT/T served as a baseline from which learning potential and the modifiability of the individual can be assessed. The PRT/E was used on the second attempt (following directly after completion of the PRT/T).
This time the students were provided with mediation during the testing in order to assess their potential intellectual functioning (LP). In the PRT/E the students did not do the items in the same order as in the PRT/T. In order to facilitate the transfer of learning the items were clustered according to solutions requiring similar cognitive operations. The same format as that used by Shochet (1986) was incorporated with modifications to the mediation process.

The Learning Process Measure (LSP) was based on the phenomenological approach of getting students to summarise content-specific learning material and then making a qualitative analysis of the answers given. Cloete (1984) argues that this is a useful approach to determine whether students attempt to transform the material, or whether they merely reproduce the material in a sequential reproductive manner. In accordance with the literature (Cloete, 1984; Marton & Svensson, 1979), students were given an article to read that approximated real learning conditions as closely as possible. The text chosen was from an introductory economics text : An Introduction to Positive Economics by Lipsey (1974).

The text had to subscribe to certain principles :

(1) it should be of interest to most students who took commercial subjects;

(2) it should not make use of extensive technical jargon or 'Americanisms';

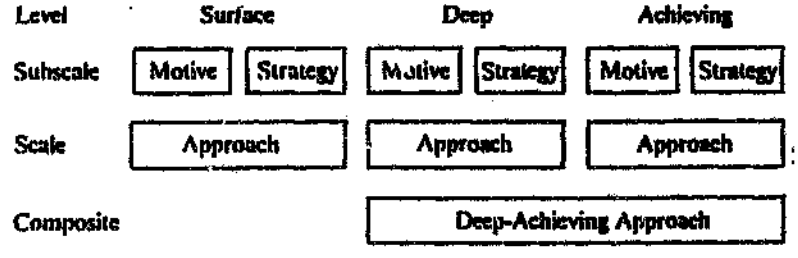
(3) it should contain a combination of general theories as well as detailed information presented in both literal and graphical form.

The article involved a case study of the application of supply and demand theory (see Appendix 12). Students were asked to read and summarise the article. Appendix 13 outlines the instructions for the LSP. In addition, two questions relating to the main ideas and authors' conclusions were included to facilitate evaluation of the learning process (Appendix 14 details the actual questions given to the students after they had studied the text).

The Study Process Questionnaire of Biggs (1987) is a 42 item self-report questionnaire which yields scores on three basic motives of learning and their three associated learning strategies (see Appendix 15 for a sample of SPQ items). Each corresponding motive and strategy yields a particular approach (Figure 3).

Figure 3 :

SPQ SCALE AND SUBSCALE COMPOSITION



A student has a preferred learning approach which could be categorised at a surface, deep or achieving level (see Table 5).

Table 5 :

SPQ APPROACHES TO LEARNING

Approach	Motive	Strategy
Surface (SA)	Surface mouve (SM) is to meet requirements minimally; a balancing act between failing and working more than is necessary.	Surface strategy (SS) is to limit target to bare essentials and reproduce them through rote learning.
Deep Approach (DA)	Deep mouve (DM) is intrinsic interest in what is being learned: to develop competence in particular academic subjects.	Deep strategy (DS) is to discover meaning by reading widely, inter-relating with previous relevant knowledge, etc.
Achieving Approach (AA)	Achieving motive (AM) is to enhance ego and self-esteem through competition; to obtain the highest marks, whether or not material is interesting.	Achieving strategy (AS) is to organize one's time and working space; to follow up all suggested readings, schedule time, behave as "model student".

The SPQ is easy to administer and requires about 20 minutes to complete.

The Learning and Study Strategies Inventory (LASSI) was developed as part of the Cognitive Learning Strategies Project at the University of Texas (Weinstein, 1983). It is a diagnostic instrument which identifies the strengths and weaknesses of individual students in ten areas which educational research has shown to be important for success at university (Table 6 gives a brief description of the subscales).

Table 6 :

LASSI SUBSCALES

There are 10 scales on the LASSI: Attitude, Motivation, Time Management, Anxiety, Concentration, Information Processing, Selecting Main Ideas, Study Aids, Self Testing, and Test Strategies.

Attitude, the first scale, contains items addressing attitude and interest in college.

How clear are students about their own educational goals?
Is school really important or worthwhile to them?

Motivation, the next scale, addresses students' diligence, self-discipline, and willingness to work hard.

Do they stay up-to-date in class assignments?
Do students easily lose interest in their classes?

Time Management examines students' use of time management principles for academic tasks.

Are they well organized?
Do they anticipate scheduling problems?

Anxiety items address the degree to which students worry about school and their performance.

Do students worry so much that it is hard for them to concentrate?
Are they easily discouraged about grades?

Concentration items focus on students' ability to pay close attention to academic tasks.

Are they easily distracted?
Can they direct their attention to school tasks?

The Information Processing scale contains items addressing several sub-areas. These include the use of imaginal and verbal elaboration, comprehension monitoring, and reasoning.

Can they imagine analogies that aid their memory?
Can they reason from hypotheses to form conclusions?

Selecting Main Ideas items address students' ability to pick out important information for further study.

Can they focus on the key points in a lecture?
Can they decide what to underline in a textbook?

The Study Aids scale examines the degree to which students use support techniques or materials to help them learn and remember new information.

Do they perform practice exercises?
Do they create or use organizational aids?

Self Testing concentrates on reviewing and preparing for classes and tests. Most of the items deal with some aspect of comprehension monitoring.

Do the students review before a test?
Do they stop periodically while reading to review the content?

The last scale, Test Strategies, focuses on students' approach to preparing for and taking examinations.

Do they prepare appropriately?
Do they try to integrate material from different sources?

The LASSI comprises 77 multiple choice questions which focus on either covert or overt thoughts and behaviours which can be altered through educational interventions. (Appendix 16 outlines sample items for each subscale). The LASSI is also easy to administer, requiring about 25 minutes to complete.

2.3.3 Procedure

All the students, both advantaged and disadvantaged, were exposed to the same testing procedure in the same sequence of testing. The instruments of the study were administered to the subjects on two full days of testing. For purposes of the study the first session was used for static testing and the second session for dynamic testing. The Director of Commerce Support Services had worked the days of testing into the PBS programme, thereby

ensuring full attendance of all PBS students at both sessions. The testing sequence, which took place at the end of the first semester, was as follows :

Session 1 (a) Biographical Questionnaire (BQ) - 45 minutes
(b) Mental Alertness Test (MAT) - 35 minutes
15 minute break
(c) Lassi - 25 minutes
(d) Biggs (SPQ) - 25 minutes

Session 2 (a) Learning Process Test (LSP) - 40 minutes
(b) Pattern Relations Traditional (PRT/T) - 50 minutes
15 minute break
(c) Pattern Relations Enriched (PRT/R) - 80 minutes

All the above tests were group administrations. The writer was assisted by two psychology students during both sessions. In addition, during the second semester each student was interviewed on a one-to-one basis using the IM. The scoring of both the BQ and IM followed the same format (see Appendices 3, 4 and 17). The IM was evaluated by a trained rater who also evaluated the BQ. The writer then evaluated the BQ after which inter-rater reliabilities were computed on the basis of agreement between both evaluations (Table 7).

Table 7 :

INTER-RATER RELIABILITY OF THE BIOGRAPHICAL QUESTIONNAIRE
CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 25

	X	Y
X	1.00000 0.0	0.56585 0.0032
Y	0.56585 0.0032	1.00000 0.0

The scoring of matric rating has already been discussed in a previous section. The scoring of both the Lassi and Biggs instruments was done by the Academic Staff Development Centre. The results of both these instruments were used to give feedback

to individual students as well as to the teaching staff of the PBS programme. Furthermore, the results were explained to the subjects as a whole at a post-test session and compared to the results obtained by a group of B Com (Accounting) students in B Com 1. Each PBS student received a profile of both the Lassi and Biggs score as well as suggestions for improving learning and studying processes (Appendix 18). The instructions and questions for the Learning Process Measure (LPM) have been discussed elsewhere. The summaries made by students in the LSM were evaluated by a post-graduate student in economics. A second rater then evaluated the same scripts. Both raters read each summary several times and indicated the extent to which characteristic attributes satisfied the criteria of strategy use. Table 8 indicates the inter-rater reliabilities of the LSP. Both raters were trained to score the LSP using the attributes outlined in Appendix 19 as an aid to evaluating each script. Each attribute was operationalised and a score allocated to degree of use of each attribute (Appendix 20). High scores (holist strategists) were characterised by good abstraction and transformation of the material. Low scores (atomists) were characterised by a reproducing sequence and no attempt at transforming the material.

Table 8 :

INTER-RATER RELIABITY OF THE LEARNING PROCESS MEASURE

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 26

	X	Y
X	1.00000 0.0	0.87451 0.0001
Y	0.87451 0.0001	1.00000 0.0

The Pattern Relations Traditional Test scoring did not present any methodological difficulties as the test administrator's manual provides a list of correct solutions. The raw scores were used in both the traditional and enriched forms. The raw score on the PRT/T was considered a measure of inductive reasoning and used to establish the baseline manifest intellectual functioning. The student's raw score on the PRT/E was considered a measure of potential intellectual functioning (LP). Learning potential was thus operationally defined as the difference between the enriched score and the traditional score. The enriched testing condition followed directly after the PRT/T and comprised four stages :

(1) Introductory patter (Appendix 21) to familiarise students with the procedures and set the tone for mediation
(2) intensive mediation
(3) minimal mediation and
(4) no mediation

In the PRT/E the order of items was changed in order to arrange items according to similarity of rules. This was in accordance with the Feuersteinian principle of using early items for intensive mediation and then assessing the transfer of learning to subsequent items. In later phases, minimal mediation was provided and a brief non-mediation phase concluded the last eight items of the PRT/E.

The criteria for mediation followed Feuerstein's (1979) principles of providing a mediated learning experience :

a) there must be an intention to mediate
b) mediation must transcend the here and now of the task and facilitate broader learning
c) there must be a mediation of the meaning in the task presented
d) the mediator should attempt to regulate the behaviour of students by restraining impulsivity
e) the mediator should present a climate of challenge to the students
f) the mediator should transmit a sense of competence to the students.

The PRT/E condition was therefore a learning experience wherein the relationship between the mediator and students was one of trainer/trainee.

In accordance with mediating the learning of skills required for success in inductive reasoning (see Appendix 6) the following training principles were adhered to :

(1) Modelling the components of cognitive operations through the use of graphics and thereafter providing students with repeated experience of the appropriate cognitive processes.
(2) Inhibiting impulsivity by mediation of anticipation of possible difficulties.
(3) Modelling appropriate problem-solving behaviour.
(4) Inducing greater need for precision.
(5) Inducing a need for logical evidence by asking inferential questions.
(6) Inducing spontaneous comparative behaviour by focusing attention on relevant details.

In order to ensure standardisation in the administration of the PRT/E a verbatim transcript of the entire mediation procedure was written (Appendix 22). The answer sheet on which students committed their responses can be found in Appendix 23. During the PRT/E one invigilator was designated to every eight students so as to ensure that students had committed themselves to answer in pen before the next mediation procedure.

2.3.4 Experimental Design and Statistical Analyses Performed

The present study is a predictive analysis which proposes to go beyond purely quantitative analysis and attempts to predict university success from student learning strategies as well as accounting for learning potential. The design thus consists of subject variables, predictor variables and criterion variables.

The design involved categorising the subjects into advantaged and disadvantaged. The rationale for the categorisation was

discussed in section 2.3.1. The full group of 26 PBS students registered for the PBS programme within the Faculty of Commerce at the University of the Witwatersrand in 1991, were put through a battery of testing near the beginning of the academic year. The testing consisted of two distinct and separate forms of testing. The students received static testing in Session 1 and dynamic testing in Session 2.

A number of predictor variables were generated from both testing sessions. The predictor variables together with the students' school matric rating and subsequent interview measure became the predictor variables of the present study. The capacity of these variables to predict academic success was assessed. The criterion measures of success (university results) were obtained after the July examinations. These university results were the students official faculty results in the three examined PBS subjects of Accounting, Mathematics and Statistics. In addition, the average mark obtained by the students over all three courses was also computed. It was felt that an additional criterion measure should be used which does not require reproductive learning as is in the case of the aforementioned three subjects. For this reason the July results for Business Studies was also included as a predictor variable. Business Studies is not examined as an official faculty subject but is a PBS course requiring more than just reproductive learning.

Variations in the university results are expected to be a function of variations in the learning styles and learning potential between and within subjects. For the purposes of clarity, a tabulated summary of the variables used in the present study, as well as their hierarchy of importance in terms of the aims of the study, is presented in Table 9.

Table 9 :

SUMMARY OF SUBJECT, PREDICTOR AND CRITERION VARIABLES

SUBJECT VARIABLES	PREDICTOR VARIABLES	CRITERION VARIABLES
1. Advantaged Students (ADV)	1. Learning Potential (LP) (PRT/E-PRT/T=LP)	1. Accounting (A)
2. Disadvantaged Students (DISAD)	2. Pattern Relations Enriched (PRT/E)	2. Mathematics (M)
	3. Learning Process Measure (LSP)	3. Statistics (S)
		4. Business Studies (BS
		5. Average Result (AV)
	4. Bigg's Study Process Questionnaire (SPQ)	
	4.1 Surface motive (B1)	
	4.2 Deep motive (B2)	
	4.3 Achieving motive (B3)	
	4.4 Surface strategy (B4)	
	4.5 Deep strategy (B5)	
	4.6 Achieving strategy (B6)	
	4.7 Surface approach (B7)	
	4.8 Deep approach (B8)	
	4.9 Achieving approach (B9)	
	5. Learning and Study Skills Inventory (LASSI)	
	5.1 Attitude and interest (L1)	
	5.2 Motivation (L2)	
	5.3 Time management (L3)	
	5.4 Anxiety (L4)	
	5.5 Concentration (L5)	
	5.6 Information processing (L6)	
	5.7 Selecting main ideas (L7)	
	5.8 Support techniques (L8)	
	5.9 Self-testing (L9)	
	5.10 Test strategies (L10)	
	6. Pattern Relations Traditional Test (PRT/T)	
	7. Interview measure (IM)	
	8. Biographical Questionnaire (BQ)	
	9. Mental Alertness Test (MAT)	
	10. Matric Rating (MATRIC)	

In accordance with the stated aims and hypotheses of this study the statistics of choice was that of correlational analyses. The Statistical Analyses System (SAS) under licence of the University of the Witwatersrand was used to correlate all 27 predictor variables with performance in all 5 of the criterion variables. In addition, intercorrelations between all measures was also obtained using the Pearson Product Moment Correlation Coefficient. Results were computed separately for the whole group (ADV & DISAD), advantaged students (ADV), disadvantaged students (DISAD), students with high learning potential and also for students with low learning potential. The latter two computations were considered essential to accounting for qualitative differences between subjects.

Significance levels throughout the present study were set at 0,05 and were based on two-tailed assumptions.

CHAPTER 3

RESULTS

In keeping with the rationale of the present study of distinguishing between selection criteria and their application to advantaged, disadvantaged as well as full group of students, it was necessary to present the results separately in five sections. Furthermore, it was an aim of the study to demonstrate that students are modifiable at all stages of cognitive development. In terms of predicting for academic success using a process-oriented approach, there was a consequent need to distinguish between manifest and potential performance by analysing the results for the group on the basis of high or low modifiability. The statistical procedure employed for each comparison was a simple predictive one for each of the following :

(1) analysis of the results for the full PBS group (both ADV and DISAD) where N = 26.
(2) analysis of the results for the advantaged students (N = 8).
(3) analysis of the results for the disadvantaged students (N = 18).
(4) analysis of the results for the high modifiable students (N = 9).
(5) analysis of the results for the low modifiable students (N = 17).

The results for each group are presented firstly, in terms of simple statistics giving the mean, standard deviation, and sums for all the variables. Secondly, the correlational analysis of all predictor variables with criterion variables is shown. Thirdly, the intercorrelations of all predictor variables is also given.

3.1 Analysis of the Results for the Whole Group

Table 10 indicates the simple statistics for the whole group of PBS students.

Table 10 :

SIMPLE STATISTICS FOR THE FULL GROUP OF STUDENTS

Variable	N	Mean	Std Dev	Sum
NO	26	114.11538	8.49153	2967
MATRIC	26	21.11538	6.90780	549.00000
IQ	26	26.96154	6.35283	701.00000
PRT	26	8.88462	3.74515	231.00000
PRTE	26	16.11538	4.81935	419.00000
LP	26	8.07692	3.49769	210.00000
BIOGRAPH	26	57.15385	6.86261	1486
INTVIEW	26	48.26923	11.61226	1255
LSP	26	49.57692	11.43389	1289
L_1	26	32.07692	6.38701	834.00000
L_2	26	30.03846	5.21138	781.00000
L_3	26	25.57692	4.64046	665.00000
L_4	26	23.53846	5.96141	612.00000
L_5	26	28.80769	5.51376	749.00000
L_6	26	27.26923	6.74423	709.00000
L_7	26	17.42308	3.61301	453.00000
L_8	26	25.92308	4.16579	674.00000
L_9	26	26.61538	5.67152	692.00000
L_10	26	27.65385	5.15319	719.00000
B_1	26	26.11538	3.99326	679.00000
B_2	26	21.61538	4.68254	562.00000
B_3	26	23.61538	4.80897	614.00000
B_4	26	23.53846	5.47161	612.00000
B_5	26	26.42308	4.65767	687.00000
B_6	26	25.15385	5.55476	654.00000
B_7	26	47.73077	7.32971	1241
B_8	26	47.15385	8.71180	1226
B_9	26	51.57692	7.93561	1341
JUNE_A	26	41.50000	17.25167	1079
JUNE_S	26	45.19231	15.72519	1175
JUNE_M	26	52.15385	13.60498	1356
JUNE_AVE	26	46.07692	12.38361	1198
JUNE_BS	25	64.60000	14.25658	1615

Table 11 indicates the correlations of all the predictor variables with the five criterion variables of academic success.

Table 11 :

CORRELATION ANALYSIS OF PREDICTOR VARIABLES WITH CRITERION VARIABLES FOR THE FULL GROUP

	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE	JUNE_BS
NO	-0.23824 0.2412 26	0.02349 0.9093 26	-0.03549 0.8634 26	-0.11915 0.5621 26	-0.33784 0.0986 25
MATRIC	0.26072 0.1983 26	-0.04020 0.8454 26	-0.17468 0.3934 26	0.03927 0.8489 26	0.23315 0.2620 25
IQ	-0.02208 0.9147 26	0.29517 0.1432 26	0.27035 0.1816 26	0.21613 0.2889 26	0.33622 0.0982 25
PRT	0.37920 0.0561 26	0.19260 0.3459 26	0.28926 0.1518 26	0.36416 0.0674 26	-0.00226 0.9914 25
PRTE	0.19557 0.3383 26	0.33010 0.0996 26	0.16382 0.4239 26	0.29609 0.1419 26	-0.02714 0.8975 25
LP	-0.07510 0.1738 26	0.00117 0.9955 26	-0.02800 0.8920 26	-0.13682 0.5051 26	-0.21092 0.3115 25
BIOGRAPH	0.30475 0.1301 26	0.17467 0.3934 26	0.18953 0.3538 26	0.28838 0.1531 26	0.29696 0.1494 25
INTVIEW	0.19278 0.3454 26	-0.16064 0.4331 26	0.13341 0.5159 26	0.06800 0.7414 26	-0.08160 0.6982 25
LSP	0.24486 0.2280 26	0.20559 0.3137 26	0.55483 0.0033 26	0.40393 0.0407 26	0.14307 0.4951 25
L_1	0.04864 0.8134 26	0.45108 0.0207 26	0.09929 0.6294 26	0.24621 0.2253 26	0.13591 0.5171 25
L_2	-0.01802 0.9304 26	0.19466 0.3406 26	-0.03845 0.8521 26	0.05945 0.7730 26	-0.04370 0.8357 25
L_3	-0.02223 0.9141 26	-0.00377 0.9854 26	-0.04011 0.8458 26	-0.02377 0.9082 26	-0.09018 0.6681 25
L_4	0.16024 0.4342 26	0.09102 0.6584 26	-0.07455 0.7174 26	0.08990 0.6623 26	0.12315 0.5577 25
L_5	0.04142 0.8408 26	0.24218 0.2333 26	0.01537 0.9407 26	0.12032 0.5582 26	0.08576 0.6836 25

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE	JUNE_SS
L_6	-0.02596 0.8998 26	-0.14723 0.4729 26	-0.19316 0.3444 26	-0.14202 0.4889 26	0.25084 0.2265 25
L_7	0.12995 0.5269 26	0.23267 0.2130 26	-0.12588 0.5400 26	0.11815 0.5654 26	0.28736 0.1637 25
L_8	0.10909 0.5958 26	0.00023 0.9991 26	-0.13247 0.5189 26	0.00012 0.9995 26	0.24852 0.2310 25
L_9	-0.03475 0.8642 26	-0.04040 0.8447 26	-0.18634 0.3621 26	-0.10151 0.6217 26	0.19264 0.3562 25
L_10	0.19145 0.3488 26	0.24148 0.1969 26	-0.02089 0.9193 26	0.19224 0.3468 26	0.25166 0.2249 25
B_1	-0.16809 0.4117 26	0.03403 0.8689 26	0.18741 0.3593 26	0.00143 0.9945 26	0.27912 0.1766 25
B_2	-0.01733 0.9330 26	0.10806 0.5993 26	0.02106 0.9187 26	0.04882 0.8128 26	0.01957 0.9260 25
B_3	-0.23288 0.2523 26	-0.01115 0.9569 26	-0.09994 0.6272 26	-0.15128 0.4607 26	0.29920 0.1462 25
B_4	0.13348 0.5156 26	-0.15606 0.4465 26	-0.18923 0.3543 26	-0.07148 0.7286 26	0.42643 0.0335 25
B_5	-0.29445 0.1442 26	-0.13353 0.4540 26	-0.19991 0.3275 26	-0.27521 0.1736 26	-0.08668 0.6803 25
B_6	-0.22290 0.2737 26	-0.11529 0.5749 26	-0.05431 0.7921 26	-0.17754 0.3856 26	0.09559 0.6495 25
B_7	-0.10265 0.6178 26	0.08757 0.6705 26	0.11555 0.5740 26	0.03197 0.8768 26	0.16435 0.4324 25
B_8	-0.04471 0.8283 26	-0.10417 0.6126 26	-0.17401 0.3952 26	-0.12840 0.5319 26	0.43326 0.0303 25
B_9	-0.32885 0.1009 26	-0.17081 0.4041 26	-0.15535 0.4486 26	-0.28580 0.1570 26	0.01624 0.9386 25

An analysis of Table 11 reveals that none of the traditional measures (Matric or IQ) predict for success for both advantaged and disadvantaged students in the same group. The most significant predictor of academic success was the learning process measure which showed correlations of 0,56 at the 0,003 level and 0,40 at the 0,04 level with Mathematics and the June average respectively. A significant relationship is also found between positive attitude toward university (LI) and Statistics marks (0,45 at the 0,02 level). There is a significant relationship between deep strategy (B4) and Business Studies (BS) as well as between deep approach (B8) and BS. The results are 0,42 at the 0,03 level and 0,43 at 0,03 respectively. It is interesting to note that the Pattern Relation traditional score (PRT) correlates at 0,38 at the 0,05 level with Accounting.

The intercorrelations of all predictor variables are shown in Appendix 24. Significant relationships exist between PRT and the Biography (0,40 at 0,03); the learning process measure (LSP) and Biography (0,44 at 0,02); achieving strategy (B6) and time management (L3) which is 0,61 at 0,001; the achieving approach (B9) correlates with both time management (L3) and motivation (L2) which is 0,49 at 0,01 and 0,40 at 0,04 respectively. A deep strategy (B4) correlates highly (0,66 at 0,0002) with information processing (L6) and self-testing which is L6 (0,52 at 0,006). An achieving strategy (B6) also correlates with L6 (0,42 at 0,03). The deep approach (B8) has a significant relationship with L6 and L9 (0,48 at 0,01 and 0,51 at 0,007 respectively). An achieving approach (B9) correlates with use of support techniques (L8) at 0,44 at the 0,01 level.

3.2 Analysis of the Results for the Advantaged Students

Table 12 outlines the simple statistics pertaining to the advantaged students (N = 8) within the PBS group.

Table 12 :

SIMPLE STATISTICS FOR THE ADVANTAGED STUDENTS

Variable	N	Mean	Std Dev	Sum
JUNE_BS	8	65.37500	18.50048	523.00000
NO	8	115.50000	11.50155	924.00000
MATRIC	7	22.28571	3.72891	156.00000
IQ	8	30.50000	[illegible]	244.00000
PRT	8	11.37500	[illegible]	91.00000
PRTE	8	18.37500	2.87539	147.00000
LP	8	6.25000	2.81577	50.00000
BIOGRAPH	8	62.25000	7.30460	498.00000
INTVIEW	7	52.00000	6.08276	364.00000
LSP	8	49.50000	12.61518	396.00000
L_1	8	34.12500	4.51782	273.00000
L_2	8	30.62500	4.47014	245.00000
L_3	8	25.00000	4.59814	200.00000
L_4	8	21.12500	6.49038	169.00000
L_5	8	26.25000	5.39179	210.00000
L_6	8	25.12500	8.85498	201.00000
L_7	8	18.00000	3.54562	144.00000
L_8	8	24.37500	4.10337	195.00000
L_9	8	26.00000	7.15142	208.00000
L_10	8	28.25000	6.08863	226.00000
B_1	8	27.50000	2.67261	220.00000
B_2	8	23.75000	3.49489	190.00000
B_3	8	23.62500	3.33542	189.00000
B_4	8	22.37500	5.70557	179.00000
B_5	8	25.62500	4.95516	205.00000
B_6	8	23.75000	3.57571	190.00000
B_7	8	51.25000	3.57571	410.00000
B_8	8	46.00000	6.04743	368.00000
B_9	8	49.37500	6.47936	395.00000
JUNE_A	8	42.87500	19.04459	343.00000
JUNE_S	8	46.50000	20.24140	372.00000
JUNE_M	8	55.25000	15.58158	442.00000
JUNE_AVE	8	48.00000	16.86077	384.00000

Table 13 indicates the correlations of all the predictor variables with the criterion variables. The correlations for Business Studies are shown in Appendices 24 to 28.

Table 13 :

CORRELATION OF PREDICTOR VARIABLES WITH CRITERION VARIABLES FOR THE ADVANTAGED STUDENTS

	B_7	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE
JUNE_BS	-0.01207 0.9774 8	0.74822 0.0327 8	0.79254 0.0190 8	0.72564 0.0416 8	0.82069 0.0125 8
NO	0.09469 0.8231 8	-0.54817 0.1595 8	-0.43199 0.2851 8	-0.80830 0.0152 8	-0.63279 0.0922 8
MATRIC	-0.38832 0.3893 7	0.50429 0.2485 7	0.33819 0.4581 7	0.20908 0.6528 7	0.38227 0.3974 7
IQ	0.06124 0.8855 8	0.56522 0.1443 8	0.81319 0.0141 8	0.69495 0.0557 8	0.75306 0.0310 8
PRT	-0.64057 0.0870 8	0.41322 0.3089 8	0.16404 0.6979 8	0.46202 0.2491 8	0.35774 0.3843 8
PRTE	-0.30000 0.4703 8	0.46534 0.2453 8	0.10677 0.8013 8	0.39937 0.3270 8	0.33297 0.4203 8
LP	0.64403 0.0848 8	-0.58541 0.1274 8	-0.27571 0.5086 8	-0.55190 0.1561 8	-0.50251 0.2044 8
BIOGRAPH	0.00981 0.9816 8	0.41205 0.3104 8	0.75460 0.0305 8	0.65707 0.0767 8	0.65535 0.0777 8
INTVIEW	-0.59924 0.1550 7	0.64036 0.1213	0.35734 0.4313 7	0.22499 0.6276 7	0.43982 0.3234 7
LSP	-0.27177 0.5150 8	0.48907 0.2187 8	0.64170 0.0863 8	0.89393 0.0028 8	0.71865 0.0446 8
L_1	0.13482 0.7503 8	0.75733 0.0295 8	0.76156 0.0281 8	0.65499 0.0779 8	0.79330 0.0188 8
L_2	0.35081 0.3942 8	0.30142 0.4681 8	0.55812 0.1505 8	0.41584 0.3055 8	0.47385 0.2356 8
L_3	0.76720 0.0263 8	0.00979 0.9816 8	0.28089 0.5004 8	0.26519 0.5256 8	0.20638 0.6239 8
L_4	0.49809 0.2091	0.22783 0.5874	0.39201 0.3368	0.10842 0.7983	0.28458 0.4945

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	B_9	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE
L_5	0.19730 0.6395 8	0.47476 0.2345 8	0.56284 0.1464 8	0.35284 0.3913 8	0.51700 0.1895 8
L_6	-0.25490 0.5424 8	0.17122 0.6852 8	0.01714 0.9679 8	0.19646 0.6410 8	0.13970 0.7415 8
L_7	0.09949 0.8147 8	0.66642 0.0711 8	0.61706 0.1032 8	0.27410 0.5112 8	0.58546 0.1273 8
L_8	-0.00067 0.9987 8	0.41015 0.3129 8	0.41363 0.3084 8	0.38261 0.3495 8	0.43566 0.2806 8
L_9	0.24048 0.5662 8	-0.00944 0.9823 8	0.06711 0.8745 8	0.15128 0.7206 8	0.08175 0.8474 8
L_10	0.22542 0.5914 8	0.44752 0.2662 8	0.54017 0.1670 8	0.34558 0.4018 8	0.49957 0.2075 8
B_1	-0.03712 0.9305 8	0.52906 0.1776 8	0.43308 0.2838 8	0.59690 0.1182 8	0.55162 0.1564 8
B_2	0.00473 0.9911 8	0.43302 0.2839 8	0.64420 0.0847 8	0.19282 0.6473 8	0.48244 0.2260 8
B_3	0.73457 0.0379 8	-0.05707 0.8932 8	0.23805 0.5702 8	0.27969 0.5023 8	0.16004 0.7050 8
B_4	-0.30190 0.4674 8	0.50008 0.2069 8	0.34326 0.4052 8	0.19484 0.6438 8	0.39204 0.3368 8
B_5	0.83706 0.0095 8	-0.59701 0.1181 8	-0.39097 0.3382 8	-0.33906 0.4113 8	-0.48390 0.2244 8
B_6	0.65206 0.0797 8	0.11276 0.7904 8	0.37897 0.3545 8	0.32948 0.4255 8	0.30330 0.4652 8
B_7	-0.02312 0.9567 8	0.81867 0.0130 8	0.95334 0.0002 8	0.63460 0.0910 8	0.88383 0.0036 8
B_8	0.12031 0.7766 8	0.44034 0.2749 8	0.45515 0.2571 8	0.33808 0.4127 8	0.45814 0.2536 8
B_9	1.00000 0.0 8	-0.39434 0.3337 8	-0.08986 0.8324 8	-0.07747 0.8553 8	-0.20269 0.6302 8

An analysis of Table 13 shows a very significant relationship between the June Business Studies marks (BS) and IQ (0,92 at 0,001). BS also correlates highly with L1 (0,81 at 0,01). A surface motive (B1) and surface approach (B7) correlate with BS (0,86 at 0,005 and 0,76 at 0,02 respectively). IQ also correlates with June Average (0,75 at 0,03). There are two very high correlations of Learning Process (LSP) with both June Maths and Average marks (0,9 at 0,002 and 0,72 at 0,04 respectively). Attitude and interest (L1) also has significant relationships with June Accounts, Stats and Average (0,76 at 0,02; 0,76 at 0,02; and 0,80 at 0,01 respectively). A surface approach correlates highly with June Accounts, Stats and Average (0,82 at 0,01; 0,95 at 0,0002; and 0,88 at 0,003 respectively).

The intercorrelations of all predictor variables for this group are indicated in Appendix 25.

For this group the Matric rating correlates with the interview measure (0,83 at 0,03). The surface approach correlates with IQ (0,72 at 0,04). A Deep Motive correlates with Time Management (L3; 0,76 at 0,02). The surface approach (B7) also correlates with the Biography (0,71 at 0,04) and attitude (0,78 at 0,02). The deep approach correlates with attitude (0,73 at 0,03) and anxiety (0,74 at 0,03). An achieving approach correlates 0,77 at 0,02 with time management. A deep strategy correlates with information processing (0,81 at 0,01) and test strategies (L10; 0,77 at 0,02). The surface approach correlates with selecting main ideas (L7; 0,72 at 0,04). The deep approach correlates with concentration, self-testing and test strategies (0,76 at 0,03; 0,76 at 0,02; and 0,88 at 0,003 respectively).

3.3 Analysis of Results for the Disadvantaged Students

The simple statistics for the disadvantaged students is shown in Table 14.

Table 14 :

SIMPLE STATISTICS FOR THE DISADVANTAGED STUDENTS

Variable	N	Mean	Std Dev	Sum
JUNE_BS	17	64.23529	12.43749	1092
NO	18	113.50000	7.08976	2043
MATRIC	17	23.11765	2.57105	393.00000
ID	18	25.38889	6.16374	457.00000
PRT	18	7.77778	2.53344	140.00000
PRTE	18	16.33333	3.83057	294.00000
LP	18	8.55556	3.79198	154.00000
BIOGRAPH	18	54.88889	5.44371	988.00000
INTVIEW	18	49.50000	4.39163	891.00000
LSP	18	49.61111	11.25710	893.00000
L_1	18	31.16667	6.98107	561.00000
L_2	18	29.77778	5.61045	536.00000
L_3	18	25.83333	4.76815	465.00000
L_4	18	24.61111	5.56395	443.00000
L_5	18	29.94444	5.31891	539.00000
L_6	18	28.22222	5.61045	508.00000
L_7	18	17.16667	3.71404	309.00000
L_8	18	26.61111	4.11795	479.00000
L_9	18	26.88889	5.09774	484.00000
L_10	18	27.38889	4.85240	493.00000
B_1	18	25.50000	4.38245	459.00000
B_2	18	20.66667	4.91097	372.00000
B_3	18	23.61111	5.42477	425.00000
B_4	18	24.05556	5.45001	433.00000
B_5	18	26.77778	4.62163	482.00000
B_6	18	25.77778	6.22666	464.00000
B_7	18	46.16667	8.08230	831.00000
B_8	18	47.66667	9.77993	858.00000
B_9	18	52.55556	8.48682	946.00000
JUNE_A	18	40.88889	14.94242	736.00000
JUNE_S	18	44.61111	13.92053	803.00000
JUNE_M	18	50.77778	12.87293	914.00000
JUNE_AVE	18	45.22222	10.29309	814.00000

Table 15 shows the correlations of all the predictor variables with the criterion variables.

Table 15 :

CORRELATION ANALYSIS OF PREDICTOR VARIABLES WITH CRITERION VARIABLES FOR THE DISADVANTAGED STUDENTS

	B_9	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE
JUNE_BS	0.04336 0.8687 17	0.05547 0.8325 17	-0.34974 0.1688 17	-0.30447 0.234[illegible] 17	-0.26033 0.3129 17
NO	0.21901 0.3848 18	-0.02644 0.9170 18	0.45387 0.0585 18	0.55558 0.0167 18	0.41513 0.0867 18
MATRIC	-0.08530 0.7448 17	0.43767 0.0789 17	0.09859 0.7066 17	-0.10684 0.6773 17	0.[illegible]2613 0.3828 17
IQ	-0.49112 0.0385 18	-0.30251 0.2224 18	0.02791 0.9125 18	0.02561 0.9197 18	-0.13862 0.5833 18
PRT	-0.02675 0.9161 18	0.41327 0.088[illegible] 18	0.21924 0.3821 18	0.05612 0.8250 18	0.35842 0.1441 18
PRTE	0.06370 0.8017 18	0.05607 0.8251 18	0.17459 0.4884 18	0.20882 0.4057 18	0.20863 0.4061 18
LP	0.08307 [illegible] 18	-0.21873 0.3832 18	0.03219 0.8991 18	0.17621 0.4843 18	-0.02596 0.9186 18
BIOGRAPH	-0.10954 0.6768 18	0.26773 0.2828 18	-0.30024 0.2261 18	-0.22114 0.3779 18	-0.06882 0.7861 18
INTVIEW	0.21146 0.3996 18	0.12331 0.6259 18	-0.35073 0.1536 18	0.04433 0.8614 18	-0.08047 0.7509 18
LSP	-0.05548 0.8269 18	0.11912 0.6378 18	-0.08323 0.7427 18	0.37769 0.1223 18	0.18355 0.4660 18
L_1	-0.03541 0.8891 18	-0.17639 0.4838 18	0.37176 0.1287 18	-0.11804 0.6409 18	0.01501 0.9529 18
L_2	0.44131 0.0668 18	-0.14199 0.5741 18	0.02745 0.9139 18	-0.23774 0.3421 18	-0.17022 0.4995 18
L_3	0.40799 0.0928 18	-0.03010 0.9056 18	-0.16055 0.5245 18	-0.16835 0.5043 18	-0.15981 0.5265 18
L_4	-0.54701 0.0188 18	0.15801 0.5312 18	-0.08409 0.7401 18	-0.11626 0.6460 18	0.00160 0.9950 18

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	B_9	JUNE_A	JUNE_S	JUNE_M	JUNE_AVG
L_5	0.31999 0.1955 18	-0.13193 0.6018 18	0.10615 0.6751 18	-0.07493 0.7676 18	-0.07175 0.7772 18
L_6	0.40494 0.0955 18	-0.15072 0.5505 18	-0.28379 0.2503 18	-0.45294 0.0591 18	-0.40224 0.0980 18
L_7	0.14805 0.5577 18	-0.11374 0.6532 18	0.04577 0.8571 18	-0.34614 0.1594 18	-0.19337 0.4429 18
L_8	0.54684 0.0159 18	-0.00319 0.9900 18	-0.22239 0.3751 18	-0.33685 0.1717 18	-0.24487 0.3274 18
L_9	0.56713 0.0141 18	-0.04310 0.8590 18	-0.12333 0.6259 18	-0.40825 0.0926 18	-0.26183 0.2939 18
L_10	-0.21410 0.3936 18	0.03776 0.8817 18	0.04765 0.8511 18	-0.27069 0.2773 18	-0.07721 0.7607 18
B_1	0.58993 0.0100 18	-0.39612 0.1037 18	-0.12680 0.6161 18	0.03232 0.8987 18	-0.26472 0.2884 18
B_2	0.53820 0.0212 18	-0.19136 0.4469 18	-0.13108 0.6042 18	-0.10825 0.6690 18	-0.20442 0.4158 18
B_3	0.50582 0.0322 18	-0.29299 0.2380 18	-0.10416 0.6808 18	-0.22369 0.3722 18	-0.30387 0.2202 18
B_4	0.35030 0.1541 18	-0.02987 0.9063 18	-0.46181 0.0537 18	-0.36202 0.1399 18	-0.37668 0.1234 18
B_5	0.69620 0.0013 18	-0.13856 0.5835 18	0.00498 0.9844 18	-0.10371 0.6822 18	-0.11885 0.6386 18
B_6	0.84624 0.0001 18	-0.31529 0.2025 18	-0.28676 0.2486 18	-0.13275 0.5995 18	-0.36906 0.1318 18
B_7	0.64690 0.0037 18	-0.33106 0.1796 18	-0.14340 0.5568 18	-0.04825 0.8492 18	-0.26775 0.2827 18
B_8	0.47578 0.0460 18	-0.17916 0.4769 18	-0.31513 0.2028 18	-0.32582 0.1870 18	-0.37844 0.1215 18
B_9	1.00000 0.0 18	-0.30678 0.2156 18	-0.20768 0.4083 18	-0.15387 0.5421 18	-0.33349 0.1735 18

For this group there are no predictors of academic success for the July marks in accounts, maths, statistics or July Average. There is a relationship of 0,47 at the 0,05 level between a deep strategy (B4) and Business Studies.

The intercorrelations of all predictor variables are shown in Appendix 26. There is a correlation between selecting main ideas (L7) and Matric (0,49 at 0,04). The interview correlates with the LSP (0,52 at 0,02), as well as with time management (L3; 0,57 at 0,01). An achieving strategy correlates with time management (0,60 at 0,009). A surface strategy correlates with information processing (L6; 0,57 at 0,01). An achieving strategy correlates with both support techniques (L8) and self-testing (L9; 0,48 at 0,04 for both variables). An achieving approach (B9) correlates with support techniques (0,55 at 0,01) and self-testing (0,57 at 0,01).

3.4 Analysis of the Results for the Low Modifiable Students

The number of low modifiable (LM) students are those students ($N = 17$) who scored below the mean when calculating the Learning Potential (LP). These students made little improvement in the enriched condition of the PRT/E test. The number of disadvantaged students in the LM group is 11.

Table 16 indicates the simple statistics for this group of low modifiable students.

Table 16 :

SIMPLE STATISTICS FOR THE LOW MODIFIABLE STUDENTS

Variable	N	Mean	Std Dev	Sum
JUNE_BS	17	65.29412	14.52052	1110
NO	17	111.94118	8.04263	1903
MATRIC	15	22.73333	2.31352	341.00000
I	17	27.35294	6.66090	465.00000
PRT	17	9.58824	3.93794	163.00000
PRTE	17	15.82353	3.50420	269.00000
LP	17	5.88235	1.79869	100.00000
BIOGRAPH	17	56.82353	6.28724	966.00000
INTVIEW	17	51.11765	6.42147	869.00000
LSP	17	50.88235	11.98897	865.00000
L_1	17	33.23529	4.44246	565.00000
L_2	17	30.41176	4.59699	517.00000
L_3	17	24.52941	4.93859	417.00000
L_4	17	22.47059	6.52033	382.00000
L_5	17	28.76471	5.64058	489.00000
L_6	17	28.29412	6.74319	481.00000
L_7	17	17.58824	3.44708	299.00000
L_8	17	25.58824	4.22875	435.00000
L_9	17	26.76471	5.81517	455.00000
L_10	17	28.52941	5.36327	485.00000
B_1	17	26.64706	4.10702	453.00000
B_2	17	21.17647	3.74559	360.00000
B_3	17	22.94118	4.84085	390.00000
B_4	17	23.11765	5.77584	393.00000
B_5	17	25.94118	3.99172	441.00000
B_6	17	24.05882	5.29706	409.00000
B_7	17	47.82353	6.39566	813.00000
B_8	17	46.05882	8.66365	783.00000
B_9	17	50.00000	7.80224	850.00000
JUNE_A	17	41.94118	16.80949	713.00000
JUNE_S	17	42.82353	17.52939	728.00000
JUNE_M	17	51.82353	15.28167	881.00000
JUNE_AVE	17	45.29412	13.97661	770.00000

The correlations of all the predictor variables with the five criterion variables is shown in Table 17.

Table 17 :

CORRELATION ANALYSIS OF PREDICTOR VARIABLES WITH CRITERION VARIABLES FOR THE LOW MODIFIABLE STUDENTS

	B_9	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE
JUNE_SS	0.08054 0.7586 17	0.47743 0.0523 17	0.42329 0.0905 17	0.40443 0.1074 17	0.51384 0.0349 17
NS	0.09562 0.7151 17	-0.25013 0.3329 17	-0.29577 0.2491 17	-0.18316 0.4817 17	-0.29841 0.2447 17
MATRIC	0.03730 0.8950 15	0.73852 0.0017 15	0.42337 0.1158 15	0.17272 0.5382 15	0.51874 0.0475 15
IQ	-0.68549 0.0024 17	0.17882 0.4923 17	0.49998 0.0410 17	0.47467 0.0542 17	0.46137 0.0623 17
PRT	-0.35598 0.1608 17	0.34518 0.1748 17	0.28680 0.2644 17	0.47646 0.0532 17	0.43044 0.0846 17
PRTE	-0.23774 0.3582 17	0.16428 0.5287 17	0.16124 0.5364 17	0.36820 0.1459 17	0.26783 0.2986 17
LP	0.23604 0.3617 17	-0.70927 0.0014 17	-0.43481 0.0811 17	-0.47830 0.0521 17	-0.63996 0.0057 17
BIOGRAPH	-0.25737 0.3186 17	0.36478 0.1500 17	0.16246 0.5333 17	0.38410 0.1280 17	0.35838 0.1578 17
INTVIEW	0.29317 0.2707 17	0.32432 0.2041 17	-0.05200 0.8429 17	0.13015 0.6186 17	0.15279 0.5582 17
LSP	0.04481 0.8048 17	0.30389 0.2357 17	0.21045 0.4175 17	0.59448 0.0113 17	0.42841 0.0862 17
L_1	-0.29058 0.2579 17	0.59927 0.0110 17	0.57583 0.0156 17	0.10804 0.6798 17	0.51831 0.0331 17
L_2	0.43564 0.0605 17	0.34732 0.1720 17	0.06223 0.8124 17	-0.14303 0.5839 17	0.11473 0.6611 17
L_3	0.56284 0.0187 17	0.07794 0.7662 17	-0.17716 0.4943 17	-0.11380 0.6637 17	-0.07[illegible] 0.7621 17
L_4	-0.28011 0.2762 17	0.30021 0.2417 17	0.02319 0.9296 17	-0.29064 0.3319 17	0.04639 0.8597 17

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	B_9	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE
L_5	0.25279 0.3276 17	0.43086 0.0780 17	0.23849 0.3566 17	-0.01356 0.9580 17	0.26731 0.2996 17
L_6	0.26511 0.3073 17	0.12312 0.6378 17	-0.20822 0.4294 17	-0.20611 0.4328 17	-0.10376 0.6917 17
L_7	-0.05577 0.8316 17	0.55721 0.0201 17	0.23248 0.3692 17	-0.15096 0.5630 17	0.26731 0.2996 17
L_8	0.40159 0.1101 17	0.17021 0.5137 17	-0.03381 0.9277 17	0.00348 0.9742 17	0.05717 0.8270 17
L_9	0.41188 0.1004 17	0.04908 0.8516 17	-0.04826 0.8541 17	-0.02652 0.9195 17	-0.00679 0.9794 17
L_10	-0.12695 0.6273 17	0.41910 0.0940 17	0.29688 0.2439 17	-0.05141 0.8447 17	0.27794 0.2801 17
B_1	0.53832 0.0256 17	-0.04559 0.8621 17	0.04856 0.8532 17	0.26383 0.3062 17	0.09229 0.7246 17
B_2	0.07485 0.7752 17	0.37143 0.1421 17	0.12996 0.6191 17	0.23097 0.3724 17	0.28667 0.2646 17
B_3	0.34916 0.1695 17	-0.07224 0.7829 17	0.01018 0.9691 17	0.09363 0.7208 17	0.00674 0.9795 17
B_4	0.05548 0.8325 17	0.39598 0.1156 17	-0.09341 0.7208 17	-0.04578 0.8615 17	0.10948 0.6757 17
B_5	0.78265 0.0002 17	-0.22547 0.3842 17	-0.41907 0.0941 17	-0.25325 0.3267 17	-0.36600 0.1485 17
B_6	0.68316 0.0001 17	0.03303 0.8998 17	-0.11565 0.6585 17	0.05959 0.8203 17	-0.01376 0.9582 17
B_7	0.38953 0.1222 17	0.18824 0.4693 17	0.10730 0.6819 17	0.30469 0.2344 17	0.22715 0.3806 17
B_8	0.23208 0.3701 17	0.22362 0.3883 17	-0.03672 0.8868 17	0.02180 0.9338 17	0.07673 0.7697 17
B_9	1.00000 0.0 17	-0.09293 0.7228 17	-0.27292 0.2539 17	-0.08911 0.7338 17	-0.19659 0.4495 17

An analysis of Table 17 shows that for this group of students there is a correlation of 0,46 at 0,04 between a deep approach and Business Studies. There is a significant correlation between the Matric marks and both June accounts and average (0,74 at 0,001 and 0,52 at 0,04 respectively). IQ also correlates with both June statistics and maths (0,50 at 0,04 and 0,48 at 0,05 respectively). The traditional PRT, another static measure, correlates 0,48 at 0,05 with mathematics. The Learning Process Measure (LSM) has a significant relationship (0,60 at 0,01) with Mathematics. The attitude measure (L1) correlates 0,60 at 0,01, 0,58 at 0,01 and 0,52 at 0,03 with accounts, statistics and June average respectively. Selecting main ideas (L7) correlates with accounting (0,56 at 0,02). The intercorrelations of the predictor variables for the low modifiable group are shown in Appendix 27. For this group, there is a strong correlation between the PRT/T and the Biography (0,72 at 0,001). Matric correlates 0,77 at 0,0007 with attitude (L1) as well as 0,55 at 0,03 with motivation (L2). There is also a correlation of 0,66 at 0,007 between Matric and selecting main ideas (L7).

A surface strategy correlates with the interview (0,71 at 0,001) as well as the LSP (0,54 at 0,02). A deep strategy correlates with anxiety (L4; 0,61 at 0,009). An achieving strategy correlates 0,66 at 0,004 with time management (L3). The surface approach has a relationship with both the interview (0,69 at 0,002) and LSP (0,53 at 0,02). An achieving approach correlates with time management (0,56 at 0,01). A deep strategy correlates with information processing (0,76 at 0,0004), selecting main ideas (0,49 at 0,04). A deep approach correlates 0,60 at 0,01 with information-processing and 0,54 at 0,02 with self-testing.

3.5 Analysis of the Results for the High Modifiable Students

The high modifiable (HM) students were those who scored above the mean for the calculation of learning potential. These students demonstrated after a short period of mediation that they are in fact able to improve in the range of skills being assessed. Of the 9 HM students, 7 were disadvantaged, demonstrating that this latter group benefitted the most from the period of assisted instruction.

Table 18 shows the simple statistics for the high modifiable students.

Table 18 :

SIMPLE STATISTICS FOR THE HIGH MODIFIABLE STUDENTS

Variable	N	Mean	Std Dev	Sum
JUNE_TS	8	63.12500	14.53506	505.00000
NO	9	118.22222	8.19196	1064
MATRIC	9	23.11111	3.82345	208.00000
IQ	9	24.22222	6.03692	236.00000
PRT	9	7.55556	3.12694	68.00000
PRTE	9	19.11111	3.10018	172.00000
LP	9	11.55556	3.32081	104.00000
BIOGRAPH	9	57.77778	8.21246	520.00000
INTVIEW	8	48.25000	5.89794	386.00000
LSP	9	47.11111	10.51718	424.00000
L_1	9	29.88889	8.88038	269.00000
L_2	9	29 33333	6.46142	264.00000
L_3	9	27.55556	3.43188	248.00000
L_4	9	25.55556	4.36208	230.00000
L_5	9	28.88889	5.60010	260.00000
L_6	9	25.33333	6.68954	228.00000
L_7	9	17.11111	4.10623	154.00000
L_8	9	26.55556	4.21637	239.00000
L_9	9	26.33333	5.72276	237.00000
L_10	9	26.00000	4.55522	234.00000
B_1	9	25.11111	3.78961	226.00000
B_2	9	22.44444	6.26720	202.00000
B_3	9	24.88889	4.75511	224.00000
B_4	9	24.33333	5.07445	219.00000
B_5	9	27.33333	5.87367	246.00000
B_6	9	27.22222	5.73973	245.00000
B_7	9	47.55556	9.27512	428.00000
B_8	9	49.22222	8.92717	443.00000
B_9	9	54.55556	7.73161	491.00000
JUNE_A	9	40.66667	19.07223	366.00000
JUNE_S	9	49.66667	11.12430	447.00000
JUNE_M	9	52.77778	10.52114	475.00000
JUNE_AVE	9	47.55556	9.20748	428.00000

The correlations of the predictor variables with the criterion variables is shown in Table 19.

Table 19 :

CORRELATION ANALYSIS OF PREDICTOR VARIABLES WITH CRITERION VARIABLES FOR THE HIGH MODIFIABLE STUDENTS

	B_9	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE
JUNE_SS	-0.05070 0.9051 8	0.08519 0.8410 8	-0.60789 0.1099 9	-0.64687 0.0830 8	-0.38949 0.3402 8
NS	-0.05357 0.8711 9	-0.22776 0.5536 9	0.67660 0.0453 9	0.32301 0.3965 9	0.23211 0.5479 9
MATRIC	-0.40416 0.2807 9	0.20304 0.5912 9	-0.17246 0.6573 9	-0.28837 0.4517 9	-0.05325 0.8677 9
IQ	0.23805 0.5374 9	-0.42268 0.2570 9	-0.28168 0.4628 9	-0.35927 0.3423 9	-0.55571 0.1203 9
PRT	0.06836 0.8613 9	0.48557 0.1851 9	0.17488 0.6527 9	-0.29974 0.4333 9	0.30488 0.4250 9
PRTE	-0.12284 0.7529 9	0.28188 0.4424 9	-0.23801 0.5374 9	0.07367 0.8506 9	0.14208 0.7154 9
LP	-0.17905 0.6448 9	-0.19407 0.6168 9	-0.38687 0.3037 9	0.35101 0.3543 9	-0.15444 0.6916 9
BIOGRAPH	-0.06475 0.8686 9	0.23330 0.5458 9	0.20022 0.6055 9	-0.22199 0.5659 9	0.15888 0.6831 9
INTVIEW	-0.44815 0.2654 8	0.19861 0.6373 8	-0.10559 0.8035 8	0.19806 0.6382 8	0.14471 0.7288 8
LSI	-0.36825 0.3275 9	0.12422 0.7502 9	0.39353 0.2947 9	0.49276 0.1777 9	0.42784 0.2507 9
L_1	0.35056 0.3550 9	-0.45414 0.2195 9	0.68539 0.0416 9	0.15490 0.6907 9	0.01614 0.9671 9
L_2	0.48125 0.1897 9	-0.48485 0.1859 9	0.62953 0.0693 9	0.18142 0.6404 9	-0.01611 0.9672 9
L_3	0.12824 0.7423 9	-0.23936 0.5351 9	0.38199 0.3103 9	0.19771 0.6101 9	0.05239 0.8937 9
L_4	-0.31792 0.4044	-0.13723 0.7248	0.12021 0.7580	0.62947 0.0693	0.17809 0.6467

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	B_9	JUNE_A	JUNE_S	JUNE_M	JUNE_AVE
L_5	0.51260 0.1582 9	-0.66280 0.0517 9	0.28426 0.4552 9	0.09924 0.7995 9	-0.32350 0.3953 9
L_6	0.28841 0.4517 9	-0.31450 0.4098 9	0.19653 0.6123 9	-0.14800 0.7039 9	-0.20430 0.5980 9
L_7	0.46241 0.2101 9	-0.50703 0.1634 9	0.41960 0.2609 9	-0.07169 0.8546 9	-0.22333 0.5635 9
L_8	0.48399 0.1867 9	0.01503 0.9694 9	-0.02754 0.9439 9	-0.56888 0.1079 9	-0.21501 0.5795 9
L_9	0.63094 0.0682 9	-0.19897 0.6263 9	0.01178 0.9760 9	-0.66296 0.0516 9	-0.38826 0.3018 9
L_10	0.17746 0.6478 9	-0.28488 0.4575 9	0.44895 0.2254 9	0.11737 0.7656 9	0.02086 0.9575 9
B_1	0.41999 0.2604 9	-0.43352 0.2437 9	0.17593 0.6507 9	-0.00557 0.9886 9	-0.22410 0.5621 9
B_2	0.66757 0.0494 9	-0.41796 0.2630 9	0.02032 0.9586 9	-0.35092 0.3545 9	-0.40339 0.2817 9
B_3	0.82809 0.0056 9	-0.51595 0.1561 9	-0.26781 0.4860 9	-0.71264 0.0312 9	-0.73786 0.0232 9
B_4	0.49171 0.1788 9	-0.37585 0.3188 9	-0.51595 0.1561 9	-0.68912 0.0400 9	-0.74533 0.0211 9
B_5	0.67529 0.0459 9	-0.37827 0.3155 9	0.25252 0.5121 9	-0.15642 0.6870 9	-0.20494 0.5969 9
B_6	0.65599 0.0550 9	-0.63640 0.0654 9	-0.40590 0.2784 9	-0.40893 0.2745 9	-0.78316 0.0126 9
B_7	0.62267 0.0733 9	-0.45934 0.2133 9	0.08561 0.8267 9	-0.23939 0.5350 9	-0.36413 0.3383 9
B_8	0.72059 0.0285 9	-0.48647 0.1821 9	-0.43593 0.2409 9	-0.77131 0.0149 9	-0.81681 0.0072 9
B_9	1.00000 0.0 9	-0.75982 0.0175 9	-0.10949 0.7792 9	-0.42241 0.2574 9	-0.73709 0.0235 9

An analysis of Table 19 shows that the only significant relationship is that between attitude and statistics (0,69 at 0,04). An analysis of the traditional predictor measures such as matric and IQ shows a negative relationship with all criterion variables. An additional observation is that for the HM students the PRT traditional measure demonstrates no relationship with any criterion variable. In fact, the PRT/T also shows a negative relationship with both mathematics and business economics. It appears that the more modifiable students do not predict on their manifest level of functioning. The intercorelations of all the predictor variables for the high modifiable group is shown in Appendix 28.

There is a correlation of 0,70 at 0,03 between support techniques (L8) and PRT/T. The Learning Process Measure has significant correlations with both L3 and L4 (time-management and anxiety respectively). The correlations are 0,79 at 0,01 and 0,78 at 0,01 respectively. Test strategies (L10) correlates 0,75 at 0,01 with Biography.

3.6 Summary of Results

Table 20 is a summary of all the correlations of predictor variables with criterion variables for each separate group.

Table 20 :

SUMMARY OF PREDICTOR VARIABLES WITH CRITERION VARIABLES FOR EACH GROUP

Group	Predictor Variable	Criterion Variable	Correlation	Significance level
WHOLE GROUP	Learning Process (LSM)	Mathematics	0,56	0,003
	Learning Process	June Average		
	Attitude (L)	Statistics	0,45	0,02
	Deep Strategy (B4)	Business Studies	0,42	0,03
	Deep Approach (B8)	Business Studies	0,43	0,03
	Pattern Relations (PRT/T)	Accounting	0,38	0,05

ADVANTAGED	IQ	Business Studies	0,92	0,001
	Attitude	Business Studies	0,81	0,01
	Surface motive (B1)	Business Studies	0,86	0,005
	Surface Approach (B7)	Business Studies	0,76	0,02
	Biography	Statistics	0,75	0,03
	IQ	June Average	0,75	0,03
	Learning Process	Mathematics	0,90	0,002
	Learning Process	June Average	0,72	0,04
	Attitude	Accounting	0,76	0,02
	Attitude	Statistics	0,76	0,02
	Attitude	June Average	0,80	0,01
	Surface Approach	Accounting	0,82	0,01
	Surface Approach	Statistics	0,95	0,0002
	Surface Approach	June Average	0,88	0,003
DISADVANTAGED	Deep Strategy	Business Studies	0,47	0,05
LOW MODIFIABLE	Deep Approach	Business Studies	0,48	0,04
	Matric	Accounting	0,74	0,001
	Matric	June Average	0,52	0,04
	IQ	Statistics	0,50	0,04
	IQ	Mathematics	0,48	0,05
	PRT/T	Mathematics	0,48	0,05
	Learning Process	Mathematics	0,60	0,01
	Attitude	Accounting	0,60	0,01
	Attitude	Statistics	0,58	0,01
	Attitude	June Average	0,52	0,03
	Selecting Main Ideas (L7)	Accounting	0,56	0,02
HIGH MODIFIABLE	Attitude	Statistics	0,69	0,04

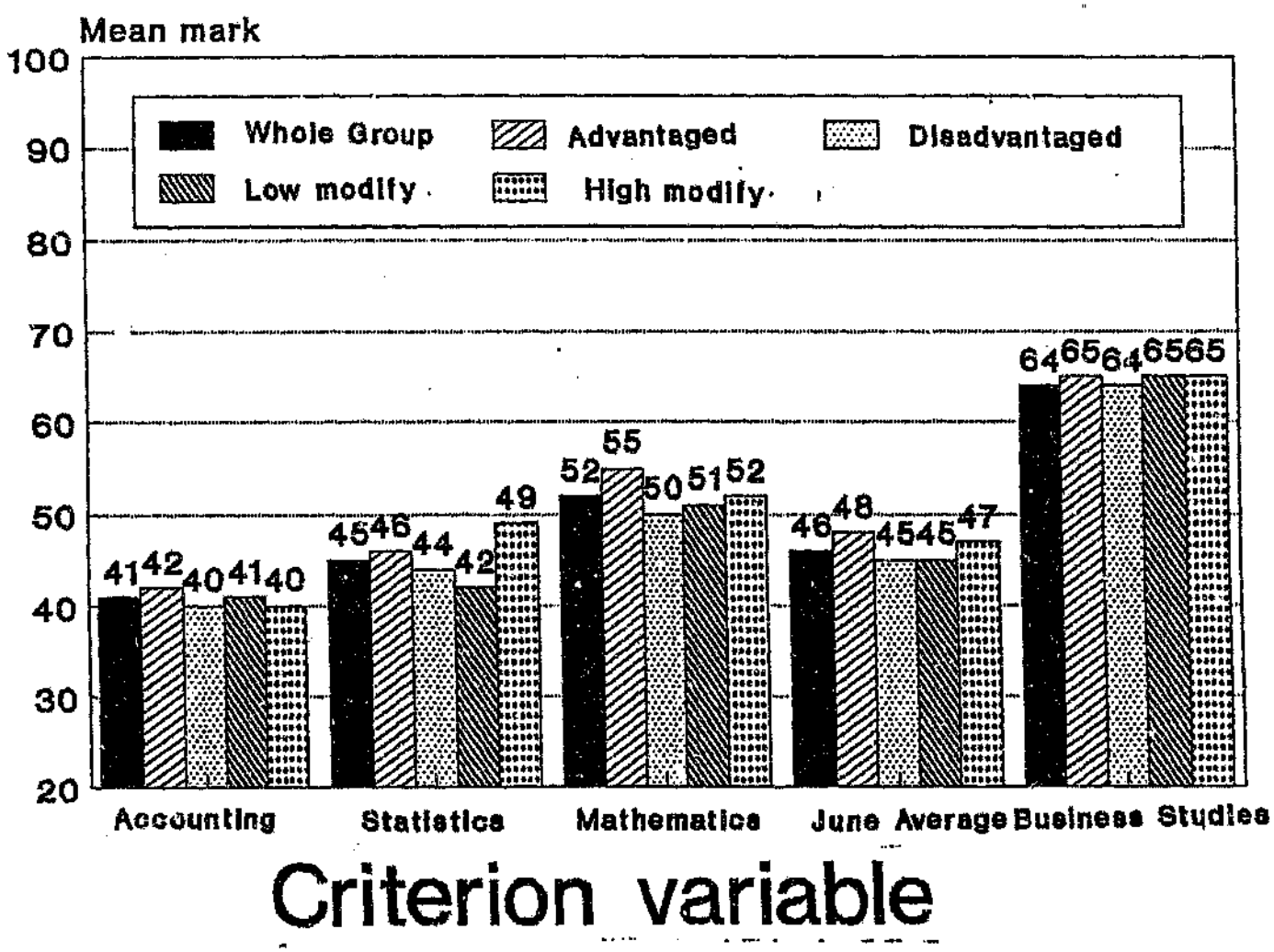
It is interesting to note that if one looks across all the groups then the predictor variable which correlates the most times with a criterion variable is the subscale of attitude on the Lassi. There are 9 such significant correlations. Learning process and a surface approach correlate 5 times each; IQ 4 times; PRT/T, Matric, deep approach and deep

strategy twice, and one correlation for each of biography, and selecting main ideas.

It is also informative to show the mean of all the June criterion variables for each group to give an indication of how each group performed in the area of academic success. Figure 4 gives an outline of these results.

Figure 4 :

MEAN MARKS OF ALL CRITERION VARIABLES FOR EACH GROUP



An analysis of Figure 4 reveals that the advantaged group performed better across all the measures than the disadvantaged group. However, within the latter group, the high modifiable students performed considerably better than the low modifiable group, and even attained a higher mean than the advantaged group for the statistics results.

CHAPTER 4

DISCUSSION

A restatement of the hypotheses will be given and the results pertaining to them examined regarding the mid-year results.

The hypotheses of the study were as follows :

H1. Learning potential is a better predictor of academic competence for the disadvantaged students than a traditional measure of general intelligence.

H2. Learning potential is a better predictor of academic competence for the disadvantaged students than school marks.

H3. Learning potential together with the learning process measures is a better predictor of academic competence for both advantaged and disadvantaged students than only learning potential or static measures used alone.

4.1 Interpretation of Findings

All three hypotheses have been supported by the results of the study. However, the first two of the proposed hypotheses were not supported through a main effect. Instead, the way in which the enriched condition of the traditional PRT enhanced prediction was through the moderator effect of the degree of student modifiability. The more modifiable the disadvantaged students were, the less predictable they became on their manifest level of intellectual functioning (PRT/T). Conversely, the less modifiable the intellectual functioning of the disadvantaged students, the more predictable they became on their manifest level of intellectual functioning (PRT/T and Mental Alertness Test) as well as manifest academic functioning (Matric). The present study was able to enhance prediction for academic success by supporting H1 and H2 through a moderator effect. A role was found for Feuerstein's construct of modifiability in tertiary academic prediction. The major finding of the study is that advantaged and disadvantaged students predict entirely

differently. The study provided no valid predictors for disadvantaged students. A consistent finding was that the advantaged students as well as the low modifiable students predict across many more measures than the disadvantaged and high modifiable students. The results clearly demonstrate that for the advantaged and LM students the manifest level of intellectual functioning as well as manifest level of academic functioning do predict with university success. The results have shown a group of students to be highly modifiable and that for this group of students their manifest functioning does not predict with future success. The findings reinforce the need to find alternative admissions criteria. The evidence of the present study rejects the traditional measures based on static assumptions of intelligence. For the disadvantaged students the only predictor of success was a learning strategy measure. This finding further suggests that the processes of thinking are essential in being incorporated in a selection procedure. The single best predictor of university success for the whole group was in fact the learning process measure. For both advantaged and disadvantaged students, it appears that a holist learning strategy (high LSP) correlates with academic success. The ability to identify main arguments with supporting evidence and transform information account for a major proportion of variance in first-year university success. A further measure which correlates with academic success for the full group, advantaged, LM and HM groups is the attitude subscale of the Lassi test. Students who have a positive attitude to university study and are motivated achieve better marks. This measure also gives an indication of goal-setting and the relevance of present study to future work. The scale therefore looks at the extent to which a student takes responsibility for her own learning. The fact that the attitude subscale correlates with 9 criterion measures across all groups suggests that it is a useful predictor of academic success. The Biggs measures were also found to be useful in predicting for academic performance across the various subjects within the first-year B Com curriculum. A deep approach was found to be a valid predictor of success in Business Studies, whereas a surface approach correlated with accounting and statistics. The learning of the latter subjects require more reproduction of objective facts. Business studies places more emphasis on discovering meaning and inter-relating with previous knowledge. However, the advantaged students seem to use a surface approach to their studies (surface approach correlates with

BS), suggesting that they are making use of their previously acquired school strategies and still rote-learn within changing contexts. The fact that the PRT/T correlates with both accounting and mathematics for the whole group and IM students, suggests that the skills of inductive reasoning are necessary for success in these subjects and give a valid measurement of manifest intellectual functioning. However, for the disadvantaged and high modifiable groups no measure of manifest intellectual or academic functioning was found. For the latter groups, the results suggest that a move towards measuring learning potential and towards examining the processes of thinking will go a long way to explaining the variance in first-year academic success. In fact, the results support H3 in that the learning process measure is a better predictor of academic performance than the static measures for all the students. Learning process assessment in conjunction with learning potential clearly enhance prediction for all categories of students. This new paradigm goes beyond mere prediction and links the way in which students learn (the process) with success. It is an educational-modifiable approach leading to understanding and remediation. Such an approach rejects traditional static measures which merely show relationships between products (Matric or IQ) and success.

4.2 Implications for Traditional Static Testing and Academic Prediction

The findings of the present study lend added support to Feuerstein's critique of traditional approaches to intellectual assessment. The study finds no relationship between any of the traditional measures and tertiary academic success for the disadvantaged students. What the present study did do was to distinguish a subgroup of disadvantaged students for whom one of the traditional measures of intellectual functioning (PRT/T) was a successful predictor. For this group of students who are not highly modifiable the traditional test predicts well. However, there is also a subgroup of students who are highly modifiable and for whom the traditional measures even have a negative relation to university success. Within the high modifiable group, 78% of the students were disadvantaged, indicating that the manifest level of academic or intellectual functioning does not reflect potential. By introducing the Feuerstein approach to selection, a subgroup of students were isolated who did not predict on the basis of their manifest level of functioning. These students were easily able to improve their scores through mediated learning.

For such high modifiable students the matric, IQ or PRT/T scores do not relate at all to academic success. Such tests of manifest level of functioning are not meaningful predictors for students who have been mediationally deprived and lacked educational opportunity. The fact that traditional measures have consistently been used in academic selection for all groups of students leads to the exclusion of a large group of students for whom such measures are predictively invalid. There is a large group of high modifiable students for whom learning potential can be used to enhance prediction of academic performance. The present study has shown that cognitive structures can be changed and represents a fundamental shift in paradigm away from static notions of intelligence or potential. Such an approach acknowledges the strengths of modifiable disadvantaged students and suggests areas of educational intervention to help fulfil academic potential. The study further suggests that when learning potential scores are supplemented with knowledge of learning processes, then prediction is further enhanced. Information about students' processes of thinking facilitates appropriate teaching strategies. Such an approach to selection is far more meaningful than a traditional static approach which concentrates on deficits as a criteria for exclusion.

4.3 Implications for Process Testing and Academic Prediction

The traditional approach to selection views learning as a quantitatively measurable outcome. The disappointing results generated by this static approach provides little insight into the relationships involved in the learning context. Traditional selection does not take cognisance of the processes involved in studying and learning. A process testing approach examines the processes in learning that students engage in when faced with a realistic learning task in the natural context of higher education. Such an approach to selection attempts to discern the qualitatively different ways in which students experience, interpret, understand and conceptualise the learning context. Unlike static selection measures, assessments of learning processes do not reflect a permanent characteristic way of learning that is displayed over a range of tasks and situations, but is instead a product of the interaction between a student's current motivation and the teaching context and is modifiable. When such information on learning processes is supplemented with assessment of potential intellectual functioning then selection measures can be

linked to appropriate educational interventions. The university has a responsibility to facilitate the success of modifiable students and to encourage appropriate approaches to learning within the academic context. The focus of attention changes from individual deficits to the learning environment. The traditional measures encourage passive, reproductive forms of learning and is a consequence of perceiving learning in quantitative terms. The process measures emphasise the student's awareness of the act of learning and the strategies they employ when approaching material to be learnt. Developing an awareness of one's own learning and thought processes is a prerequisite for academic success (Ford, 1981). Feuerstein (1980) argues that the creation of self awareness into one's own cognition as a most useful component in determining the modifiability of the individual. The confluence of research trends in process testing reveals that alternative predictors greatly enhance prediction of academic success. Alternative predictors which incorporate learning process and modifiability provide direction as to how the educational-modifiable approach can be used in the service of academic prediction. It appears that there is an emerging consensus between a process approach to learning in tertiary education and the Feuersteinian tenet of modifiability. Of more importance in the South African context, is that without introducing the Feuersteinian approach to selection, in which the learning potential of a student is assessed, a subgroup of disadvantaged students would not have been able to have been isolated. The present study has shown the extent of modifiability determines the level of predictability on the basis of traditional measures. For low modifiable students the manifest levels of academic and intellectual functioning do predict with university success. For these students their educational opportunity enabled them to a large extent to fulfil their academic potential. The finding that traditional measures have no relationship at all with academic success for disadvantaged students, is an indication that their manifest level of academic functioning does in no way reflect potential in that such students have not had the necessary educational opportunities to fulfil this potential. The learning process paradigm stresses modifiability, context, content and metacognition factors involved in learning and provides a solution to the selection of students who have been disadvantaged by their education.

4.4 Implications for Disadvantaged Students

Only about two percent of students educated through the DET educational system pass the matriculation examination, and their inferior academic background, as evidenced by their manifest academic functioning (Matric), therefore prohibit such students entrance into the "open" universities which do enrol black students. The present study shows that no valid predictors exist for this group of students, and suggests that an approach which looks at learning potential within a cognitive processes paradigm would enhance prediction for disadvantaged students. The results demonstrate that such an approach is not necessary for the advantaged students who are predictable on the basis of their manifest intellectual functioning (IQ). Feuerstein (1979) argued that manifest level of functioning and mental capacity are two entirely different matters and there is a consequent need for university admission criteria to redress the advantage which a student from an advantaged school has over a student of equal, or better ability from one of the more educationally deprived schools. In an academically non-homogeneous society such as South Africa vast disparities exist between schools even within the same educational authority in the fraction of students who obtain a university entrance school-leaving certificate. The present study points to the need for identifying students who have university potential despite the effects of educational deprivation. The Feuersteinian approach enhanced prediction for the disadvantaged students by showing that the more modifiable the intellectual functioning of disadvantaged students, the less predictable was their university success on the basis of their manifest level of functioning. This supports the findings of Shochet (1986) who found the same moderator effect in the Faculty of Arts. Both studies provide support for Feuerstein's (1979) critique of traditional approaches to assessment. Static approaches should not be used as a basis for selecting students who have been mediationally deprived but who have demonstrated their modifiability. The present study also provides support for the change of paradigm moving to the institutional context of learning for disadvantaged students as well as the student's insight into their own thinking processes. The single best indicator of academic success for disadvantaged students was a deep learning strategy which implies that students who read widely and attempt to relate present with previous knowledge will succeed in Business Studies. However, Business Studies is not formally examined

in the Faculty of Commerce, and the results suggest that the learning environment is important in inducing appropriate learning strategies. Furthermore, those students who demonstrate high modifiability could be predicted on the basis of their attitude to university. It appears that the present approach to selection can successfully identify a subgroup of students who can benefit from an enriched learning context and who have a positive attitude to university learning. There is also a subgroup of disadvantaged students who are not modifiable to the same extent, and the results suggest that such students would be more at risk for university admission. The results suggest that a multi-faceted approach to selection enhances prediction in that modifiability, metacognition and learning strategy are linked to appropriate educational interventions after selection. It appears that the procedure of selection could be greatly enhanced if school marks are supplemented by assessment of learning potential and learning processes. At present faculties use point scores based on matric results as the basic method of admission. Some faculties (such as Arts and Science) use selection tests, for students whose matric scores are too low to be admitted automatically. Such approaches to selection exclude a range of highly modifiable students who are low in manifest functioning but high in potential. The present study argues that the ability to adapt and learn be seen as integral part of selection testing, and that a fairer and more accurate assessment would incorporate future potential functioning which includes the ability to adapt to a new learning environment and benefit from instruction. An important question which still remains is that of what needs to be done in the future to fulfil the student's learning potential?

4.5 Limitations of the Present Study

Although the present study demonstrates the need to link selection to appropriate educational intervention on the basis of learning potential and processes of thinking, further information not uncovered by the present study is required to fulfil this potential in the academic context. The present study did not explore the dynamics involved in the mediational process itself and account for the way in which students responded to different aspects of the mediation. Such information would be instructive in informing how mediation could be adapted to meet the needs of the student. It is not inconceivable that certain students have problems

in the pictorial modality and did not benefit from the mediation provided. It is also a possibility that the metacognitive functioning of some students militated against benefitting from instruction. High functioning and low modifiable students might be overconfident in terms of self-perception and therefore be less open to assisted instruction. Students may not have responded to the instructions during the dynamic testing session in terms of their habitual strategies commonly used when confronted with learning material. Quasi-educational information would be necessary to incorporate meta-academic factors and deal with the learning process as experienced by the student. The present study did not assess the perceptions of the learner regarding motivations for attending the PBS programme and how it would address their specific needs. The provision of the appropriate educational context to fulfil potential depends on a fuller assessment of the mediation process itself as well as looking at the broader learning context. Structured interviews could enhance selection if students' perceptions are included in the information obtained. A limitation in the present study is the high degree of skill required both in the mediating process itself and in the classification of the learning process measure. Extensive training would be necessary in order to make the dynamic assessment a general selection procedure. Such training would also involve providing mediators with the necessary confidence and skills to establish rapport with the students. It is conceivable that effective training would assist mediators and scorers to understand the phenomenological viewpoints of the students. This is particularly apposite in the context of second language mediation and there is a need to consider training of mediators from similar race groups to the students.

A limitation was found in that the selection procedure took place during the second semester of the university year. The students had benefitted from enriched instruction during this time while on the PBS programme, and it is likely that there have been changes in learning processes since the beginning of the year. The selection procedure should have been implemented before the university year so as to assess the predictor variables before exposure to the university environment. The study was of necessity limited to black students in the Faculty of Commerce and there is a need to extend the selection research in other faculties

and on students of other groupings and educational backgrounds.

In addition, a limitation of the present study is that modifiability was only assessed over one measure and that the mediation was limited to a short period of time. A comprehensive assessment of learning potential would involve intensive mediation in the areas of learning strategies and metacognitive skills so as to measure potential for increased awareness into one's own thinking processes.

Finally, the statistical technique was limited to a correlational analysis because of the small sample size and the large number of predictor variables. Regression analysis would be useful in that one could combine predictor variables to generate predictor scores on the criterion variables. However, the present sample was too small to allow for this type of analysis and earlier studies have also found that regression equations change across years when used in selection (Rutherford & Watson, 1990). The criterion variables were also limited to the July examinations, and it would also have been useful to extend prediction to longer term criterion measures so as to include Faculty results after each year of study.

CHAPTER 5

CONCLUSIONS AND PROPOSALS FOR FUTURE RESEARCH

It was an aim of the present study to investigate alternative selection measures for university undergraduate admissions. The impetus for the study was an urgent need to find alternative predictors for disadvantaged students. The University of the Witwatersrand is in a position to admit students of all races, and needs to find criteria for discerning merit of students coming from different educational backgrounds. This is a matter of increasing concern, since the ratio of applicants to places available for students is increasing substantially each year. It was proposed that advantaged and disadvantaged students are predictable through entirely different predictors. The present study suggested that a confluence of Feuerstein's tenets and learning process measures would enhance prediction for disadvantaged students and could be a useful adjunct in predicting for university success. Selection procedures currently used at Wits University are based on school-leaving results only, or on school results combined with measures from traditional tests. A case was made that neither of these two methods of selection are suitable because of the situation peculiar to South Africa.

The rationale was that traditional selection measures are only a reflection of the manifest level of functioning for disadvantaged students. It was important to distinguish between a student's manifest level, as reflected in school marks and intelligence tests, and future potential functioning as reflected through dynamic assessment.

The findings of the present study have shown that school marks and traditional intelligence tests are invalid indicators of the disadvantaged students' success at university. The study has successfully extended the learning processing and modifiability paradigm into tertiary academic selection by establishing a relationship between learning potential, learning strategy and academic performance. The assumption of modifiability was supported in that all students showed improvement after mediation on the scores obtained in the traditional intelligence measure (PRT/T). This test was shown to be a valid indicator of the cognitive skills needed to be successful in

commercial subjects (Accounting and Mathematics). These findings, therefore, are in agreement with Shochet (1986) in that the measure of modifiability moderated the predictability of disadvantaged students through the PRT measure. The higher the level of modifiability, the less predictable were the measures of school marks and the intelligence test. Conversely, students who were not readily modifiable were predictable on these traditional measures. The manifest level of intellectual functioning (IQ) does appear to be a valid predictor of university success for both the advantaged students and low modifiable students. From a practical perspective, the Matric and IQ measures can be seen as useful measures in admissions for advantaged students.

The present study has also found that the learning process measure (LSM) predicts for the whole group. It was demonstrated that this measure, when used with the learning strategy and study process measures (Lassi and Biggs), enhances the predictability of all groups of students. It was argued that these measures have relevance for selection in higher education because they highlight the processes involved in successful university performance. The learning process and learning potential measures not only are valid predictors of academic success, but also facilitate understanding of the steps needed to be taken in fulfilling this potential. Such an educational-modifiable approach allows selection, remediation and teaching to be as part of the same process.

From an admissions viewpoint, the selection procedure should be differentiated according to educational disadvantage. The results indicate that the IQ measure is the best predictor for advantaged students and in addition, the learning process measures also predict successfully for this group. The PRT/T has been shown to be a valid predictor of university success and should therefore be used for the advantaged student selection. This measure then also serves as a baseline measure for the learning potential assessment. The selection procedure for disadvantaged students requires the educational-modifiable measures. The results suggest that a time and cost efficient selection procedure with predictive validity should take the following format:

1) Learning Process Measure (LSM) for <u>all</u> students.
2) Pattern Relations Traditional (PRT/T), for <u>advantaged</u> students.
3) Pattern Relations Enriched (PRT/E) for <u>disadvantaged</u> students (<u>high</u> modifiable scores with <u>high</u> LSM scores enhance predictability).

4) The Lassi and Biggs measures for all students (the attitude subscale appears to be a valid predictor).

A multi-faceted approach to selection enhances predictability and accounts for disparities in manifest functioning. The above selection procedure would require two and a half hours of group testing. The scoring and administration of the above measures are not difficult and the results can be used to aid educational support during the academic year. It has been suggested that further steps into the educational-modifiable approach are necessary to facilitate appropriate educational intervention.

Future research needs to explore the mediational process itself. Information on how each student responds to mediation can supplement the measure of the enriched score. It might be beneficial to review the student's problem-solving approach as set out in the student's rough paper during mediation. An analysis of the thinking processes in terms of Feuerstein's cognitive map would be a useful adjunct to further merge prediction and education. Mediators could also be selected from similar race groups to that of their subjects. Research along these lines would lead to adaptable selection procedures where tests and questionnaires are administered to suit the characteristics of the testee.

Future research should focus on extending the dynamic assessment approach to selection in different faculties and with other disadvantaged students of different age groups.

Modifiability should be assessed over a number of different measures. The ability to benefit from enriched instruction would be a more valid indicator for predicting university success if assessed across various measures. Appropriate measures of the manifest level of functioning should be used as baseline measures for assessing improvements after mediation. The Learning Process Measure has been found to be a valid predictor for all students and the present writer is at present conducting research into using this measure for the enriched testing condition.

In addition, future research should assess modifiability according to skills necessary for success on the criteria that are being predicted. It would

be useful to classify subjects in terms of cognitive skills required in order to facilitate the selection procedure. Research has shown that commerce and science subjects generally require inductive reasoning, whereas arts subjects involve deductive reasoning (Boeyens, 1989; Shochet, 1986).

A vital area for future research is to explore the processes of thinking and identifying ways in which atomist or surface processes could be induced to be more holistic or deep with regard to learning processing. The individual's awareness of their own processes of thinking needs to be incorporated in a comprehensive selection battery. Future research should examine more fully the student's metacognitive capacity during a testing situation. This could be achieved through assessing levels of self-doubt during testing by getting students to indicate item for item whether they thought they had answered items correctly or not.

Finally, the selection measures should be used over a longer period of time so as to include assessment of changes in metacognitive functioning. The present PBS group should be assessed after each year of study to see if appropriate educational support has had the desirable effect of inducing more appropriate learning strategies. Teaching, selection and education support are part of the same process. Fruitful areas of further research need to incorporate learning potential measures and include the metacognitive context.

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APPENDIX 1

FEUERSTEIN'S COGNITIVE MAP

There are *seven parameters of the cognitive map* by which a specific mental act can be analyzed according to Feuerstein (Feuerstein & Hoffman, 1982; Feuerstein, Miller, Rand & Jensen, 1982; Feuerstein, Rand & Hoffman, 1979; Feuerstein, Rand, Hoffman & Miller, 1980). They are:

Content – the subject matter upon which a mental operation deals with.
Modality – the language upon which the content and mental act operates within.
Operation – set of sequential, organized, internalized mental actions required by a task.
Phase – a loosely defined location within which various cognitive functions can be grouped.
Level of Abstraction – distance between the object or event and the mental act itself.
Level of Complexity – refers both to the quality and quantity of units of information dealt with in the mental act.
Level of Efficiency – consists of both temporal and affective elements in combination with all the other parameters.

The following concepts are found under the *three phases of cognition*:
(definitions of these terms have been shortened and explained in less technical language than is used in Feuerstein's IE teacher's manuals)

Input

CP = *clear perception* – listening, seeing, smelling, tasting, touching, feeling – to gather clear and complete information.
SS = *systematic search* – using a plan so that nothing is skipped, looking in a systematic way, either in time or space.
L = *labelling* – giving the thing we become aware of with our senses a name.
SO = *spatial orientation* – being aware of where something is, describing where it is located.
TO = *temporal orientation* – describing events in terms of when they occur.
C = *conservation* – deciding on the characteristics of a thing or event that are always the same even when changes take place.
PA = *precision and accuracy* – paying attention to details when it matters.
2S = using *two or more sources* of information at one time.

Elaboration

DP = *defining the problem.*
RC = *relevant cues* – using only that part of the information that applies to the problem and ignoring the rest.
C = *comparing* – determining what is the same and different between two objects or experiences.
R = *remembering* – keeping in mind various bits of information and determining information that must be retrieved.
SB = *summative behavior* – making a general rule or observation or counting objects to know the composition of the group.
SR = *seeing relationships* – comparing objects or events on a number of different parameters, their likenesses, similarities.
LE = *logical evidence* – using logic to prove or disprove an opinion, deductive and inductive reasoning.
I = *interiorization* – having a good mental picture of what one is to do.
HT = *hypothetical thinking* – thinking about different alternatives and their consequences, if...then...thinking.
IT = *inferential thinking* – assuming a part from looking at the whole or knowing the pattern.
SP = *systematic planning* – making a plan that will include all the necessary steps for reaching a goal.
Cat = *categorization* – classifying information, finding a commonality that describes a set or group, and differences as subsets.
F = *flexibility* – being ready to change your view point, take another course of action.
R = *reversibility* – reversing an operation, doing the opposite when required.

Output

OEC = *overcoming egocentric communication/behavior* – being aware of what you are doing or saying and how this affects others, being able to put yourself in another's position.
OB = *overcoming blocking* – being aware of unhelpful feelings/thoughts which could stop or affect how well you work.
OTE = *overcoming trial and error* – not guessing, thinking things through before answering.
PA = *precision and accuracy* – using exact words or actions and using them to communicate appropriately, enlarging conceptual tools for language.
VT = *visual transport* – carrying an exact picture of an object, words or action in your mind's eye to another place without losing details.
RI = *restraining impulsive behavior* – stopping unnecessary or unplanned movements.
M = *motivation* – dealing with boredom, trying to create an interest for yourself to help you work on something you don't want to do.

APPENDIX 2

THE BIOGRAPHICAL QUESTIONNAIRE

BIOGRAPHICAL QUESTIONNAIRE FOR COMMERCE STUDENTS

==========

Surname : _____
First names : _____
Application number (e.g.: 90/12345/H): _____
Place and date of birth : _____
Marital status married/single : _____
Address : _____

_____
Postal code: _____

Country of nationality (e.g. Zimbabwe): _____

==========

Please complete this questionnaire as fully and as accurately as possible in the time allocated. The information that you give will be treated as confidential. You have 30 minutes to complete the 45 questions.

Write clearly preferably using a black or dark blue pen.

Delete (i.e. cross out), underline or tick ( ) where appropriate

==========

1. Whic matriculation examination did you write (underline if listed; otherwise provide name)?
   Transvaal Senior Certificate (TED)
   Natal Senior Certificate
   National Senior Certificate
   Department of Education and Training Senior Certificate (DET)
   House of Representatives (Coloured Education) Senior Certificate
   House of Delegates (Indian Education) Senior Certificate
   Joint Matriculation Board
   Transkei Senior Certificate

   Other (please specify): _____

   In which year/s did you write your matric exam? _____

   Do any of your parents have a university education? Yes/No
   If yes, give details _____

2. Which degrees at Wits have you applied for? List these degrees in order of preference:
   a) _____ b) _____ c) _____

   Have you been refused for any of these? If so, list which degree/s: _____

3. B.Com students are encouraged to major in two subjects, which you will study for three successive years. Which two subjects would you choose as majors?
   a) _____ b) _____

   If you are unable to do your two proposed majors, what alternative majors would you do?
   c) _____ d) _____

What other courses are you proposing to study as part of your degree?

_____

_____

_____

4. Fill in all the schools you have attended. Mark boarding schools with an asterisk (*)

Name of School	Its Location (town/district)	Dates	Standards From	To

5. Were there any times during your school career - other than those spent at boarding school - when you lived away from your parents? If so, when, for how long and why?

_____

_____

6. Which language/s do you use most often? Please list in order of usage.
a) for speaking: _____
b) for writing : _____

Which language/s do you parents use most often? Please list in order of usage.
a) for speaking: _____
b) for writing : _____

Were your general school subjects ever taught in a language other than English? Yes/No
If yes, in which language/s? _____
and in which standards or forms? _____

7. How old were you when you first went to school? _____ years
and how old were you when you left school? _____ years

8. On average, how many pupils were their being taught in your <u>own</u> matriculation year? _____ pupils

9. Have you ever repeated a standard or form at school?
never/once/twice or more

If you have repeated a standard or form, please indicate which standard or form, when and why.

_____

_____

10. During your school years, were you able to study in a room
a) of your own? Yes/No
b) that was quiet? Yes/No
c) where electric lighting was available? Yes/No

If the answer is no to any of the above, give details:

_____

_____

_____

11 Do you live with both or one or neither of your parents?
both/one/neither

If neither then with whom do you live? _____

12 How many brothers and sisters do you have?
brothers: _____ How old are they? _____
sisters : _____ How old are they? _____

13 If you help to support your family financially, briefly detail what this involves:

_____

_____

14 Have you applied for a scholarship, bursary or loan? Yes/No
If yes, give details: _____

_____

15 Approximately how many books of any kind are there in your home?
none/20-100/more than 100

16 To which libraries did you have access as a pupil?
school/municipal/other/none

If available, did you use one or more of these libraries at least once a day/week/fortnight/month/quarter/year/never?

17 During your last two years at school did you ever have a teacher who was not properly qualified to teach? Yes/No
If yes, give details:

Subject	Form or Standard	Months without a qualified teacher

18 Was your school career ever interrupted by boycotts or the closure of the school? Yes/No

If yes, specify when and for how long? _____

_____

_____

What were the reasons for these boycotts? _____

_____

_____

19 Place a tick in the appropriate column if you experienced any of the following during your last two years at school:

	quite often	occasionally	never
Educational outings, e.g. historical tours, museum/ theatre visits			
Library project work			
Audio-visual instruction (e.g. with films/slides/ tapes/videos)			
Debating activities			
Drama activities			
Using a computer			
Science Laboratory Demonstrations			
Direct personal science Laboratory participation			

20 In your matric year, how many hours per day did you usually spend

a) at school attending classes (excluding breaks) _____ hours
b) studying after school hours _____ hours
c) studying during vacation _____ hours

21 Over the last two years, how many hours per week would you estimate you spent during term time on each of the following (give examples of your involvements):

a) sport: _____
_____
b) hobbies: _____
_____
c) other interests (e.g. reading, writing): _____
_____
d) home/family/community responsibilities: _____
_____

22 List, in order of their importance to you, the major school and community activities in which you have participated and any positions or offices that you have held. (Give dates)

_____
_____
_____

23 How many books do you read on average every three months? _____ books. In what language/s _____

24 List, in order of preference, some books and their authors, that have especially interested you. Do NOT include school setworks.

a) _____
b) _____
c) _____
d) _____
e) _____
f) _____

Now explain why you found the book and author given in your answer to a)- as your <u>first preference</u> - especially interesting.

25 If you have read anything that relates directly to your proposed two majors, please list some of these. Say briefly why you found them particularly worthwhile.

26 List, <u>in order of preference</u>, the magazine and newspapers which you read regularly:
Magazines/periodicals:

Newspapers:

Why do you read these particular publications and what do you think of them?

27 What three things did you like most about school?
a)
b)
c)

28 What three things did you like least about school?
a)
b)
c)

29 What two subjects did you like best at school and why?
a)
b)

30 What two subjects did you like least at school and why?
a)
b)

31 If you could have chosen to study different subjects for your matriculation examination, would you have done so? Yes/No

If yes, state
a) those you would have studied: _____
why would you have chosen these: _____
_____

State
b) those you would not have studied: _____
why would you not have chosen these: _____
_____

What - if anything - stopped you from making the choice of subjects you wished? _____
_____

32 What was your main activity in 1990? (e.g. school, study at university or elsewhere, full-time or part-time work):
_____

33 Have you taken any educational courses since you matriculated? Give details of the institutions, courses, dates and results.
_____
_____

34 Write in the space below on these three questions:
i) Why do you want come to university?
ii) Why have you chosen to apply for a B Com?
iii) What do you hope to do after you have qualified at university and how does this relate to your choice of university course?

35 What career do you hope to follow after leaving university?

a) Why do you hope to follow this career? _____

b) How will your proposed university study programme and experiences assist you in your proposed career and future? _____

36 Did someone in particular influence your choice of proposed study/career choice in any way? Yes/No

If yes, who and how? _____

Were there any specific circumstances that contributed to your study/career choice? Yes/No

If yes, indicate what these were: _____

37 Have your parents/guardians ever suggested a career they would like you to follow? Yes/No

If yes, what? _____

How do you feel about their suggestion? _____

38 How do you think your parents/guardians feel about your career choice? _____

39 Within your B Com programme, do you propose enrolling for one or more courses in Accounting? Yes/No

If yes,

a) In what year will you enrol for such a course (e.g. 1992)? _____

b) How many courses in Accounting do you propose to include in your B Com curriculum? _____

c) Define "community service" and discuss how an Accountant can contribute to the community: _____

d) Give your reasons for wishing to study an Accounting course in your undergraduate degree: _____

40. What made you specifically apply to this university? _____

_____

41 Have you received any professional vocational guidance? Yes/No

If yes, please indicate from whom and the recommendations:

_____

42 Do you have friends/relatives who are studying/working at this university? Yes/No
Or friends/relatives intending to study here this year? Yes/No

43 Are you attending, or have you ever attended, the Pre-University School at Wits? Yes/No

If yes, list the courses followed and the year/s in which they were taken: _____

_____

_____

44 If you are not accepted by this faculty, what will you do?

_____

45 Add any other information not already given that you think will be useful to the Admissions Committee in considering your application:

_____

_____

_____

_____

_____

_____

_____

I declare that the above information is correct and complete.

Signature of applicant: _____ Date: _____

APPENDIX 3

INTERPRETATION OF THE BIOGRAPHICAL QUESTIONNAIRE

BIOGRAPHICAL QUESTIONNAIRE FOR COMMERCE STUDENTS

The aspects requiring consideration are especially - but not exclusively - likely to be illuminated in the answers to the questions indicated:

1. PRESENCE OF DISADVANTAGE (General Impact, Background and Activities)
   a) LANGUAGE: 1,4,6
   b) EDUCATIONAL: 4-12, 15-19, 45

2. QUALITIES OF APPLICANT
   a) MOTIVATION: 13, 14, 20, 21, 34, 45 (Personality)
   b) DIRECTION: 2, 3, 22-44 (Career Suitability)

While careful coding under sub-headings is essential, we are primarily concerned to achieve a properly motivated overall evaluation under each main heading in a way that precludes a crude mechanistic computation. Such computation, in any event, is not appropriate because responses are sometimes incomplete, inadequate, or insufficient in what they reveal; because certain attributes often interrelate; and because not all attributes are necessarily of equal salience in themselves or in regard to the applicant's projected programme and objectives.

The Committee is academically and socially contextualised fairness for all as prime objectives and therefore must consider the first available spectrum of salient data, while recognising the varying standards, consistency and credibility of diverse matriculation authorities. It should also be noted that disadvantage while generally group-specific is occasionally person-specific.

The Committee simultaneously carries an academic and moral responsibility to ensure that all admitted will, with the fullest possible support inputs available, stand a reasonable chance of success. This means taking cognisance of minimum current academic skills; aptitude; motivation and - to the extent possible - potential. It also regretfully implies looking at the financial and circumstantial constraints that, if very severe, could deeply prejudice the prospects of even the most socially-worthy applicant unless there are adequate compensatory personal attributes and supports. Because sacrifices are incurred by economically disadvantaged applicants are particularly disproportionate, we bear a painful responsibility not to accept those for whom the prognosis is unambiguously very poor. This must not, however, deflect us from maximising acceptance of disadvantaged applicants where we have adequate reason for hope, while maintaining a policy of universal fairness towards all. All evaluations will occur in a group committee and be subject to moderation to ensure uniformity and fairness. Responses giving rise to difficulty should be discussed within the marking group.

APPENDIX 4

CRITERIA FOR RATING BACKGROUND INFORMATION

INTERVIEW EVALUATION

INTERVIEW PROFILE OF BRIDGING PROGRAMME CANDIDATE; CRITERIA FOR ACCEPTING/REJECTING A CANDIDATE IN THE THREE MAIN ASSESSMENT AREAS

An acceptable bridging programme candidate must show evidence of the following:

a) a certain standard of general impact given the candidate's background and activities (Language and Educational)

b) a career choice which is acceptable to the Scheme and which is suited to the candidate's overall abilities, personality and interests (Direction)

c) the specific personality characteristics of Control, Commitment and Challenge (Motivation)

The minimum criteria for acceptance in terms of each of the above are as follows. Refer to these when completing the Rating Form.

A. General Impact

The applicant must show evidence of each of the following:

- a balance of interests i.e. between "work" and "play"
- a reasonable spread of interests
- a level of responsibility/conscientiousness/motivation and awareness appropriate to his age
- a realistic and positive self-perception
- an ability to understand and answer questions in a clear and logical fashion with no excessive indication of stress e.g. incoherence

- an ability to "get on" with, interact and identify with others i.e. family, peer group, teachers, community etc.

- initiative and flexibility especially in dealing with particular problems

B. Career Suitability

- One of the following career choices:

  - Commerce (Finance/Pers/Training)

  - Engineering - Mining, Metallurgy, Chemical (only for top achievers)
    Mechanical, Electrical, Geology

  - A career choice appropriate to his aptitude

  - A broad understanding of his career/study choice

  - A sound/appropriate basis for his career decision i.e. career choice does not appear to be an arbitrary one

  - A real interest in his choice as demonstrated by, for example, PROTEC membership, applications to relevant Universities faculties, other bursary applications etc.

C. Personality Characteristics and Motivation

The applicant must by means of actual behavioural examples show positive evidence of each of the following personality characteristics

Commitment
Control
Challenge

APPENDIX 5

SAMPLE OF ITEMS IN MENTAL ALERTNESS TEST

EXPLOSION is related to CORROSION as EARTHQUAKE is related to (?)
1. CATACLYSM 2. AVALA' ;HE 3. ERUPTION 4. EROSION 5. TYPHOON
..... ( )

Which two numbers come next in the following series?
6 7 5 8 4 9 — —..... ( )

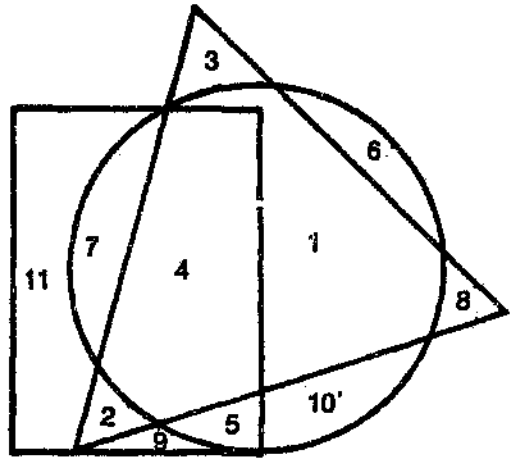
against all united men stand upright evil enemy
If one word is omitted from the above, the others can be arranged to form a good sentence.
Print the first letter of the word to be omitted..... ( )

PYRAMID is related to CONE as CUBE is related to (?)
1. CIRCLE 2. CYLINDER 3. SPHERE 4. ELLIPSE 5. RECTANGLE..... ( )

The rate of rejection of a factory is expressed as a percentage of the number of articles which is manufactured. A rate of rejection of 12 % therefore means that out of every 100 articles 12 are unacceptable. What is the rate of rejection of a factory where 9 out of every 15 dozen articles are rejected?..... ( )

How many of the following words can be made of any of the letters in the word FREIGHT, using any letter not more than twice for any word?
retire, height, grief, trigger, neither, thrift, relief, eighty..... ( )

must bad a storms brave ship repair seaworthy be to
If one word is omitted from the above, the others can be arranged to form a sentence.
Print the last letter of the word to be omitted..... ( )



Which number is in the space which is in the triangle and in the circle, but not in the rectangle?..... ( )

Which number is in the same figure or figures as the number 5?..... ( )

How many spaces are there which are in any two but only two geometrical figures?..... ( )

There is no other space like 1, so we call this space unique. Examine spaces 7, 10, 2 and 11 and find which of them is unique..... ( )

APPENDIX 6

COGNITIVE PROCESSES REQUIRED FOR THE PATTERN RELATIONS TEST

Cognitive Functions: The following functions which are prerequisites for solving the test, seem also necessary for university success.

a. Input Phase

1) Systematic exploratory behaviour
2) Conservation of constancies
3) Sound spatial orientation
4) Need for precision and accuracy
5) Ability to provide appropriate verbal labels of elements of the task (i.e. sound receptive verbal tools)

b. Elaborational phase

1) Sound definition of the problem
2) Sound ability to separate relevant from irrelevant cues
3) Need for logical evidence
4) Inferential, hypothetical thinking
5) Sound spontaneous comparative behaviour
6) Sound internal representation, i.e. the ability to keep pictures in one's head and to manipulate these internally

c. Output Phase

1) Need for precision and accuracy

APPENDIX 7

INSTRUCTIONS FOR THE TRADITIONAL PATTERN RELATIONS TEST

Follo v in detail the instructions given below.

Read aloud: "I am going to hand out the material you will need for the test. Please do not open the question booklet yet".

Give each subject a question booklet, an NIPR 200 answer sheet, and a HB pencil with eraser.

Read aloud: "Do you all have a question booklet, an answer sheet, and a pencil with a rubber?"

Give any subjects who may be lacking any of these items what they need.

Read aloud: "Now complete the biographical details asked for on the answer sheet. Please make quite sure that all the information you give is correct .

Ensure that all subjects have correctly completed the biographical questions.

Read aloud: "Please open your question booklets to the instructions at the beginning".

Look up to see that this has been done.

Read aloud: "Now follow the instructions as I read them".

Read aloud: "This is a test of your ability to think clearly. You will be given a number of patterns each with a part missing. You have to find the missing part.

Look at the page opposite this one headed "Examples". At the top there is a pattern with a piece missing. Below there are six pieces labelled A, B, C, D, E and F that might fit into the piece left out. They are all the right size and shape, but only one has the pattern. Look at A; it is quite the wrong pattern; so are B, C, E and F. D is the right answer, therefore you have to mark D on your separate answer sheet next to Example 1. Use the pencil you have been given to blacken the space thoroughly between the two dotted lines printed over letter D.

Study Example 2".

Wait until all subjects have attempted the example.

Read aloud: "Can you see that C is the correct answer? Now blacken the space between the two dotted lines over C".

Ensure that all subjects have correctly marked the letter C opposite Example 2 of their answer sheets.

If any subjects doubt that C is the correct answer to the example, use the following line of explanation:

"Looking at the columns you will notice that the third element is the superimposition of the first two. Looking at rows you will find that the first element is a combination of the last two. We will therefore expect the same principles to hold for the missing element".

Read aloud: "Try Example 3 yourself and mark the correct answer as you were shown".

Wait until all subjects have attempted the example. Ensure that all subjects have correctly marked the letter D opposite Example 3 of their answer sheets. If any subjects doubt that D is the correct answer to the example, use the following line of explanation:

"Eight circles are given; three blank; three with a cross and only two with a horizontal line. The ninth one should therefore be a circle with a horizontal line. Also: Looking at columns only, one finds a circles of every description in each of the first two columns and would therefore expect the same principle in the third column. Also: Looking at rows only, one finds that the first and last elements are identical for the first two rows and would expect the same principle to hold for row three".

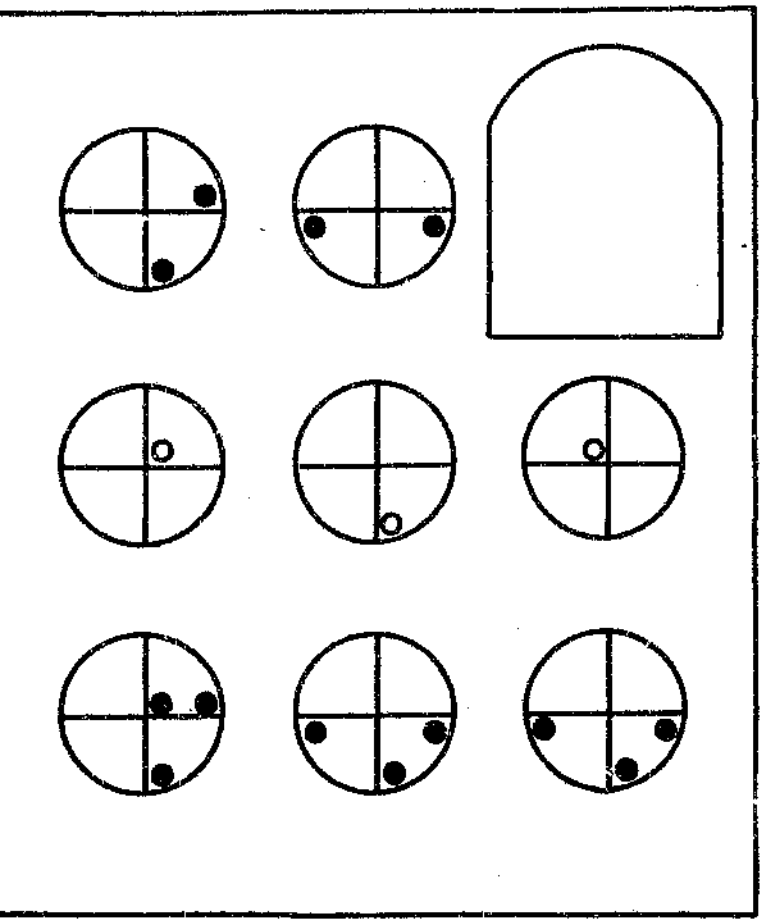
Read aloud: "On each page of this test, there is a different pattern with a piece missing. All you have to do is to find the piece which will complete the pattern and mark it over the corresponding letter next to the right question number.

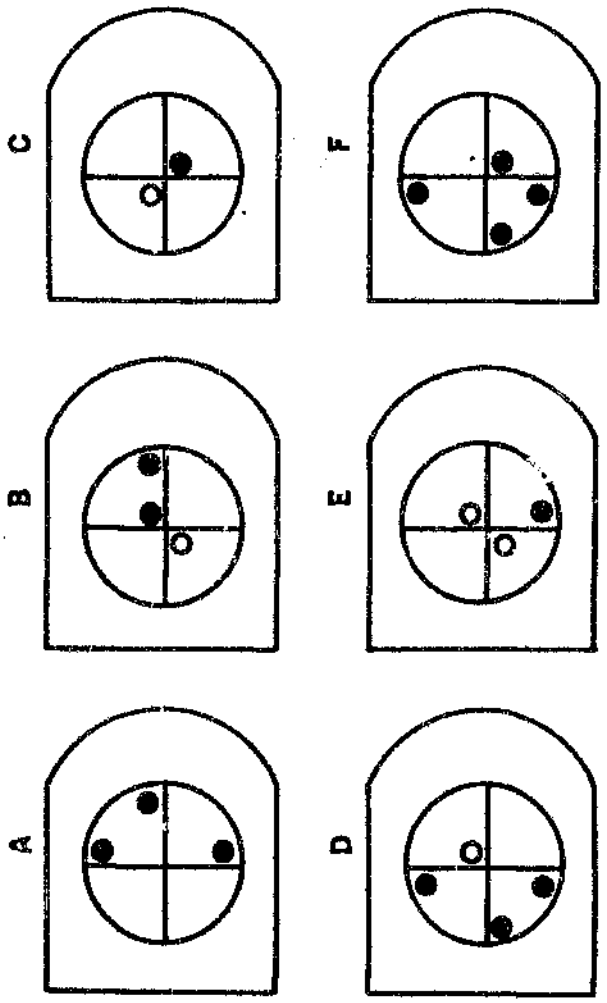
They are quite easy at first, but become more difficult as you go on. If you understand how the first ones should be done, it will help you to do the others. Work quickly, but do not worry if you don't finish all the questions; it is more important that those you do are correct.

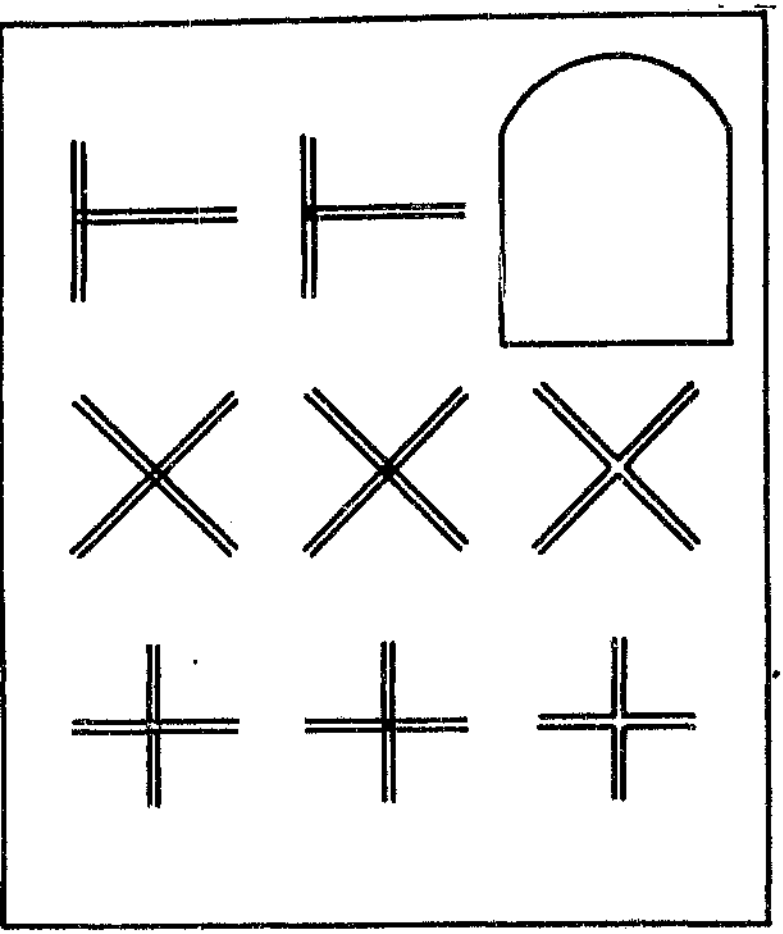
If you want to change the answer, rub it out thoroughly before making a mark over the correct letter.

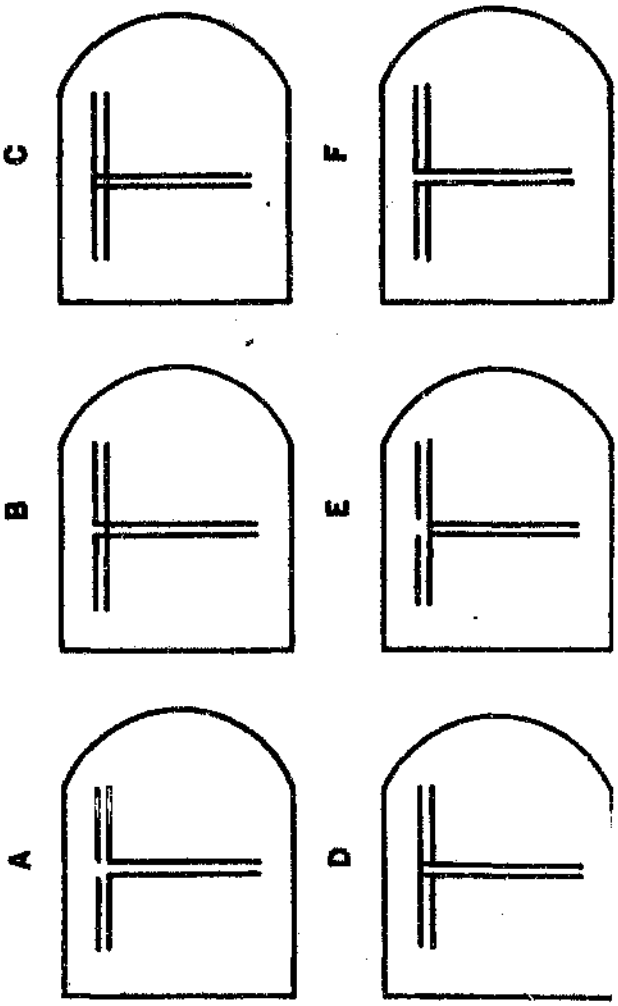
APPENDIX 8

SAMPLE OF ITEMS IN THE PATTERN RELATIONS TEST




C
F
B
E
A
D




C
F
B
E
A
D

APPENDIX 9

ANSWER SHEET FOR THE TRADITIONAL PATTERN RELATIONS TEST

PATTERN RELATIONS PATROONVERHOUDINGS

Name
Naam _____ Surname — Van _____ Initials — Voorletters _____

Occupation
Beroep _____

Highest academical qualifications
Hoogste akademiese kwalifikasies _____

Tested by
Getoets deur _____ Place
Plek _____

Today's date
Vandag se datum _____/_____/_____

Date of birth
Geboortedatum _____/_____/_____

Age
Ouderdom _____ Years
Jare _____ Mo.
Ma

Sex
Geslag _____

Home language
Huistaal _____

CODE NUMBER
KODENOMMER

RS RT	SS ST	Stanine	Centile Sentiel

EXAMPLES
VOORBEELDE

1

1 A B C D E
2 A B C D E
3 A B C D E

TEST/TOETS

1 A B C D E
2 A B C D E
3 A B C D E
4 A B C D E
5 A B C D E
6 A B C D E
7 A B C D E
8 A B C D E
9 A B C D E
10 A B C D E
11 A B C D E
12 A B C D E
13 A B C D E
14 A B C D E
15 A B C D E
16 A B C D E
17 A B C D E
18 A B C D E
19 A B C D E
20 A B C D E
21 A B C D E
22 A B C D E
23 A B C D E
24 A B C D E
25 A B C D E
26 A B C D E
27 A B C D E
28 A B C D E
29 A B C D E
30 A B C D E

APPENDIX 10

THE INTERVIEW MEASURE

INTERVIEW PROFILE FOR COMMERCE STUDENTS

INTERVIEW QUESTIONNAIRE

SUGGESTED TIME FOR ALL 16 QUESTIONS IS 20 MINUTES

APPLICANT: .....

INTERVIEWER(S): .....

Use this questionnaire to:

1. Help prepare for the interview

2. Ensure that all the required information is obtained

3. Complete the Rating Form.

Once the Rating Form has been completed the Questionnaire should be destroyed.

I. BIOGRAPHICAL QUESTIONNAIRE FOR COMMERCE STUDENTS

Check carefully through the different sections on the form. Read the open responses. Note questions you will ask and information you will receive.

AREAS TO PROBE	RESPONSES RECEIVED
A. GENERAL IMPACT (1, 4-12, 15-19, 45)	
1. Kind of school attended. Why?	
2. Age? Possibl PM candidate?	

3. Activities at school/ in the community?

4. Nature of participation i.e. observer/ spectator/participant leader etc?

5. Work experience? What was gained from this? Impressions?

6. Hobbies and other achievements

7. If matriculated, what has he/she done since?

8. Personal situation? Type of background? Who supports the applicant financially?

9. Who helps him/her; is a role model/ example? Why?

B. CAREER SUITABILITY (2, 3, 22-44)

10. Where has the applicant applied to for further studies/ bursaries?

Any alternative plans for next year?

11. Career choice? Extent of career knowledge?

12. Basis on which career decision has been made?

13. Has the applicant been to a mine or a factory? What were his impressions? Attitude?

C. PERSONALITY - CHARACTERISTICS (MOTIVATION) (13, 14, 20, 21, 34, 45)

Examples can be drawn from information already given by the applicant or from responses to the questions listed below.

CHARACTERISTICS TO PROBE

14. Control

Positive: Believes that one can control one's future; events result from one's actions. Willing to maintain high standards and to work hard to achieve this. Responds well to competition.

Negative: Shows excessive anxiety. Blames others/ outside factors for unhappiness/failures. Believes he can't help himself.

POSSIBLE QUESTIONS/BEHAVIOURAL EXAMPLES

Give us an example of something you are doing at the moment which you feel will help you in the future. What is it? How will it help you?

15. Commitment

Positive: Involves himself in what he's doing; identifies with it; finds it meaningful. Does not give up quickly or under pressure. Active vs passive approach. Perseveres with a problem/difficulties.

Negative: Unusually apprehensive in new ventures. Generally pessimistic in outlook. Feels isolated; does not take part for fear of failure/rejection.

Tell us about a time when you worked really hard to achieve something (not schoolwork). What was it? What was the result?

16. Challenge

Positive: Views change positively as an opportunity for growth. Believes it is normal.

Negative: Excessive dislike of ambiguity or uncertaintly. Wants complete/ready answers. Has difficulty in dealing with probabilities.

Tell us about a change in your life. What was it? What difference has it made on you as a person?

III PRESENTATION

Observe the candidate carefully. Note oral communication skills, general appearance and body language, thinking processes.

APPENDIX 11

ANSWER SHEET FOR THE PATTERN RELATIONS ENRICHED TEST

PATTERN RELATIONS

Second answer sheet

FULL NAME AND SURNAME ..... DATE .....

a) Draw a cross over the answer of your choice.
b) Every problem must be answered.
c) All answers must be done in pen.
d) No answers may be corssed out or changed.
e) No marks will be deducted for wrong answers.
f) If you don't know an answer and don't want to guess, draw a cross over the letters NR.

i) Answer the problems in the order shown on these answer sheets.

							No Response
1.	A	B	C	D	E	F	NR
10.	A	B	C	D	E	F	NR
11	A	B	C	D	E	F	NR
12.	A	B	C	D	E	F	NR

							No Response
11.	A	B	C	D	E	F	NR
8.	A	B	C	D	E	F	NR
4.	A	B	C	D	E	F	NR
7.	A	B	C	D	E	F	NR
13.	A	B	C	D	E	F	NR
2.	A	B	C	D	E	F	NR
3.	A	B	C	D	E	F	NR
23.	A	B	C	D	E	F	NR
25.	A	B	C	D	E	F	NR
5.	A	B	C	D	E	F	NR
6.	A	B	C	D	E	F	NR

							No Response
18.	A	B	C	D	E	F	NR
9.	A	B	C	D	E	F	NR
25.	A	B	C	D	E	F	NR
17.	A	B	C	D	E	F	NR
27.	A	B	C	D	E	F	NR
20.	A	B	C	D	E	F	NR
21.	A	B	C	D	E	F	NR
22.	A	B	C	D	E	F	NR
15.	A	B	C	D	E	F	NR
19.	A	B	C	D	E	F	NR
24.	A	B	C	D	E	F	NR

							No Response
14.	A	B	C	D	E	F	NR
28.	A	B	C	D	E	F	NR
29.	A	B	C	D	E	F	NR
30.	A	B	C	D	E	F	NR

APPENDIX 12

THE LEARNING PROCESS MEASURE READING TEXT

READING EXERCISE LSP MEASURE

IMPORTANT CONCEPTS IN ECONOMICS: A STUDY IN APPLICATION OF SUPPLY AND DEMAND THEORY

Supply elasticity and the adjustment period

Supply elasticity, which is a measure of the responsiveness of amounts offered for sale to changes in prices, is analogous to demand elasticity. It is simple, the percentage change in quantity offered divided by the percentage change in price which induced the change in offerings. This elasticity, like demand elasticity can vary from zero to infinity. Inelastic supply means a supply elasticity of less than unity. The amounts that firms offer are relatively insensitive to price changes, so percentage changes in quantities offered are less than percentage changes in prices. When supply elasticity equals unity, offerings and prices change in the same proportions. When supply is elastic, the percentage changes in offerings is greater than the percentage change in prices.

In general, one expects that the responsiveness of firms to price changes will be greater the longer the period in which firms have to adjust to price changes. Therefore, in the momentary period, supply is likely to be relatively inelastic. In the short run, it will be somewhat more elastic, and in the long run, it will tend to be even more elastic still.

The usefulness of supply and demand analysis in understanding markets

Professional economists use the supply and demand concepts and market analysis to explain the price levels and market sales in particular markets. But for the nonprofessional, the utility of the concepts and analysis is not in such particular applications. The supply-demand analysis provides a general understanding of the economic forces operating in markets. This can be illustrated by analysing

a market that exists in spite of its illegality: the market for dagga. Application of supply and demand concepts to this market also illustrates the value neutrality of these analytical tools. Their use does not imply approval or condemnation of the market being analysed.

There is relatively little precise and detailed knowledge about the dagga market because it is illegal. But general qualitative information organised in supply and demand concepts will permit some insights. First of all, the market in urban areas may not be too far from being a competitive market. The nature of the product and the conditions under which it can be produced and "imported" encourage competition among suppliers. It is light, takes up little volume and can be easily transported. Apparently it can be cultivated intensively or extensively, on large or small plots, with little specialised technology. These factors contribute to the existence of a number of alternative sources of supply.

The effect of the illegality of the market, however, is to increase the costs of the supply. The penalties for breaking government laws regarding dagga are heavy in order to discourage its production and sale. The returns to suppliers must, therefore, cover the risks of fines and imprisonment. The continuation of supply suggests the profitability of the undertaking.

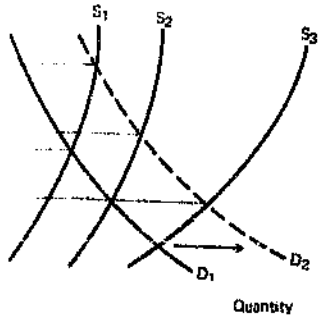


Figure 1.

ANALYSIS OF THE EFFECTS OF DEMAND AND SUPPLY CHANGES ON DAGGA PRICES

An apparent increase in demand over time has been accompanied by an increase in supply. This has been facilitated by easy "entry" into the import "business". It has occurred in spite of the high "costs" of arrest and conviction. This is just another example of a market working out as we would by now expect it to work, even though it it an illegal market. The process is represented in Figure 1. The increase in demand is shown by the shift from **D1** to **D2** with a consequent increase in price from **p1** to **p2**. When prices go up, the profitability increases. This stimulates an increase in the quantity supplied from available sources. In addition, it leads to an enlargement of the scale of operations of existing "firms" and brings new "firms" into the industry. The consequent shift in the supply curve **S1** to **S2** is shown in Figure 1. That in turn leads to a new equilibrium price at **p3**. Effective police action against suppliers may shift the supply schedule back to **S1**, with a consequent increase in price

How would legalisation affect the price and sales of dagga? Would it lead to increased usage? Legalisation would mean a substantial shift in the supply schedule, say, to **S3** in Figure 1 because the "costs" of the present penalties on supply would be eliminated. If the demand curve for dagga showed the conventional downward slope, more would be purchased at a lower price. Would the total expenditures on dagga be greater? That would depend on the elasticity of demand. If demand were elastic, expenditures would increase; if inelastic, total expenditures would fall; and if the elasticity of demand were unity, expenditures would be constant.

Can the Law of Supply and Demand be repealed?

We are told in the financial columns that the Law of Supply and Demand cannot be repealed. Is it true? The dagga example showed that government regulation, if it cannot

828 repeal the operation of supply and demand, can certainly
837 tamper with the system. But just what is the Law of Supply
849 and Demand anyway?

852 It is certainly not a physical law like the Law of
863 Conservation and Energy, for the process of supply and
872 demand interaction need not take place at all. It is not a
884 moral law either. It was never claimed that the price
894 resulting from supply and demand interaction in a
902 competitive market was Right or Just or even that it would
913 Make Everyone Happy.

TIMED READING (3 MINUTES)
REACHED LINE NUMBER _____

INSTRUCTIONS

Now go back and study the article as you would usually prepare for a test or examination. Feel free to underline or make marks on the article. If you want to make notes or write comments, you can do so on the article or on the separate sheet of note paper. You have 20 minutes in which to prepare for questions on the text.

APPENDIX 13

INSTRUCTIONS FOR THE LEARNING PROCESS MEASURE

INSTRUCTIONS FOR LEARNING STRATEGIES TEST

First of all I would like to thank you for being here and for agreeing to participate. You are going to take part in an experiment in learning. The reason for this is that we are interested in finding out how people learn the context of a text which they read. This is how the experiment will be conducted: You will be given a text to read and learn. We want you to study the text as you normally study for test material that has not been discussed in class. This is the article you are going to read you can use this clean sheet of paper if you want to write down anything. You are free to write of mark anything on the article. You may read the article more than once if you want to. You will be given approximately 20 minutes to go through the text. You will be told when your time is up. I shall then give you some questions on the content of the text, which I expect you to answer on paper. The text you are about to read is taken from an introductory course in economics and I don't think you will have any major difficulties with it. Is there anything you want to ask? In that case you can start reading.

APPENDIX 14

QUESTIONS FOR THE LEARNING PROCESS MEASURE

EXERCISE ON ECONOMIC CONCEPTS LSP MEASURE

Read the instructions before starting.

Answer the following TWO questions:

Question One (On a single A4 page)

Summarise the article using your own words as far as possible.

The summary should be no longer than one page (100 - 150 words)

Question Two (on a separate A4 page)

a) List the main ideas expressed in the article.

b) What is the author's conclusion

TIME LIMIT : 20 minutes

Both questions are of equal value.

APPENDIX 15

SAMPLE OF ITEMS IN THE STUDY PROCESS QUESTIONNAIRE

The alphabetical index stands for the following responses:
a – this item is always or almost always true of me;
b – this item is frequently true of me;
c – this item is true of me about half the time;
d – this item is sometimes true of me;
e – this item is never or only rarely true of me.
Do not worry about projecting a good image. Your answer is **CONFIDENTIAL**.

	Always/ Almost Always	Frequently	Half the Time	Sometimes	Never/ Only Rarely
When I chose my courses I was more interested in a future job than in their actual content.	a	b	c	d	e
I find that studying gives me a feeling of deep personal satisfaction.	a	b	c	d	e
I want top marks in my courses so that I can choose from the best positions when I graduate.	a	b	c	d	e
Reading widely is a waste of time, so I only study the prescribed readings seriously.	a	b	c	d	e
I often think of real life situations which are relevant to the material I am studying.	a	b	c	d	e
I summarise suggested readings and include them as part of my notes on a topic.	a	b	c	d	e
I am discouraged by a poor mark in a test and I worry about how I will do on the next test.	a	b	c	d	e
As truth is dependent on knowledge, I have to continually redefine my concept of the truth.	a	b	c	d	e
I have a strong desire to excel in all my studies.	a	b	c	d	e
I learn some things by rote, going over them again and again until I know them by heart.	a	b	c	d	e
When reading new work I am often reminded of known material, and I then see the latter in a new light.	a	b	c	d	e
I try to work consistently throughout the term and review regularly when exams are close.	a	b	c	d	e
Whether I like it or not, I can see that education is a good way to ensure a secure, well-paid job.	a	b	c	d	e
I feel that virtually any topic can be highly interesting once I get into it.	a	b	c	d	e
I would basically see myself as an ambitious person, and wanting to get to the top in whatever I do.	a	b	c	d	e
I tend to choose subjects with a lot of factual content rather than theoretical kinds of subjects.	a	b	c	d	e
Before I am satisfied, I need to do enough work on a topic to form my own point of view.	a	b	c	d	e
I try to do all of my assignments as soon as possible after they are given out.	a	b	c	d	e
Even when I have worked hard for a test, I am worried that I may not do well in it.	a	b	c	d	e
I find that studying my academic work can sometimes be as exciting as a good novel or movie.	a	b	c	d	e
I would sacrifice my immediate popularity with fellow students and friends for success in my academic career.	a	b	c	d	e

APPENDIX 16

LASSI SAMPLE ITEMS FOR EACH SUBSCALE

I review the notes before the next class. (Self-Testing)

I am unable to summarize what I have just heard in a lecture or read in a textbook. (Selecting- Main ideas)

I work hard to get a good mark even if I don't like a course (Motivation)

I often feel like I have little control over what happens to me at university. (Anxiety)

I stop periodically while reading and mentally go over what was said. (Concentration)

Even when I am well prepared for a test, I feel very anxious. (Test Strategies)

When I am studying a topic I try to make everything fit together logically. (Information processing)

I talk myself into believing some excuse for not doing an assignment. (Time Management)

When I study I have trouble figuring out just what to do to learn the material. (Study Aids)

When I begin an examination, I feel pretty confident that I will do well. (Test Strategies)

When it comes to studying, procrastination is a problem for me. (Time Management)

I check to see if I understand what the lecturer is saying during the lecture. (Selecting Main ideas)

I do not care about getting a general education, I just want to get a good job. (Attitude)

I am unable to concentrate well because of restlessness or moodiness. (Concentration)

I try to find relationships between what I am learning and what I already know. (Information processing)

I set high standards for myself at university. (Motivation)

I end up cramming for almost every test. (Test Strategies)

I find it hard to pay attention during lectures. (Concentration)

I focus on the first and/or last sentences of most paragraphs when reading my text. (Study aids)

I only study the subjects I like. (Motivation)

I am distracted from my studies very easily. (Concentration)

I try to relate what I am studying to my own experiences. (Information processing)

I make good use of daytime study hours between classes. (Time management)

When work is difficult I either give up or study only the easy parts. (Motivation)

I make drawings or sketches to help me understand what I am studying. (Study aids)

I dislike most of the work in my classes. (Attitude)

I have trouble understanding just what a test question is asking. (Test Strategies)

APPENDIX A7

RATING FORM FOR THE INTERVIEW MEASURE AND BIOGRAPHICAL QUESTIONNAIRE

PROFILE FOR COMMERCE STUDENTS

RATING FORM FOR BIOGRAPHICAL QUESTIONNAIRE AND INTERVIEW

APPLICANT: ....

INTERVIEWER(S): .....

CENTRE: .....

DATE: .....

Please note any relevant information. This form serves as the basic record of the preliminary interview and will be forwarded to the final selection panel. Use the following 10 point rating scale:

RATING SCALE

Poor		Weak		Average		Good		Outstanding	
1	2	3	4	5	6	7	8	9	10
Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi

Applicant does not meet any criteria for acceptance	Applicant meets some criteria but not enough for acceptance	Applicant meets basic criteria only	Applicant meets criteria and exceeds these in some respects	Applicant exceeds all basic criteria for acceptance

INTERVIEW RATING

RATE THE APPLICANT IN EACH OF THE FOLLOWING ASSESSMENT AREAS. PROVIDE INFORMATION TO SUBSTANTIATE EACH RATING.

A. GENERAL IMPACT, BACKGROUND AND ACTIVITIES:

1.
2.
3.
4.
5.
6.
7.
8.
9.

/10

B. CAREER SUITABILITY: (DIRECTION)

10.
11.
12.
13.

/10

C. PERSONALITY CHARACTERISTICS:

Describe how and rate the extent to which the applicant shows evidence of each characteristic.

CONTROL:

COMMITMENT:

CHALLENGE: _____

_____

_____

_____

AVERAGE RATING FOR DIMENSIONS /10

FINAL SCORE = /10 (ADD INDIVIDUAL'S SCORES FOR SECTIONS A - C AND DIVIDE BY 3). PLEASE INDICATE WHETHER THE APPLICANT IS:

A - ACCEPTABLE - SHOULD PROCEED TO FINAL INTERVIEW

P - POSSIBLE - BASICALLY ACCEPTABLE BUT HAVE RESERVATIONS MAY PROCEED TO FINAL INTERVIEW

R - REJECT - NOT SUITABLE - SHOULD NOT PROCEED TO FINAL INTERVIEW

AND GIVE AN OVERALL COMMENT

_____

_____

_____

_____

_____

BIOGRAPHICAL RATING

1. PRESENCE OF DISADVANTAGE

1.
4.
5.
6.
7.
8.
9.
10.
11.
12.
15.
16.
17.
18.
19.
45.

/10

2. QUALITIES OF APPLICANT

2.
3.
13.
14.
20.
21.
22.
23.
24.
25.
26.
27.
28.
29.

30. _____

31. _____

32. _____

33. _____

34. _____

35. _____

36. _____

37. _____

38. _____

39. _____

40. _____

41. _____

42. _____

43. _____

44. _____

45. _____

/10

FINAL SCORE = /10 (SECTIONS 1 AND 2 DIVIDED BY 2)

APPENDIX 18

FEEDBACK ON LASSI AND BIGGS INVENTORIES

PBS 1991

REPORT BACK ON SELF-RATING QUESTIONNAIRES

NAME :

	Surface Motive & Strategy	Deep Motive & Strategy	Achieving Motive & Strategy
BIGGS PROFILE :	= Approach	= Approach	= Approach

LASSI STRENGTHS :

LASSI WEAKNESSES :

FACTORS WHICH COULD IMPROVE YOUR APPROACH TO LEARNING

FACTORS WHICH COULD IMPROVE YOUR APPROACH TO STUDYING

99	39	39	39	39	38	39	25	38	39	39	99
95	38	38	33	36	34	36	23	33	33	37	95
90	37	37	32	34	32	34	22	31	32	35	90
85	36	36	30	33	31	32	21	30	30	34	85
80	35	35	29	32	30	31	--	29	29	33	80
75	--	--	28	31	29	30	20	28	--	--	75
70	34	34	27	30	--	29	--	27	28	32	70
65	--	33	26	29	28	--	19	26	27	--	65
60	33	32	25	28	27	28	--	--	--	31	60
55	--	--	24	27	26	27	--	25	26	--	55
50	32	31	23	26	25	--	18	--	25	30	50
45	--	30	22	25	24	26	--	24	--	29	45
40	31	--	21	24	23	25	17	23	24	--	40
35	30	29	20	23	22	24	--	--	23	28	35
30	29	28	19	22	21	23	16	22	22	27	30
25	--	27	18	21	20	22	--	21	21	26	25
20	28	26	17	20	19	21	15	20	20	25	20
15	27	25	15	19	18	20	14	19	19	24	15
10	25	23	14	17	16	19	13	18	18	22	10
05	23	20	12	15	13	17	11	16	16	19	05
01	19	17	09	12	10	14	08	13	12	14	01
	$\overline{ATT}$	$\overline{MOT}$	$\overline{TMT}$	$\overline{ANX}$	$\overline{CON}$	$\overline{INP}$	$\overline{SMI}$	$\overline{STA}$	$\overline{SFT}$	$\overline{TST}$	

Each of the three-letter codes indicates a category of learning and study strategies or methods. The meanings of the codes are:

- ATT • attitude and interest
- MOT • motivation, diligence, self-discipline, and willingness to work hard
- TMT • use of time management principles for academic tasks
- ANX • anxiety and worry about school performance
- CON • concentration and attention to academic tasks
- INP • information processing, acquiring knowledge, and reasoning
- SMI • selecting main ideas and recognizing important information
- STA • use of support techniques and materials
- SFT • self testing, reviewing, and preparing for classes
- TST • test strategies and preparing for tests

APPENDIX 19

SUMMARY OF ATTRIBUTES FOR THE LEARNING PROCESS MEASURE

3. OPERATIONALISATION OF STRATEGY MEASURE

Attribute	Intensity									
	Lo									Hi
Holist Strategies										
1. Abstraction	1	2	3	4	5	6	7	8	9	10
	weak integration						strong integration			
2. Transformation	1	2	3	4	5	6	7	8	9	10
	weak related grouping						strong related grouping			
3. Main argument	1	2	3	4	5	6	7	8	9	10
	no argument				1/2 arguments			3+ arguments		
4. Support details	1	2	3	4	5	6	7	8	9	10
	weak support							strong support		
5. Conclusion	1	2	3	4	5	6	7	8	9	10
	no conclusion				weak conclusion			strong conclusion		
Atomist Strategies	Hi									Lo
6. Sequence	1	2	3	4	5	6	7	8	9	10
	strong sequencing							no sequencing		
7. Irrelevant info	1	2	3	4	5	6	7	8	9	10
	3+ irrelevant				1/2 irrelevant			no irrelevant		
8. Discrete details	1	2	3	4	5	6	7	8	9	10
	3+ discrete				1/2 discrete			no discrete		
9. Incorrect info	1	2	3	4	5	6	7	8	9	10
	3+ incorrect				1/2 incorrect			no incorrect		
10. Confused	1	2	3	4	5	6	7	8	9	10
	strong confusion							no confusion		
11. Haphazard	1	2	3	4	5	6	7	8	9	10
	strong incoherence							no incoherence		

APPENDIX 20

OPERATIONALISATION OF THE LEARNING PROCESS MEASURE

SCORING THE LEARNING STRATEGY

1. SUMMARY OF ATTRIBUTES AND THEIR OPERATIONALISATION

Attribute	Operationalisation
1. Abstraction	Identification of an underlying structure/integrating theme or presentation of the general principle.
2. Transformation	Restructuring of information i.e. grouping together information that seems to be related.
3. Main argument	Main points or main parts of the argument that determine the structure.
4. Supporting details	Information that supports and explains what has been identified as the underlying structure of main arguments.
5. Conclusion	Identification and presentation of the final remark/solution of the article. This can be either an own conclusion or the author's.
6. Sequence	Emphasis on the sequence of the test. Starting with the beginning or ending and attempting to reproduce the same order as in the article.
7. Irrelevant information	Introducing new information/interpretations which may be true but has not been presented in the text and no justification is given as to why it is included.
8. Discrete details	Facts that are disjointed without any apparent connections, sometimes presenting direct information.
9. Incorrect information	Text-based information but incorrect.
10. Confused	Mixing main arguments and supporting details.
11. Haphazard	Completely lacking in coherence, no meaningful sequence.

2. PREVIOUS DISTRIBUTION OF ATTRIBUTES ACCORDING TO STRATEGY ATTRIBUTES (Culverwell, 1989).

ATTRIBUTES		STRATEGY			
		HOLISTS		ATOMISTS	
		H1 GOOD	H2 POOR	A1 GOOD	A2 POOR
		%	%	%	%
1.	Abstraction	80	53	0	0
2.	Transformation	20	47	0	0
3.	Main Argument : 0	0	48	12	57
	1 - 2	40	38	37	35
	3 +	60	16	51	7
4.	Supporting Detail : none	0	35	0	71
	1 - 2	20	52	25	29
	3 +	80	12	75	0
5.	Conclusion	100	52	29	25
6.	Sequence	0	0	70	7
7.	Irrelevant Information : none	100	48	87	71
	1 - 2	0	43	13	21
	3 +	0	9	0	8
8.	Discrete Details : none	70	30	13	7
	1 - 2	30	48	50	14
	3 +	0	22	37	79
9.	Incorrect Information : none	90	87	50	14
	1 - 2	10	13	50	64
	3 +	0	0	0	21
10.	Confusing	0	13	12	21
11.	Haphazard	0	60	0	100

APPENDIX 21

INTRODUCTORY PATTER FOR THE ENRICHED PATTERN RELATIONS TEST

A. PRETEST INSTRUCTIONS (5 STEPS)

1. Now you are going to do the same test again. This time you are going to do the problems in a different order and I am going to teach you how to do some of the problems. I am not going to show you how to do all of them though, because one of the things I am trying to see this time is if you can remember the methods that I teach you and if you can know when to apply these methods. You may have noticed when you did this test the first time that you solve the problems by working out the "rules" that apply to each one. So when I teach you how to do some of them, I will explain how you can get to the right answer by working out the rules. But, as with most things in life, there is not only one correct way to do something. So if you have worked out different rules to me and arrived at the same answer, it doesn't mean that your rules are wrong. As far as possible though, I will try to teach you methods of working out particular problems that can be used again in later problems.

2. As I said, this time we are going to do the problems in a different order. The reason for this is that the problems are now going to be grouped in such a way that many of them follow logically from one another. You may have noticed when you did this test the first time that many of the problems have the same sorts of rules. In this test many of the problems are grouped together in that way, so that ones with the same sorts of rules follow each other in some sort of order. This will make it easier for me to teach you the different methods of answering these problems. It must be stressed though that not all of the problems are going to be grouped in this way.

3. Now we're going to use the same procedure as we did when you were taught the test in the previous session. Will you all please look at your answer sheets. You are not going to do the problems at your own pace. We are going to do each problem separately. As we go through the test, I will tell you which page to turn to and we will do the problem on that page together. After a few minutes I will tell you to stop, then you must commit yourself to an answer. Then I will tell you the correct answer to that problem and in some cases I will teach you a method of doing the problem. If this procedure is going to work properly, there are two rules that you must all please follow.

4. The first rule is : Please always have your question book open on the page that I tell you it should be open on. Even if you get the answer quickly or even if you got the answer last time, please do not turn to any other problems in the book until you are told to. This is an extremely important rule if the test is going to work properly, so the invigilators are going to have to check that you stick to it.

5. The second rule is : Never change your answer once you have written it down (as the previous test). You must mark your answer on your sheet in pen and you may not change your answer once you have marked it down. So it is in your interests not to mark an answer until you are quite sure about it. But when I ask you to commit yourself to an answer, you must choose one of the alternatives on your answer sheet.

APPENDIX 22

MEDIATION FOR THE ENRICHED CONDITION OF THE PATTERN RELATIONS TEST

MEDIATION FOR ENRICHED CONDITION OF THE PATTERN RELATIONS TEST

INTENSIVE AND MINIMAL MEDIATION (22 STEPS)

1. Please turn to Problem 1 in your question book - not to Example 1, to Question 1.
You should all now be on Page 1. (5 seconds)
OK, pick up your pen and attempt to do Question 1. I will tell you when ur time is up. (1 minute).
OK. Now commit yourself to an answer. (5 seconds).
Now please put down your pen and listen carefully. (5 seconds).
Even if you found that problem easy, please listen to what I am going to say about it. If you listen carefully, you will get some hints on how to do the more difficult problems later on. (Displays appropriate graphic and points while explaining).

Before you try and answer any problems, it is always best to try and organise the information you are given first. That is, look carefully at what types of figures are drawn in the frame. It is a good idea to give the different types of figures different names, so that you are clear on what you are dealing with. Then try and see if you can establish any sort of relationship between these different figures.

In this problem we have +'s, X's and T's. We can immediately see a relationship between them, and so we arrive at the "rules" of the problem : along the horizontal rows we see that the figures repeat themselves in this pattern - first + then X then T. Down the vertical columns we see that the figures

are grouped together. First all the +'s then all X's then T's. So there are no prizes for seeing that the answer must be a T.

But that obviously doesn't get you to the exact answer. So in order to get it you must look for some other detail. And you will notice that in this problem, the detail is in the intersecting areas of each figure. And you will see that these intersections obey horizontal and vertical rules as well. Following the horizontal pattern you will see that simple crossed intersections can be found in the top row of figures. Blacked in intersections can be found in the second horizontal row. And open intersections are found in the third row. You will also see that these intersections follow a vertical rule : In the first vertical column the pattern is - first, simple crossed/ second, blacked-in/ third, open. In the second vertical column the same ttern appears.

So it should be easy to see why the answer-figure is a T with an open intersection, because this figure follows the rule about the patterns between the figures and it follows the rule about the pattern between the intersection of the origins. We therefore induce that the answer is A.

Although this problem was quite easy, I have been able to teach you two general methods for solving some of these problems.

The first one is, look for a vertical or a horizontal rule. There may not always be one, but it is a good thing to look out for.

Secondly, pay attention to detail. Do not answer too quickly, look carefully if there isn't a small detail which will provide you with the answer.

2. OK, now please turn to Page 10 in your question book. (5 seconds).
You should all now be on Page 10. (2 seconds).
OK, pick up your pen and attempt to do Question 10. I will tell you when your time is up. (1 minute, 30 seconds).
Alright, time's up. Now commit yourself to an answer. (5 seconds).
Now put down your pen. (5 seconds).

This one was a bit harder than the last one. Now let's look at what "rules" were used here : (Displays appropriate graphic and points while explaining).

Once again, there is a vertical and a horizontal rule. And once again, you had to pay attention to the details. First, let's look at the horizontal rule. If you look at the first and second horizontal rows, you will see that you always have a tall figure first, then some sort of a cross, then a flat figure on the right hand side. So we know that the answer must be a flat figure.

Now, let's look at the vertical rule. This one isn't so simple. Let's look at the left hand vertical column first. What is the difference between the top figure and the middle figure in that column? A horizontal line has been added to the second figure. And what's the difference between the middle figure and the bottom figure in that column? The middle figure has been "flipped over" to form the bottom one. Now let's look at the middle vertical column : what is the difference between the top figure and the middle figure in that column? A horizontal line has been added to the second figure. And what's the difference between the second and third figures in this column? No difference, right. But the vertical rule that we learned in the first vertical column is that the middle figure in the column is "flipped over" to form the third one. If you flip the middle figure in the second vertical column over, does it fit the bottom figure here? Yes it does.

So now we have established a set of rules for this problem. Now look at the third vertical column. We take the top figure in that column and we add a horizontal line to it in order to arrive at the middle figure in the column. Right. Now we have to flip that one over to arrive at the answer. So now it should be clear why B is the answer. The general rule that this problem has taught you is that sometimes you have to shift the position of some of the figures, or reorientate the figures, in order to get the answer.

3. Now turn to Page 16 in your question book. (5 seconds).
You should all now be on Page 16. (2 seconds).
OK, pick up your pen and attempt to do Question 16. (2 minutes 30 seconds).
Right, now commit yourself to an answer. (5 seconds).
Now put down your pen please. (5 seconds).

This is quite a difficult problem. Most people get it wrong. But if you listen to the logic behind it, you will see that there are only three rules

that you need to discover, and that it's not all that different to the last two problems.

You will remember that we told you that it is a good idea to give the different types of figures different names, so that you are clear on what you are dealing with. We said that this makes it easier to see relationships between the figures, and therefore easier to work out the logical rules it uses.

You will also remember that we said you must look for a vertical or a horizontal rule, but that there may not always be one.

We also told you to watch out for small details as these details may hold the key to the problem.

If you followed that advice, you might have got this problem right. (Displays appropriate graphic and points while explaining).

So, first of all let's give the different figures in the frame different names :
There are three main types of figures, and we will call them circles, squares, and diamonds. That's the first detail you had to look out for. Notice the difference between the squares and the diamonds.

Having named them circles, squares and diamonds, you will notice that there are details within each of these figures. One detail is that the figures all have pathways cut through them. Another is that these pathways either cut vertically, diagonally or horizontally through the figures. A further detail is that the pathways have different sorts of entrances. The entrance can either be open, like they are in the top left hand corner circle, or the entrance can be partially closed, like it is in the square at the top centre of the frame, or it can be partially extended like it is in the top right hand circle.

Now that we have gien names to all the elements we can start looking at the relationships between them and try and work out some rules.

Let's look at the entrances to the pathways first, and let's see if there are any vertical or horizontal rules for them. If you look at the top horizontal row you will see that its three figures have (from left to right) :

First an open entrance to the pathway
Second a part-closed entrance
Third a part-extended entrance

If you look at the second horizontal row you will see that its three figures have (from left to right) :
First a part-extended entrance
Second a part-closed entrance
Third an open entrance

From that observation we can work out the first rule. Each horizontal row has one of each of the different types of entrances. You will also see that this rule does not apply vertically.

So by looking at the bottom horizontal row, we can see that the answer figure must have a part-closed entrance to its pathway, because that horizontal row has a figure with a part-extended entrance, a figure with an open entrance, and no figure with a part-closed entrance.

Now we can look for some other rules. The other detail in these figures that we named was the pathways. So now we can look if there are any vertical or horizontal rules that apply to the pathways. Looking at the top horizontal row again, you will see that the top left circle has a horizontal pathway, the centre square has a diagonal pathway, and the right-hand circle has a vertical pathway. If you look at the second horizontal row you will see that there is also one of each of the different types of pathway in this row. The square has a vertical one, the circle a diagonal one and the diamond a horizontal one. So, looking at the bottom horizontal, you now know, according to these rules, that there should be one of each here too. There is a vertical pathway on the left, a horizontal pathway next to it and the diagonal pathway is missing. You will also notice that this rule doesn't apply vertically.

The other names that we gave were to the figures as a whole : circles, squares and diamonds. We can quickly see that there is no vertical or horizontal pattern between these figures. Remember, we told you that there isn't always a vertical or horizontal rule. You must, therefore, look for another kind of pattern between the three types of figures. And if you can count them, you will find it. (5 seconds). You see, there are three

circles and three squares, but only two diamonds. So the third rule that is established is that there should be three of each type of figure so the answer should be a diamond. According to the other rules we've established, that diamond should have a diagonal pathway and the entrance to that pathway should be partially closed. So the answer is E.

You have now learnt two new general methods for approaching these problems.

Firstly, you sometimes have to look at a number of different things separately, establish a number of patterns and rules and then apply them together to get the answer.

Secondly, you've learnt you sometimes have to count the number of elements and that this does not necessarily have to follow a horizontal or a vertical pattern.

4. Now turn back to Page 12 in your question book. (5 seconds).
You should all be on Page 12. (2 seconds).
Please pick up your pen and attempt Question 12. (2 minutes).
OK, now commit yourself to an answer. (5 seconds).
Put your pen down please. (5 seconds).

(Displays appropriate graphic and points while explaining).

The horizontal rule here was :-
Add the figure on the left to the figure next to it, then flip them over. So in the top row you add the half-circle to the triangle, then flip them over to get the figure in the top right hand corner of the frame. The same has been done to the second horizontal row. To get the answer you must do the same to the third row. So the answer is either A or E.

The other rule in this problem had to do with the shading. After the last problem I told you that you often have to work out separate rules and apply them together to get the answer. In this problem, the second rule is a vertical one : in the first vertical column there is one black figure, one white figure, and one striped figure. In the second vertical column there is also one black, one white and one striped figure. In the third column you can see two striped figures and two white figures. Therefore, following the pattern established in the first two vertical columns, the

answer must be two black figures (added together), because there are always an equal number of each type of shaded figure in each vertical column. So the answer is E.

This problem has taught you a new general method for approaching these problems. That is, you sometimes have to join figures to each other in order to get an answer. This can obviously also work the other way round. You sometimes have to separate figures from each other to get an answer.

5. Now turn back to Page 11 in your question book. (5 seconds).
You should all be on Page 11. (1 minute, 30 seconds).
Please pick up your pens and do Question 11. (1 minute, 30 seconds).
Alright, now commit yourself to an answer. (5 seconds).
Put your pen down please. (5 seconds).

(Displays appropriate graphic and points while explaining).

The rule here is a simple horizontal one. You add the figure on the left of a row to the figure next to it to get the figure on the right of the row. This was the only rule you needed to apply here. Therefore we can induce the answer to be C.

6. Now turn back to Page 8 in your question book. (5 seconds).
You should now be on Page 8. (2 seconds).
Please pick up your pen and do Question 8. (2 minutes).
OK, time's up.
Put your pen down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

Here there was only one rule, and you could have applied it horizontally or vertically. It had to do with counting the triangle elements. It goes like this. In the first horizontal row you have three black elements, five white elements, one vertically striped element, one horizontally striped element, one diagonally striped element, and one dotted element. In the second horizontal you have the same number of each : three black, five white, one vertically striped, one horizontally striped, one diagonally striped and one dotted element. So to get the answer you add up the elements in the third horizontal and see how many of each type you still need to get the same number of each type as you did in the other two horizontals.

(Five seconds). Doing this, you will see that you still need one diagonally shaded element and three white elements. So the answer's D.

You could have used this same rule down the vertical columns, and you would have got the same answer.

So you have learned another general rule : sometimes you have to break the figures up into smaller elements in order to get the answer.

7. Now please turn back to Page 4 in your question book. (5 seconds).
You should now be on Page 4. (2 seconds).
Please pick up your pen and do Question 4. (1 minute, 30 seconds).
OK, now commit yourself to an answer.
Put your pen down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

Here there were two rules. The first one was that each row had one large, one medium and one small square figure. This rule worked vertically and horizontally.

The second one had to do with the shading. It goes like this : Each square figure is made up of three concentric squares of different shading. In other words, the square figures have areas inside of them which are arranged like the inside of an onion, or a target. As you move along the rows, the shading within these squares swops around in a systematic manner. In fact the shaded areas rotate places amongst themselves and the movement is from the outside to the inside. For example, if you look at the top horizontal row, you will see that the striped area is on the outside of the left hand square figure. It is in the middle of the target of the second square figure and on the inside of the target of the right hand side one. The black area goes from the middle to the inside to the outside. The white area goes from the inside to the outside to the middle. And so on down the rows.

So let's look at the bottom row and apply the rule. The black area starts on the outside, then goes to the middle so it should end up on the inside. The white area starts in the middle and moves to the inside so it should end up on the outside. And then the striped area should end up in the middle.

So the answer square should be black on the inside, striped in the middle, and white on the outside. Remembering the first rule, we know that it should also be a middle-sized square figure. So the answer is A.

Many students usually give answer F. You will notice that answer F has the right shading but is the wrong size. So, perhaps the most important thing you can learn from this problem is not to answer too quickly and to pay attention to the details.

Once you have chosen an answer, imagine it in the correct place in the question frame and then check if all the rules you have worked out apply to that answer.

8. Now we're going on to a slightly different sort of problem. Please turn to Page 7 in your question books. (5 seconds).
You should now be on Page 7. (2 seconds).
Please pick up your pens and do Question 7. (2 minutes).
Right, now commit yourself to an answer. Put your pen down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

The best way to explain how this one works is to ask you to imagine that the figures in the left hand vertical column are made of soft clay. And imagine that the shapes in the middle vertical column are made of hard plastic.

Now, look at the top horizontal row. If you take the bent plastic shape in the middle of that row, and push it against all the sides of the clay square, the resultant shape would look like the figure on the top right hand corner. If you take the flat piece of plastic in the middle of the second horizontal row and push it against the sides of the clay triangle on the lft hand side, it won't change shape, so we still have a triangle on the right hand side. By following the same procedure on the bottom horizontal row, you can see why the answer is D. In Answer D all the sides of the rectangle have become curved inwards.

So the rules that get you to the answer are sometimes quite complicated. And they work in many different ways. By the way, usually less than 3 per cent of the students get that problem right.

9. OK, now turn to Page 13 in your question book. (5 seconds).
You should now be on Page 13. (2 seconds).
Plea pick up your pens and do Question 13. (2 minutes).
Right, now commit yourself to an answer and fill in the other columns. (10 seconds).
Put down your pen please. (5 seconds).
(Displays appropriate graphic and points while explaining).

Now we're going to give you a few seconds to think about why C is the correct answer to this problem. Remember the explanation we gave you after the last question. This one works in a similar way. Have a look at it, try and work out why you got it wrong, if you didn't choose C. (30 seconds).

10. Alright, now turn back to Page 2 in your question books. (5 seconds).
You should be on Page 2. (2 seconds).
Pick up your pen and do Question 2. (2 minutes).
Now commit yourself to an answer and fill in the other columns. (10 seconds).
Put down your pens please. (5 seconds).
(Displays appropriate graphic and points while explaining).

One way of explaining how this problem works goes, like this : if you take the figure on the left hand side of each horizontal row and subtract the figure in the middle of that row from it, then you are left with the figure on the right hand side of that row. So on the top horizontal row, for example, you have a diamond with a plus inside of it. Subtract the plus, and you are left with the diamond only.

There are many other ways of explaining this problem. But we are going to tell you a method which will help you a lot in solving some of the later problems.

It goes like this : You take the figure on the left hand side of a horizontal row, and take the figure next to it. Then you lay the two figures over each other. In other words you overlap or superimpose the two figures. Now whatever parts of those figures overlap exactly, or wherever they are exactly the same, they cancel out. That sounds very complicated, so let us give you an example.

Look at the middle horizontal row in the frame. If the left hand square

with an X in it is laid on top of the X next to it, then the X's overlap. And whatever overlaps, cancels out and vanishes. So you are left with a square without an X in it on the right hand side, because the square is the only part that didn't overlap. Keep this system in mind and now look at the questio.. again and try and work out why F is the correct answer. (5 seconds). Can you see that that vertical line in answer F is the only part of the circle with a plus in it that didn't cancel out when you overlapped it with the figure next to it? (5 seconds). Remember that system, it will help you to work out clear answers to some other problems which are still coming. Now turn to Page 3. (5 seconds). You should now be on Page 3. (2 seconds).

Please pick up your pen and try to do Question 3. (2 minutes, 50 seconds). OK, commit yourself to an answer and fill in the other columns. (10 seconds). Put your pens down please. (5 seconds).

That was a very difficult problem. About three quarters of students normally get it wrong. So well done if you got it right. If not, don't feel bad. Let's see if we can find out where we went wrong. (Displays appropriate graphic and points while explaining).

Now look at the problem again. Think about the method I taught you at the end of the last question. This one works in exactly the same way. Whatever overlaps between the first two figures in each horizontal row cancels out, and what remains makes the third figure on that row. I'm going to give you a few seconds to look at it again, try and see why B is the correct answer. (30 seconds).

12. Now turn to Page 23. (5 seconds).
You should now be on Page 23. (2 seconds).
Please pick up your pen and try to do Question 23. (2 minutes, 50 seconds).
OK, commit yourself to an answer. (10 seconds).
Put your pens down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

This one worked in the same sort of way as the last two, except in this one everything that overlapped stayed and everything that didn't overlap cancelled out. Some of you might have tried to use the same rules as you did in the last question and looked for a square with a + in it for the answer. When you saw that there wasn't one you would have realised that the rules work differently here. Very few students normally get this one right, so don't worry if you

got it wrong. We're going to give you a few seconds to look at it again, try and see why A is the correct answer. (30 seconds).

13. Now turn to Page 26. (5 seconds).
You should now be on Page 26. (5 seconds).
Please pick up your pen and try to do Question 26. (2 minutes, 50 seconds).
OK, commit yourself to an answer and fill in the other columns. (10 seconds).
Put your pen down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

That problem worked in the same sort of way as the last ones. We'll give you a few seconds to look at it again and try and see why B is the correct answer. (30 seconds,.

Notice that the dots didn't cancel out. As we said earlier, you must pay attention to small details.

14. Now turn to Page 5. (5 seconds).
You should now be on Page 5. (2 seconds).
Please pick up your pen and try to do Question 5. (2 minutes, 50 seconds).
OK, commit yourself to an answer. (10 seconds).
Put your pen down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

This was the same sort of problem again. We'll give you a few seconds to think about it. The correct answer is E. (30 seconds).

15. Now turn to Page 6 in your question book. (5 seconds).
You should now be on Page 6. (2 seconds).
Pick up your pen and try Question 6. (2 minutes, 30 seconds).
Now commit yourself to an answer, and fill in the other columns. (10 seconds).
Put down your pen please. (5 seconds).

It worked in the same sort of way as the last few. We'll give you a few seconds to look at it again. The answer is D.
(Displays appropriate graphic and points while explaining).

16. Now turn to Page 18. (5 seconds).
You shouldnow be on Page 18. (2 seconds).

Please pick up your pen and try to do Question 18. (2 minutes, 50 seconds).
OK, commit yourself to an answer. (10 seconds).
Put your pen down please. (5 seconds).

That was a very difficult problem.
(Displays appropriate graphic and points while explaining).

I'll give you a few seconds to look at it again. Try and work out why B is the right answer. (30 seconds).

17. Now turn back to Page 9. (5 seconds).
You should now be on Page 9. (2 seconds).
Please pick up your pen and try to do Question 9. (2 minutes, 50 seconds).
OK, commit yourself to an answer. (10 seconds).
Put your pen down please. (5 seconds).

This was a much more difficult sort of problem. I will tell you how it works. (Displays appropriate graphic and points while explaining).

The first thing you have to do is divide the figures up into their parts and, as usual, give them names. So, we have squares which are each divided up into four quadrants. These quadrants have different sorts of shading: white, black, vertical stripes, or horizontal stripes.

Now, as usual, we must try and see what sort of relationship these elements have with each other, so that we can try and find a pattern, and discover the rules.

So now, let's look at the top horizontal row and see what the pattern is. If we take the white quadrant in the first square and put it on top of the corresponding vertically striped quadrant in the second square, we get a black quadrant in the third square.

And, if we take the horizontally striped quadrant in the first square and put it over the same quadrant in the second square, it remains a horizontally striped quadrant in the third square.

And, if we take a black quadrant in the first square and put it over a white quadrant in the second square, we get a black quadrant in the third square.

And if we take a vertically striped quadrant in the first square and put it over the same quadrant in the second square, it remains a vertically striped quadrant in the third square.

So it seems, so far, that the rule goes like this : if you superimpose two quadrants that are shaded in the same way, it remains the same in the third square. But if you superimpose two quadrants that are shaded differently, it becomes black in the third square.

Now let's look at the second horizontal row : the white top left quadrant of the first figure superimposed on the striped one of the second figure makes a black one in the third figure. That's because differently shaded quadrants become black. White on white makes white (same shading remains the same). Black on striped makes black (differently shaded quadrants become black). Striped on black makes black (differently shaded quadrants become black).

So the rule is correct. Now we can apply it to the third horizontal row.

White on striped (different shading), so it becomes black. Black on black (same shading), so it stays black. Black on black again. And then striped on black (different shading) so it becomes black. Now we look for a figure that is all black. So the answer is A.

The general method that this problem has taught us is : separate out the different elements in the figures and give them names. Then try and find a relationship between these elements and see if the relationships form any pattern. Then apply the rules of that pattern in order to find the answer.

Now look at Question 9 again. The rules that we deduced were :

1. When you put differently shaded quadrants together they become black.

2. When you put similarly shaded quadrants together they stay the same.

Now we will give you a few seconds to look at it, make quite sure you can see why the answer is A. By the way, you will see that it also works vertically. (30 seconds).

18. Now turn to Page 25. (5 seconds).
You should now be on Page 25. (2 seconds).
Please pick up your pen and try to do Question 25. (2 minutes, 50 seconds).

OK, commit yourself to an answer. (10 seconds).
Put your pen down please. (5 seconds).
This problem worked in the same sort of way as the last one.
Displays appropriate graphic and points while explaining).

Here the elements were plus's and X's. The rules were :
If you put down a + or an X on an X, it remains the same. And if you put an X or a + over nothing, it remains the same. But if you put a + over an X, or an X over a +, they cancel out and vanish.

Now that I have told you the rules, look at the question again and make sure you can see why the answer is E. (30 seconds).

19. Now turn back to Page 17. (5 seconds).
You should now be on Page 17. (2 seconds).
Pick up your pen and do Question 17 please. (2 minutes, 50 seconds).
Right, commit yourself to an answer and fill in the other columns. (10 seconds).
Now put down your pen please. (5 seconds).

This problem worked in the same sort of way as the last two. I'll give you a few seconds to try and see why the answer is B. (30 seconds).
(Displays appropriate graphic and points while explaining).

When I did this problem for the first time, I couldn't work out the pattern so I chose A as my answer simply because it seemed to me that the bottom right corner needed more black triangles. Since then I have found out that nearly two thirds of the students we test also choose A as their answer. So the lesson in that is : don't choose the answer that intuitively "looks" right. Every problem has systematic rules. If you think clearly, name

the elements and look for the pattern between them. You will find it.

20. Now turn to Page 27.
You should now be on Page 27. (2 seconds).
Please pick up your pen and try to do Question 27. (2 minutes, 50 seconds).
OK, commit yourself to an answer. (10 seconds).
Put your pen down please. (5 seconds).

This question worked slightly differently to the last three, so I will explain it to you.

You might have thought that it worked in the same way as the last ones. When you see that it doesn't you have to work out a new sort of system. We worked out this one.
(Displays appropriate graphic and points while explaining).

Look at the left and right sides of each figure separately. Now, this is the rule :
Let all the circles = 1.
And let all the X's = -1.
Now you do simple arithmetic with each side separately to get the answer.

In the top horizontal row, looking at the left side of each figure we have:
2 circles + 1 circle = 3 circles.
So that's
2 + 1 = 3.

On the right side of the figure in that row we have :
1 'X' + 1 'X' = 2 'X's
So that's -1 + -1 = -2.

Now look at the second horizontal row. On the left side of each figure we have :
3 'X's + 2 circles = 1 'X'
So that's -3 + 2 = 1.

On the right hand side of that row's figures we have :
1 'X' + 3 circles
So that's

-1 + 3 which = 2.
So on the left hand side of the answer sheet there should be two circles.

On the right hand side we have :
2 'X's + 1 circle
So that's
-2 + 1 which = -1.

So on the right hand side of the answer figure we should have 1 'X'. So the answer is B.

Now, remembering that the rule is circles = 1 and X's = -1, look at the question again and try to make sure you understand why the answer is B. Once again, by the way, this rule also works vertically. (30 seconds).

21. Now turn to Page 20. (5 seconds).
You should now be on Page 20. (2 seconds).
Please pick up your pen and try to do Question 20. (2 minutes, 50 seconds).
OK, commit yourself to an answer and fill in the other columns. (10 seconds).
Put your pen down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

It worked in the same sort of way as the last one. I'll give you a few seconds to look at it again to see why the answer was D. (30 seconds).

22. Now turn to Page 21. (5 seconds).
You should now be on Page 21. (2 seconds).
Please pick up your pen and try to do Question 21. (2 minutes, 50 seconds).
OK, commit yourself to an answer. (10 seconds).
Put your pen down please. (5 seconds).
(Displays appropriate graphic and points while explaining).

This was a much more difficult one, but it worked on the same general principles as the last two. Usually only a quarter of the students get this one right, so don't worry if you got it wrong.

Now I'll give you a few seconds to try and see why A is the answer. Remember, it worked in the same sort of way as the last two. (30 seconds).

NON-MEDIATION PHASE (3 STEPS)

1. OK, now I'm going to change the procedure. I'll tell you to start. You have sixteen minutes to do the last eight problems (indicated on your answer sheet) at your own pace. Fill in your answers on the answer sheet in your own time.

2. One of the things we are trying to find out here is how well you can apply what I have taught you during this test so far. Most of these problems can be solved using the methods I have taught you. But some of them require you to use new methods of your own.

3. OK, you have sixteen minutes. Start now. (16 minutes).
   OK, time's up. (5 seconds).
   Put your pens down please. (5 seconds).

   Your invigilators will now collect your answer sheets.

APPENDIX 23

QUESTIONS TO AID FACULTIES TO EXAMINE SELECTION PROCEDURES

How great a problem is students selection in your Faculty in terms of numbers applying / places available?

To what extent are matric ratings being used in the selection procedures in your Faculty?
[only / in conjunction with other methods / not at all]
How is the rating calculated?
What cut-off point is used?
Is this the same for all Matric Boards?

Are any additional tests used in selection? (such as Spatial Perception / Numerical Skills / Aptitude / Language Skills / Subject Knowledge / Learning Skills tests)
[Across the board / borderline cases / not at all]
(If so) What is tested for?
How were these tests settled upon?

Are interviews used as part of the selection procedure?
[across the board / borderline cases / not at all]
(If so) What qualities do you look for in an applicant at an interview?

Are biographical questionnaires issued to applicants?
(If so) What role does the analysis of these play in selection?

Are any specific procedures used in the selection of borderline cases?

Are any other selection procedures used? (what? how?)

How long has this system been in operation?
What was used before?
Why was it felt necessary to change this?

On what basis was this method of selection chosen?
[trial and error / researched / looked good]

Has any follow-up been done to test the validity of your selection procedures? (what? how?)

Are any figures available as to the percentage drop out and failure rate in first year in your Faculty?

Is any extensive research into selection procedures being done in your Faculty? (has been?)
(if so) Are any references available?

What sort of academic support is offered to students who may be struggling?
Is a student ever accepted on the condition that he/she attend some form of ASP?

Do you feel that this method of selection is sufficient, or is succeeding in its aims?
Are you experiencing any particular problems with this method?
(If so) What would you like to change?

APPENDIX 24

INTERCORRELATIONS OF PREDICTOR VARIABLES FOR THE WHOLE GROUP

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	NO	MATRIC	IQ	PRT	PRTE	LP	BIOGRAPH
NO	1.00000 0.0 26	0.17482 0.3930 26	-0.26092 0.1979 26	-0.12660 0.5377 26	0.18537 0.3646 26	0.18285 0.3713 26	0.05940 0.7732 26
MATRIC	0.17482 0.3930 26	1.00000 0.0 26	-0.12105 0.5558 26	-0.11085 0.5898 26	-0.09186 0.6554 26	0.05169 0.8020 26	0.01673 0.9354 26
IQ	-0.26092 0.1979 26	-0.12105 0.5558 26	1.00000 0.0 26	0.12085 0.5563 26	-0.03774 0.8548 26	-0.08627 0.6752 26	0.32952 0.1002 26
PRT	-0.12660 0.5377 26	-0.11085 0.5898 26	0.12085 0.5563 26	1.00000 0.0 26	0.68335 0.0001 26	-0.54283 0.0042 26	0.40692 0.0391 26
PRTE	0.18537 0.3646 26	-0.09186 0.6554 26	-0.03774 0.8548 26	0.68335 0.0001 26	1.00000 0.0 26	-0.32327 0.1072 26	0.27761 0.1697 26
LP	0.18285 0.3713 26	0.05169 0.8020 26	-0.08627 0.6752 26	-0.54283 0.0042 26	-0.32327 0.1072 26	1.00000 0.0 26	-0.39546 0.0455 26
BIOGRAPH	0.05940 0.7732 26	0.01673 0.9354 26	0.32952 0.1002 26	0.40692 0.0391 26	0.27761 0.1697 26	-0.39546 0.0455 26	1.00000 0.0 26
INTVIEW	-0.15326 0.4548 26	-0.05809 0.7780 26	-0.43146 0.0277 26	0.33737 0.0919 26	0.09163 0.6562 26	-0.33931 0.0899 26	-0.05425 0.7924 26
LSP	-0.01678 0.9352 26	0.02789 0.8924 26	0.07576 0.7130 26	0.15388 0.4529 26	0.01181 0.9543 26	-0.35122 0.0785 26	0.43774 0.0253 26
L_1	-0.00533 0.9794 26	0.00071 0.9973 26	0.22878 0.2609 26	0.06059 0.7488 26	0.27129 0.1800 26	-0.45328 0.0200 26	0.19593 0.3374 26
L_2	-0.00462 0.9821 26	0.03369 0.8702 26	-0.14252 0.4873 26	-0.10838 0.5982 26	0.12096 0.5565 26	-0.39056 0.0431 26	0.14746 0.4722 26
L_3	0.04392 0.8313 26	0.19153 0.3486 26	-0.30722 0.1266 26	-0.28372 0.1601 26	0.01121 0.9566 26	0.04648 0.8217 26	0.09254 0.6527 26
L_4	-0.08108 0.6938 26	0.33450 0.0949 26	0.07556 0.7137 26	-0.49696 0.0098 26	-0.30855 0.1251 26	0.22238 0.2749 26	-0.06077 0.7481 26
L_5	-0.03197 0.8768 26	0.11890 0.5629 26	-0.17722 0.3864 26	-0.30911 0.1244 26	-0.11052 0.5909 26	-0.09461 0.6457 26	-0.14293 0.4860 26

	NO	MATRIC	IS	PRT	PRTE	LP	BIOGRAPH	
L_6	-0.24293 0.2318 26	0.23121 0.2543 26	-0.15006 0.4644 26	-0.22512 0.2687 26	-0.04699 0.8121 26	-0.24679 0.2242 26	-0.27514 0.2475 26	L6
L_7	0.02181 0.9138 26	0.21583 0.2876 26	0.14364 0.4839 26	-0.14110 0.4913 26	0.08665 0.6737 26	-0.37934 0.0560 26	0.21667 0.2877 26	L7
L_8	-0.30618 0.1282 26	-0.07725 0.7076 26	-0.36691 0.0637 26	-0.06723 0.7441 26	0.07219 0.7260 26	-0.01605 0.9368 26	0.02981 0.8830 26	L8
L_9	-0.23492 0.2430 26	-0.04646 0.8217 26	-0.15141 0.4603 26	-0.22627 0.2663 26	0.00315 0.9878 26	-0.36468 0.1914 26	-0.11949 0.5863 26	L9
L_10	-0.13461 0.5166 26	0.15311 0.4493 26	0.17186 0.4012 26	-0.20112 0.3245 26	-0.07819 0.6332 26	-0.36026 0.0707 26	0.13277 0.5179 26	L10
B_1	-0.13607 0.5075 26	-0.25359 0.2113 26	-0.01401 0.9458 26	0.00628 0.9757 26	0.09905 0.6302 26	-0.07798 0.7049 26	-0.00651 0.9748 26	B1
B_2	0.03235 0.8754 26	0.01023 0.9604 26	0.13008 0.4643 26	0.12054 0.5575 26	0.15448 0.4511 26	0.01653 0.9361 26	0.06166 0.7648 26	B2
B_3	-0.02434 0.9061 26	-0.19408 0.3421 26	0.18804 0.3576 26	-0.19134 0.3491 26	0.02788 0.8925 26	0.17305 0.3979 26	0.08671 0.6736 26	B3
B_4	-0.15722 0.4431 26	0.25169 0.2148 26	0.05010 0.8080 26	-0.25646 0.2060 26	-0.17993 0.3791 26	0.03537 0.8638 26	-0.05875 0.7756 26	B4
B_5	0.07760 0.7063 26	-0.09711 0.7817 26	-0.34009 0.0891 26	-0.19659 0.3358 26	0.11179 0.5867 26	0.19435 0.3414 26	-0.27743 0.1700 26	B5
B_6	0.13614 0.5072 26	0.21212 0.2982 26	-0.29434 0.1441 26	-0.25099 0.2162 26	-0.13367 0.5150 26	0.06525 0.7515 26	0.01300 0.9498 26	B6
B_7	-0.05347 0.7953 26	-0.13162 0.5216 26	0.08625 0.6682 26	0.08042 0.6961 26	0.15266 0.4566 26	-0.03192 0.8770 26	0.03505 0.8620 26	B7
B_8	-0.11218 0.5853 26	0.05095 0.8048 26	0.13526 0.5100 26	-0.26670 0.1878 26	-0.09762 0.6352 26	0.11774 0.5668 26	0.01696 0.9576 26	B8
B_9	0.14084 0.4925 26	0.11496 0.5760 26	-0.40578 0.0397 26	-0.29108 0.1491 26	-0.02796 0.8922 26	0.15974 0.4357 26	-0.15374 0.4534 26	B9

	INTVIEW	LSP	L_1	L_2	L_3	L_4	L_5
NO	-0.15326 0.4548 26	-0.01678 0.9352 26	-0.00533 0.9794 26	-0.00462 0.9821 26	0.04392 0.8313 26	-0.08108 0.6938 26	-0.03197 0.8760 26
MATRIC	-0.05809 0.7730 26	0.02769 0.8924 26	0.00071 0.9973 26	0.03369 0.8702 26	0.19153 0.3486 26	0.33450 0.0949 26	0.11880 0.5629 26
IQ	-0.43146 0.0277 26	0.07576 0.7130 26	0.22878 0.2609 26	-0.14252 0.4873 26	-0.30722 0.1268 26	0.07356 0.7137 26	-0.17722 0.3861 26
PRT	0.35737 0.0719 26	0.15368 0.4529 26	0.06059 0.7680 26	-0.10838 0.5982 26	-0.28372 0.1601 26	-0.49676 0.0078 26	-0.30911 0.1244 26
PRTE	0.09163 0.6562 26	0.01181 0.9743 26	0.27129 0.1800 26	0.12066 0.5565 26	0.01121 0.9566 26	-0.30355 0.1251 26	-0.11052 0.5909 26
LP	-0.33931 0.0897 26	-0.35122 0.0785 26	-0.45328 0.0200 26	-0.39956 0.0431 26	0.04645 0.8217 26	0.22238 0.2749 26	-0.09461 0.6457 26
BIOGRAPH	-0.05425 0.7924 26	0.43774 0.0253 26	0.19593 0.3374 26	0.14746 0.4722 26	0.09256 0.6529 26	-0.06077 0.7681 26	-0.14295 0.4860 26
INTVIEW	1.00000 0.0 26	0.32114 0.1097 26	-0.08065 0.6953 26	0.01965 0.9241 26	0.03486 0.8657 26	-0.08885 0.6660 26	0.08393 0.6835 26
LSP	0.32114 0.1097 26	1.00000 0.0 26	0.23763 0.2424 26	0.32049 0.1104 26	0.24904 0.2199 26	0.12789 0.5336 26	0.30638 0.1279 26
L_1	-0.08065 0.6953 26	0.23763 0.2424 26	1.00000 0.0 26	0.72696 0.0001 26	0.24542 0.2269 26	0.31823 0.1131 26	0.61038 0.0009 26
L_2	0.01965 0.9241 26	0.32049 0.1104 26	0.72696 0.0001 26	1.00000 0.0 26	0.56473 0.0027 26	0.27098 0.1806 26	0.71161 0.0001 26
L_3	0.03486 0.8657 26	0.24904 0.2199 26	0.24542 0.2269 26	0.56473 0.0027 26	1.00000 0.0 26	0.33535 0.0940 26	0.62515 0.0006 26
L_4	-0.08885 0.6660 26	0.12789 0.5336 26	0.31823 0.1131 26	0.27098 0.1806 26	0.33535 0.0940 26	1.00000 0.0 26	0.53385 0.0050 26
L_5	0.08393 0.6835 26	0.30638 0.1279 26	0.61038 0.0009 26	0.71161 0.0001 26	0.62515 0.0006 26	0.53385 0.0050 26	1.00000 0.0 26

	INTVIEW	LSP	L_1	L_2	L_3	L_4	L_5	
L_6	0.04041 0.8446 26	0.14159 0.4902 26	0.26972 0.1827 26	0.47036 0.0152 26	0.20700 0.3103 26	0.26189 0.1962 26	0.39299 0.0470 26	L
L_7	0.00004 0.9999 26	0.19235 0.3462 26	0.77855 0.0001 26	0.74902 0.0001 26	0.33557 0.0938 26	0.45514 0.0195 26	0.44678 0.0004 26	L'
L_8	0.00438 0.9823 26	0.02333 0.9217 26	0.03331 0.8717 26	0.30968 0.1237 26	0.29001 0.1307 26	-0.01115 0.9569 26	0.34762 0.0819 26	L1
L_9	-0.01355 0.9476 26	0.13186 0.5208 26	0.24157 0.2345 26	0.59734 0.0013 26	0.43281 0.0272 26	0.14634 0.4696 26	0.49768 0.0097 26	L9
L_10	-0.13471 0.5116 26	0.18614 0.3626 26	0.65225 0.0003 26	0.56949 0.0024 26	0.38170 0.0543 26	0.59615 0.0013 26	0.65300 0.0003 26	L10
B_1	-0.02054 0.9207 26	0.06331 0.7586 26	-0.01448 0.9440 26	0.19199 0.3474 26	-0.04691 0.8200 26	-0.49840 0.0096 26	-0.10614 0.6058 26	B
B_2	-0.07820 0.7041 26	-0.01736 0.9329 26	-0.03107 0.8802 26	0.17110 0.4033 26	0.02167 0.9163 26	-0.22565 0.2673 26	0.03575 0.8623 26	B2
B_3	-0.13918 0.4977 26	-0.04309 0.8344 26	-0.02895 0.8884 26	0.14267 0.4869 26	0.04081 0.8431 26	-0.17387 0.3956 26	0.04085 0.8430 26	B3
B_4	0.04295 0.8350 26	0.09777 0.6347 26	-0.01611 0.9377 26	0.16618 0.4172 26	0.10228 0.6191 26	0.35742 0.0730 26	0.30587 0.1286 26	B4
B_5	-0.12052 0.5574 26	-0.22259 0.2744 26	0.00424 0.9836 26	0.29604 0.1566 26	0.11965 0.5604 26	-0.17132 0.4027 26	0.16372 0.4242 26	B5
B_6	0.09739 0.6712 26	0.03319 0.8721 26	-0.07138 0.7290 26	0.33142 0.0981 26	0.40627 0.0010 26	-0.13548 0.5093 26	0.33143 0.0981 26	B6
B_7	-0.06115 0.7667 26	0.02341 0.9096 26	-0.02774 0.8930 26	0.21391 0.2941 26	-0.01171 0.9547 26	-0.41582 0.0346 26	-0.03498 0.8653 26	B7
B_8	-0.04905 0.8089 26	0.03762 0.8552 26	-0.02610 0.8993 26	0.18312 0.3706 26	0.08677 0.6734 26	0.12850 0.5316 26	0.21465 0.2923 26	B8
B_9	-0.00957 0.9630 26	-0.10741 0.6015 26	-0.04747 0.8179 26	0.39987 0.0430 26	0.49461 0.0102 26	-0.19538 0.3388 26	0.32809 0.1018 26	B9

	L_6	L_7	L_8	L_9	L_10	B_1	B_2	
NO	-0.24293 0.2318 26	0.02151 0.9178 26	-0.30610 0.1282 26	-0.23492 0.2480 26	-0.18461 0.3646 26	-0.13607 0.5075 26	0.03225 0.8734 26	
MATRIC	0.23191 0.2543 26	0.21585 0.2896 26	-0.07735 0.7076 26	-0.04646 0.8217 26	0.15511 0.4493 26	-0.25359 0.2113 26	0.01023 0.9604 26	MA
IQ	-0.15006 0.4644 26	0.14364 0.4839 26	-0.36891 0.0637 26	-0.15141 0.4603 26	0.17186 0.4012 26	-0.01401 0.9452 26	0.13009 0.4843 26	IQ
PRT	-0.23518 0.2487 26	-0.14110 0.4718 26	-0.06725 0.7441 26	-0.22627 0.2663 26	-0.20112 0.3248 26	0.00629 0.9757 26	0.13054 0.5578 26	PRT
PRTE	-0.04892 0.8121 26	0.08648 0.6737 26	0.07219 0.7260 26	0.00315 0.9878 26	-0.09819 0.6332 26	0.09905 0.6302 26	0.13448 0.4511 26	PRTE
LP	-0.24679 0.2242 26	-0.37934 0.0560 26	-0.01605 0.9380 26	-0.26462 0.1914 26	-0.36020 0.0707 26	-0.07798 0.7049 26	0.01653 0.9361 26	LP
BIOGRAPH	-0.23514 0.2475 26	0.21667 0.2877 26	0.02981 0.8650 26	-0.11969 0.5603 26	0.13277 0.5179 26	-0.00651 0.9748 26	0.04156 0.7648 26	BIO
INTVIEW	0.04041 0.8446 26	0.00004 0.9999 26	0.00458 0.9823 26	-0.01355 0.9476 26	-0.13474 0.5116 26	-0.02054 0.9207 26	-0.07820 0.7041 26	INT
LSP	0.14159 0.4902 26	0.19235 0.3465 26	0.02028 0.9217 26	0.13186 0.5208 26	0.18614 0.3626 26	0.06331 0.7586 26	-0.01736 0.9329 26	LSP
L_1	0.26972 0.1827 26	0.77855 0.0001 26	0.03331 0.8717 26	0.24157 0.2345 26	0.65225 0.0003 26	-0.01448 0.9440 26	-0.03107 0.8802 26	L1
L_2	0.47086 0.0152 26	0.74902 0.0001 26	0.30968 0.1237 26	0.59734 0.0013 26	0.56949 0.0024 26	0.19199 0.3474 26	0.17110 0.4033 26	L2
L_3	0.20700 0.3103 26	0.33557 0.0938 26	0.29001 0.1507 26	0.43281 0.0272 26	0.38170 0.0543 26	-0.04691 0.8200 26	0.02167 0.9163 26	L3
L_4	0.26189 0.1962 26	0.45514 0.0195 26	-0.01115 0.9569 26	0.14834 0.4696 26	0.59615 0.0013 26	-0.49340 0.0096 26	-0.22395 0.2673 26	L4
L_5	0.39299 0.0470 26	0.64676 0.0004 26	0.34762 0.0810 26	0.49768 0.0097 26	0.65500 0.0003 26	-0.10414 0.6058 26	0.03575 0.8623 26	L5

	L_6	L_7	L_8	L_9	L_10	B_1	B_2	
L_6	1.00000 0.0 26	0.45149 0.0206 26	0.35101 0.0787 26	0.68255 0.0001 26	0.40677 0.0392 26	0.21565 0.2900 26	-0.00546 0.9789 26	L6
L_7	0.45149 0.0206 26	1.00000 0.0 26	0.15108 0.4613 26	0.46309 0.0172 26	0.67418 0.0002 26	-0.01461 0.9435 26	0.13058 0.5249 26	L7
L_8	0.35101 0.0787 26	0.15108 0.4613 26	1.00000 0.0 26	0.54724 0.0038 26	0.11237 0.5847 26	0.39490 0.0459 26	0.07224 0.7258 26	L8
L_9	0.68255 0.0001 26	0.46309 0.0172 26	0.54724 0.0038 26	1.00000 0.0 26	0.40174 0.0419 26	0.25990 0.1998 26	0.19604 0.3372 26	L9
L_10	0.40677 0.0392 26	0.67418 0.0002 26	0.11237 0.5847 26	0.40174 0.0419 26	1.00000 0.0 26	-0.18653 0.3616 26	-0.08531 0.6786 26	L10
B_1	0.21565 0.2900 26	-0.01461 0.9435 26	0.39490 0.0459 26	0.25990 0.1998 26	-0.18653 0.3616 26	1.00000 0.0 26	0.42389 0.0309 26	B1
B_2	-0.00546 0.9789 26	0.13058 0.5249 26	0.07224 0.7258 26	0.19604 0.3372 26	-0.08531 0.6786 26	0.42389 0.0309 26	1.00000 0.0 26	B2
B_3	0.11062 0.5906 26	0.09722 0.6366 26	0.18016 0.3785 26	0.33167 0.0979 26	-0.20089 0.3251 26	0.46982 0.0111 26	0.46390 0.0170 26	B3
B_4	0.66147 0.0002 26	0.38257 0.0537 26	0.27214 0.1786 26	0.52124 0.0063 26	0.20690 0.3105 26	0.10688 0.6033 26	0.38154 0.0544 26	B4
B_5	0.65480 0.7903 26	-0.01582 0.9389 26	0.29448 0.1442 26	0.27291 0.1774 26	-0.15364 0.4536 26	0.39083 0.0484 26	0.44793 0.0217 26	B5
B_6	0.25297 0.2124 26	0.17401 0.3952 26	0.38255 0.0538 26	0.41968 0.0328 26	-0.01483 0.9427 26	0.27327 0.1768 26	0.12847 0.5317 26	B6
B_7	0.11400 0.5792 26	0.07546 0.7141 26	0.26130 0.1973 26	0.26483 0.1876 26	-0.15612 0.4463 26	0.81560 0.0001 26	0.86978 0.0001 26	B7
B_8	0.47651 0.0139 26	0.29375 0.1450 26	0.27037 0.1816 26	0.51046 0.0077 26	0.01905 0.9264 26	0.33751 0.0910 26	0.49371 0.0100 26	B8
B_9	0.20924 0.3080 26	0.11252 0.5842 26	0.44062 0.0243 26	0.45395 0.0198 26	-0.10056 0.6250 26	0.42068 0.0324 26	0.35283 0.0771 26	B9

	B_3	B_4	B_5	B_6	B_7	B_8	B_9	
MD	-0.02434 0.9061 26	-0.15722 0.4431 26	0.07760 0.7063 26	0.13614 0.5072 26	-0.05347 0.7953 26	-0.11218 0.5853 26	0.14084 0.4925 26	
MATRIC	-0.19408 0.3421 26	0.25169 0.2140 26	-0.03711 0.7817 26	0.21212 0.2982 26	-0.13162 0.5216 26	0.03095 0.8048 26	0.11496 0.5760 26	M
IQ	0.18804 0.3576 26	0.05010 0.8080 26	-0.34009 0.0891 26	-0.29454 0.1441 26	0.09825 0.6682 26	0.13526 0.5100 26	-0.40573 0.0397 26	K
PRT	-0.19134 0.3491 26	-0.25646 0.2060 26	-0.19659 0.3350 26	-0.25099 0.2162 26	0.09042 0.6961 26	-0.24670 0.1978 26	-0.29108 0.1491 26	K
PRTE	0.02788 0.8925 26	-0.17793 0.3791 26	0.11179 0.5867 26	-0.13367 0.5150 26	0.15265 0.4566 26	-0.09762 0.6352 26	-0.02796 0.8922 26	M
LP	0.17305 0.3979 26	0.03537 0.8638 26	0.19435 0.3414 26	0.06525 0.7515 26	-0.03192 0.8770 26	0.11774 0.5668 26	0.15974 0.4337 26	L
BIOGRAPH	0.03671 0.6736 26	-0.05875 0.7756 26	-0.27743 0.1700 26	0.01300 0.9498 26	0.03565 0.8620 26	0.01096 0.9576 26	-0.15374 0.4534 26	B
INTVIEW	-0.13918 0.4977 26	0.04295 0.8350 26	-0.12052 0 5576 26	0.08739 0.6712 26	-0.06115 0.7667 26	-0.04985 0.8089 26	-0.00957 0.9630 26	M
LSP	-0.04309 0.8344 26	0.09777 0.6347 26	-0.22259 0.2744 26	0.03319 0.8721 26	0.02341 0.9096 26	0.03762 0.8552 26	-0.10741 0.6015 26	L
L_1	-0.02895 0.8884 26	-0.01611 0.9377 26	0.00424 0.9836 26	-0.07138 0.7290 26	-0.02774 0.8930 26	-0.02610 0.8993 26	-0.04747 0.8179 26	L
L_2	0.14267 0.4869 26	0.16618 0.4172 26	0.28604 0.1566 26	0.33142 0.0981 26	0.21391 0.2941 26	0.18312 0.3704 26	0.39787 0.0430 26	L
L_3	0.04081 0.8431 26	0.10228 0.6191 26	0.11965 0.5604 26	0.60627 0.0010 26	-0.01171 0.9547 26	0.08677 0.6734 26	0.49461 0.0102 26	L
L_4	-0.17387 0.3956 26	0.35742 0.0730 26	-0.17132 0.4027 26	-0.13548 0.5093 26	-0.41562 0.0346 26	0.12850 0.5316 26	-0.19533 0.3386 26	L
L_5	0.04085 0.8430 26	0.30587 0.1286 26	0.16372 0.4242 26	0.33143 0.0981 26	-0.03498 0.8653 26	0.21465 0.2923 26	0.32809 0.1018 26	L

	B_3	B_4	B_5	B_6	B_7	B_8	B_9	
L_6	0.11062 0.5706 26	0.66147 0.0002 26	0.05480 0.7905 26	0.25277 0.2124 26	0.11400 0.5792 26	0.47651 0.0139 26	0.20726 0.3056 26	L
L_7	0.09722 0.6346 26	0.38257 0.0537 2	-0.01582 0.9387 .	0.17401 0.3782 26	0.07546 0.7141 26	0.29395 0.1450 26	0.11252 0.5842 26	L
L_8	0.13014 0.3785 26	0.27219 0.1786 26	0.24442 0.1442 26	0.39255 0.0536 26	0.26130 0.1973 26	0.27037 0.1816 26	0.44062 0.0243 26	L
L_9	0.33167 0.0979 26	0.52124 0.0063 26	0.27291 0.1774 26	0.41968 0.0328 26	0.26483 0.1876 26	0.51046 0.0077 26	0.48395 0.0193 26	L
L_10	-0.20089 0.3251 26	0.20690 0.3105 26	-0.15364 0.4536 26	-0.01483 0.9427 26	-0.15612 0.4463 26	0.01903 0.9264 26	-0.10054 0.6250 26	L
B_1	0.48982 0.0111 26	0.10688 0.6033 26	0.39063 0.0484 26	0.27327 0.1768 26	0.81560 0.0001 26	0.33751 0.0918 26	0.42068 0.0324 26	B
B_2	0.46390 0.0170 26	0.38154 0.0544 26	0.44793 0.0217 26	0.12947 0.5317 26	0.84978 0.0001 26	0.49571 0.0100 26	0.35283 0.0771 26	B
B_3	1.00000 0.0 26	0.43383 0.0268 26	0.50937 0.0079 26	0.33174 0.0978 26	0.56321 0.0027 26	0.82448 0.0001 26	0.53118 0.0052 26	B
B_4	0.43383 0.0268 26	1.00000 0.0 26	0.06447 0.7544 26	0.24459 0.2285 26	0.30197 0.1338 26	0.86755 0.0001 26	0.20905 0.3054 26	B
B_5	0.50937 0.0079 26	0.06447 0.7544 26	1.00000 0.0 26	0.20146 0.3237 26	0.49909 0.0094 26	0.32167 0.1091 26	0.72795 0.0001 26	B
B_6	0.33174 0.0978 26	0.24459 0.2285 26	0.20146 0.3237 26	1.00000 0.0 26	0.23095 0.2563 26	0.33674 0.0925 26	0.81623 0.0001 26	B
B_7	0.56321 0.0027 26	0.30197 0.1338 26	0.49909 0.0094 26	0.23095 0.2563 26	1.00000 0.0 26	0.50056 0.0092 26	0.45459 0.0196 26	B
B_8	0.82448 0.0001 26	0.86755 0.0001 26	0.32167 0.1091 26	0.33674 0.0925 26	0.50056 0.0092 26	1.00000 0.0 26	0.42451 0.0307 26	B
B_9	0.53118 0.0052 26	0.20905 0.3054 26	0.72795 0.0001 26	0.81623 0.0001 26	0.45459 0.0196 26	0.42451 0.0307 26	1.00000 0.0 26	B

APPENDIX 25

INTERCORRELATIONS OF PREDICTOR VARIABLES FOR THE ADVANTAGED STUDENTS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	JUNE_BS	NO	MATRIC	IQ	PRT	PRTE	LP	
JUNE_BS	1.00000 0.0 8	-0.54280 0.1645 8	0.72348 0.0661 7	0.91808 0.0013 8	0.07034 0.8685 8	0.30849 0.4572 8	-0.11449 0.7872 8	BS
NO	-0.54280 0.1645 8	1.00000 0.0 8	-0.13044 0.7804 7	-0.41398 0.3079 8	-0.35929 0.3821 8	-0.38229 0.3500 8	0.54257 0.1647 8	
MATRIC	0.72348 0.0661 7	-0.13044 0.7804 7	1.00000 0.0 7	0.62337 0.1347 7	0.07386 0.8750 7	0.30958 0.4993 7	-0.05252 0.9110 7	MA
IQ	0.91808 0.0013 8	-0.41398 0.3079 8	0.62337 0.1347 7	1.00000 0.0 8	-0.08574 0.8400 8	-0.00445 0.9917 8	0.00909 0.9830 8	IQ
PRT	0.07034 0.8685 8	-0.35929 0.3821 8	0.07386 0.8750 7	-0.08574 0.8400 8	1.00000 0.0 8	0.78539 0.0209 8	-0.80074 0.0169 8	PRT
PRTE	0.30849 0.4572 8	-0.38229 0.3500 8	0.30958 0.4993 7	-0.00445 0.9917 8	0.78539 0.0209 8	1.00000 0.0 8	-0.52492 0.1816 8	PRTE
LP	-0.11449 0.7872 8	0.54257 0.1647 8	-0.05252 0.9110 7	0.00909 0.9830 8	-0.80074 0.0169 8	-0.52492 0.1816 8	1.00000 0.0 8	LP
BIOGRAPH	0.54362 0.1637 8	-0.26016 0.5338 8	0.08910 0.8493 7	0.60978 0.1085 8	0.31462 0.4479 8	0.20575 0.6250 8	-0.03820 0.9284 8	BIO
INTVIEW	0.41646 0.3527 7	0.07474 0.8735 7	0.83235 0.0398 6	0.25443 0.5819 7	0.73721 0.0587 7	0.72151 0.0672 7	-0.66487 0.1032 7	INT
LSP	0.46448 0.2237 8	-0.75025 0.0320 8	0.04441 0.9247 7	0.54383 0.1635 8	0.54595 0.1616 8	0.25008 0.5503 8	-0.56706 0.1427 8	LSP
L_1	0.81293 0.0142 8	-0.65570 0.0775 8	0.34663 0.4463 7	0.67145 0.0683 8	-0.07301 0.8636 8	0.17183 0.6941 8	-0.09265 0.8273 8	L1
L_2	0.32324 0.4348 8	-0.45706 0.2549 8	-0.26132 0.5714 7	0.40946 0.3138 8	-0.40789 0.3158 8	-0.45430 0.2591 8	0.08796 0.8339 8	L2
L_3	0.39793 0.3423 8	-0.35656 0.3859 8	-0.08799 0.8478 7	0.45651 0.2555 8	-0.67482 0.0664 8	-0.39978 0.3264 8	0.44135 0.2737 8	L3
L_4	0.29818 0.4732 8	-0.17893 0.6716 8	-0.08471 0.8567 7	0.34117 0.4082 8	-0.70762 0.0496 8	-0.53871 0.1683 8	0.31854 0.4419 8	L4

	JUNE_BG	NC	MATRIC	IG	PRT	PRTE	LP	
L_5	0.49588 0.2114 8	-0.48376 0.2245 8	0.05224 0.9114 7	0.44629 0.2677 8	-0.36976 0.3673 8	-0.24649 0.5562 8	0.12703 0.7649 8	L
L_6	0.24035 0.5664 8	-0.46920 0.2408 8	0.36491 0.4209 7	0.28475 0.4942 8	-0.14660 0.7253 8	-0.22653 0.5896 8	-0.31083 0.4337 8	L1
L_7	0.52050 0.1880 8	-0.29426 0.4793 8	0.20306 0.6623 7	0.40431 0.3205 8	-0.31898 0.4412 8	-0.12611 0.7660 8	0.00000 1.0000 8	L-
L_8	0.58122 0.1308 8	-0.59174 0.1223 8	0.41874 0.3498 7	0.45227 0.2605 8	-0.07862 0.8532 8	0.10745 0.8001 8	0.12473 0.7649 8	L1
L_9	0.11353 0.7853 8	-0.47241 0.2372 8	-0.12409 0.7910 7	0.21833 0.6034 8	-0.52715 0.1794 8	-0.56273 0.1465 8	0.04966 0.9070 8	L1
L_10	0.47971 0.2270 8	-0.45696 0.2550 8	0.09184 0.8448 7	0.50032 0.2067 8	-0.49415 0.2133 8	-0.41412 0.3077 8	0.05416 0.8984 8	L1
B_1	0.86244 0.0059 8	-0.59487 0.1198 8	0.75398 0.0502 7	0.68963 0.0584 8	0.22244 0.5965 8	0.56493 0.1426 8	-0.09492 0.8231 8	B1
B_2	0.11876 0.7794 8	0.17059 0.6863 8	-0.21587 0.6420 7	0.20509 0.6261 8	-0.07675 0.8567 8	-0.27365 0.5119 8	-0.07984 0.8509 8	B2
B_3	0.51656 0.1900 8	-0.24764 0.5543 8	0.13484 0.7732 7	0.52573 0.1808 8	-0.41624 0.3050 8	-0.01303 0.9756 8	0.58942 0.1241 8	B3
B_4	0.39637 0.3310 8	-0.37117 0.3653 8	0.42811 0.3379 7	0.38810 0.3421 8	-0.25985 0.5343 8	-0.29715 0.4748 8	-0.25565 0.5411 8	B4
B_5	-0.35511 0.3680 8	0.19877 0.6405 8	-0.60274 0.1520 7	-0.34871 0.3972 8	-0.48501 0.2232 8	-0.20930 0.6189 8	0.67320 0.0673 8	B5
B_6	0.47023 0.2397 8	-0.10074 0.8124 8	0.22619 0.6258 7	0.59421 0.1203 8	-0.48863 0.2192 8	-0.25357 0.5445 8	0.23411 0.5768 8	B6
B_7	0.76069 0.0284 8	-0.27789 0.5052 8	0.35236 0.4382 7	0.71391 0.0458 8	0.09124 0.8299 8	0.15631 0.7117 8	-0.14898 0.7248 8	B7
B_8	0.65887 0.0756 8	-0.46677 0.2212 8	0.48092 0.2746 7	0.65612 0.0772 8	-0.47473 0.2346 8	-0.28754 0.4893 8	0.05389 0.8434 8	B8
B_9	-0.01207 0.9774 8	0.07489 0.8231 8	-0.38832 0.3893 7	0.06124 0.8855 8	-0.64057 0.0870 8	-0.30000 0.4703 8	0.64403 0.0848 8	B9

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4	
JUNE_BG	0.54362 0.1637 9	0.41646 0.3527 7	0.48448 0.2237 8	0.61293 0.0142 8	0.32324 0.4348 8	0.30772 0.3423 8	0.29313 0.4732 8	B
NO	-0.26016 0.5338 8	0.07474 0.8735 7	-0.75025 0.0320 8	-0.65570 0.0775 8	-0.45706 0.2549 8	-0.35656 0.3939 8	-0.17897 0.6716 8	
MATRIC	0.03910 0.8493 7	0.83235 0.0395 6	0.04441 0.9247 7	0.34663 0.4463 7	-0.26132 0.5714 7	-0.03779 0.9475 7	-0.06871 0.8847 7	M
IQ	0.60978 0.1085 8	0.25443 0.5219 7	0.54383 0.1635 8	0.67145 0.0683 8	0.40946 0.3138 8	0.45651 0.2558 8	0.34117 0.4082 8	IQ
PRT	0.31462 0.4479 8	0.73721 0.0587 7	0.54595 0.1616 8	-0.07301 0.8636 8	-0.40789 0.3158 8	-0.47482 0.0664 8	-0.70762 0.0496 8	PR
PRTE	0.20575 0.6250 8	0.72131 0.0672 7	0.25008 0.5503 8	0.17183 0.6841 8	-0.45430 0.2581 8	-0.39978 0.3264 8	-0.53871 0.1683 8	PE
LP	-0.03820 0.9284 8	-0.66487 0.1032 7	-0.56706 0.1427 8	-0.09265 0.8273 8	0.03796 0.8359 8	0.44135 0.2737 8	0.31854 0.4419 8	LP
BIOGRAPH	1.00000 0.0 8	0.17920 0.7006 7	0.67903 0.0640 8	0.45345 0.2591 8	0.31391 0.4489 8	0.10633 0.8021 8	-0.00678 0.9873 8	BI
INTVIEW	0.17920 0.7006 7	1.00000 0.0 7	0.06215 0.8947 7	0.07885 0.8664 7	-0.49967 0.2535 7	-0.62911 0.1301 7	-0.42690 0.3395 7	IN
LSP	0.67903 0.0640 8	0.06215 0.8947 7	1.00000 0.0 8	0.41734 0.3036 8	0.36860 0.3689 8	0.07881 0.8528 8	-0.08113 0.8485 8	L
L_1	0.45345 0.2591 8	0.07885 0.8666 7	0.41734 0.3036 8	1.00000 0.0 8	0.70296 0.0518 8	0.59829 0.1172 8	0.64736 0.0827 8	L1
L_2	0.31391 0.4489 8	-0.49967 0.2535 7	0.36860 0.3689 8	0.70296 0.0518 8	1.00000 0.0 8	0.76453 0.0271 8	0.86353 0.0057 8	L2
L_3	0.10633 0.8021 8	-0.62911 0.1301 7	0.07881 0.8528 8	0.59829 0.1172 8	0.76453 0.0271 8	1.00000 0.0 8	0.82334 0.0120 8	L3
L_4	-0.00678 0.9873 8	-0.42690 0.3395 7	-0.08113 0.8485 8	0.64736 0.0827 8	0.86353 0.0057 8	0.82334 0.0120 8	1.00000 0.0 8	L4

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4	
L_5	0.29111 0.5000 8	-0.27424 0.5213 7	0.24733 0.5540 8	0.86450 0.0057 8	0.89332 0.0026 8	0.68370 0.0605 8	0.83792 0.0091 8	L5
L_6	-0.43123 0.2841 8	-0.11214 0.7108 7	0.20526 0.6[illegible] 8	0.16382 0.6983 8	0.19624 0.6414 8	0.22806 0.5870 8	0.23084 0.5833 8	L6
L_7	0.14341 0.7348 8	0.07201 0.8791 7	0.03194 0.9402 8	0.83832 0.0093 8	0.72107 0.0435 8	0.50522 0.1925 8	0.63195 0.0104 8	L7
L_8	0.40153 0.3241 8	-0.17532 0.7067 7	0.36565 0.3731 8	0.78309 0.0218 8	0.55391 0.1543 8	0.45427 0.2582 8	0.40564 0.3187 8	L8
L_9	-0.26441 0.4948 8	-0.64307 0.1192 7	0.16310 0.6996 8	0.36699 0.3712 8	0.71054 0.0482 8	0.67744 0.0535 8	0.67559 0.0554 8	L9
L_10	0.07227 0.8650 8	-0.30510 0.5059 7	0.20087 0.6334 8	0.77771 0.0231 8	0.89624 0.0026 8	0.75010 0.0321 8	0.92434 0.0010 8	L10
B_1	0.38052 0.3524 8	0.35084 0.4404 7	0.40253 0.3228 8	0.62115 0.1002 8	0.00598 0.9888 8	0.24412 0.5601 8	-0.02882 0.9460 8	B1
B_2	0.43368 0.2830 8	0.17427 0.7086 7	0.12313 0.7715 8	0.32798 0.4277 8	0.51436 0.1922 8	0.08001 0.8506 8	0.47392 0.2335 8	B2
B	40898 .3144 8	-0.40002 0.3739 7	0.10695 0.8010 8	0.49653 0.2107 8	0.36290 0.3769 8	0.76381 0.0274 8	0.37862 0.3550 8	B3
B_4	-0.26651 0.5235 8	0.05882 0.9003 7	0.11611 0.7842 8	0.48563 0.2225 8	0.46560 0.2450 8	0.28315 0.4968 8	0.56564 0.1439 8	B4
	-0.05230 0.9021 8	-0.69202 0.0849 7	-0.37822 0.3556 8	-0.06780 0.8733 8	0.19913 0.6364 8	0.49532 0.2120 8	0.24374 0.5279 8	B5
B_6	0.09025 0.8317 8	-0.12204 0.7944 7	0.03167 0.9407 8	0.33825 0.4125 8	0.35974 0.3814 8	0.70379 0.0514 8	0.53708 0.1699 8	B6
B_7	0.70829 0.0493 8	0.43424 0.3303 7	0.42121 0.2987 8	0.78484 0.0211 8	0.50721 0.1995 8	0.26066 0.5329 8	0.44144 0.2733 8	B7
B_8	-0.02587 0.9515 8	-0.16026 0.7314 7	0.16853 0.6897 8	0.73203 0.0390 8	0.63943 0.0878 8	0.68842 0.0571 8	0.74249 0.0349 8	B8
B_9	0.00931 0.9816 8	-0.59926 0.1550 7	-0.27177 0.5150 8	0.13482 0.7503 8	0.35081 0.3942 8	0.76720 0.0263 8	0.49309 0.2091 8	B9

	L_5	L_6	L_7	L_8	L_9	L_10	S_1
JUNE_BS	0.49738 0.2114 8	0.24035 0.5664 8	0.52050 0.1846 8	0.58122 0.1308 8	0.11553 0.7853 8	0.47971 0.2290 8	0.86244 0.0058 8
NO	-0.48376 0.2245 8	-0.46920 0.2405 8	-0.29426 0.4793 8	-0.59174 0.1223 8	-0.47241 0.2372 8	-0.45696 0.2539 8	-0.07467 0.1193 8
MATRIC	0.05224 0.9114 7	0.34491 0.4209 7	0.30306 0.4623 7	0.41874 0.3498 7	-0.12409 0.7910 7	0.09184 0.8448 7	0.78378 0.0362 7
TS	0.44629 0.2677 8	0.28475 0.4942 8	0.40431 0.3305 8	0.45227 0.2405 8	0.21835 0.6034 8	0.50032 0.2067 8	0.68963 0.0384 8
PRT	-0.36974 0.3673 8	-0.14860 0.7295 8	-0.31898 0.4412 8	-0.07862 0.8532 8	-0.52715 0.1794 8	-0.49415 0.2133 8	0.22244 0.5965 8
PRTE	-0.24649 0.5562 8	-0.22653 0.5896 8	-0.12611 0.7660 8	0.10745 0.8001 8	-0.56273 0.1465 8	-0.41412 0.3077 8	0.56698 0.1428 8
LP	0.12703 0.7644 8	-0.31083 0.4537 8	0.00000 1.0000 8	0.12673 0.7649 8	0.04946 0.9070 8	0.05416 0.8986 8	-0.09492 0.8231 8
BIOGRAPH	0.28111 0.5000 8	-0.43123 0.2861 8	0.14341 0.7348 8	0.40153 0.3241 8	-0.28441 0.4948 8	0.07227 0.8650 8	0.38052 0.3524 8
INTVIEW	-0.29424 0.5218 7	-0.11214 0.8108 7	0.07201 0.8781 7	-0.17535 0.7069 7	-0.64307 0.1192 7	-0.30510 0.5058 7	0.35084 0.4404 7
LSP	0.24783 0.5540 8	0.20526 0.6238 8	0.03194 0.9402 8	0.36565 0.3731 8	0.16310 0.6996 8	0.20087 0.6334 8	0.40253 0.3228 8
L_1	0.86650 0.0054 8	0.14382 0.6937 8	0.83332 0.0093 8	0.78309 0.0215 8	0.36699 0.3712 8	0.77771 0.0231 8	0.62115 0.1002 8
L_2	0.89352 0.0028 8	0.19624 0.6414 8	0.72107 0.0435 8	0.55391 0.1543 8	0.71054 0.0482 8	0.89624 0.0026 8	0.00598 0.9888 8
L_3	0.68570 0.0605 8	0.22806 0.5870 8	0.50822 0.1985 8	0.45427 0.2582 8	0.69944 0.0535 8	0.75010 0.0321 8	0.24412 0.5601 8
L_4	0.83992 0.0091 8	0.23086 0.5823 8	0.83185 0.0104 8	0.40564 0.3187 8	0.69558 0.0554 8	0.92454 0.0010 8	-0.02882 0.9460 8

	L_5	L_6	L_7	L_8	L_9	L_10	B_1	
L_5	1.00000 0.0 S	0.19374 0.4457 S	0.87430 0.0045 S	0.80224 0.0166 S	0.60760 0.1101 S	0.91166 0.0016 S	0.28775 0.5377 S	L
L_6	0.19374 0.4457 S	1.00000 0.0 S	0.14540 0.7306 S	0.12826 0.7621 S	0.74219 0.0350 S	0.46833 0.2418 S	0.22033 0.6001 S	
L_7	0.87430 0.0045 S	0.14540 0.7306 S	1.00000 0.0 S	0.94934 0.1580 S	0.40565 0.3187 S	0.86027 0.0061 S	0.19593 0.6418 S	L
L_8	0.80224 0.0166 S	0.12826 0.7621 S	0.94934 0.1580 S	1.00000 0.0 S	0.35536 0.3877 S	0.56748 0.1423 S	0.60570 0.1115 S	L
L_9	0.60760 0.1101 S	0.74219 0.0350 S	0.40565 0.3187 S	0.35536 0.3877 S	1.00000 0.0 S	0.79069 0.0195 S	-0.00747 0.9860 S	L
L_10	0.91166 0.0016 S	0.46833 0.2418 S	0.86027 0.0061 S	0.56748 0.1423 S	0.79069 0.0195 S	1.00000 0.0 S	0.16680 0.6930 S	L
B_1	0.28775 0.5377 S	0.22033 0.6001 S	0.19593 0.6418 S	0.60570 0.1115 S	-0.00747 0.9860 S	0.16680 0.6930 S	1.00000 0.0 S	B
B_2	-0.40559 0.3188 S	-0.33583 0.4161 S	0.58776 0.1253 S	-0.03237 0.9393 S	-0.06267 0.8824 S	0.39945 0.3269 S	-0.35177 0.3928 S	B
B_3	0.40314 0.3220 S	-0.14813 0.7263 S	0.18120 0.6676 S	0.52317 0.1834 S	0.18566 0.6598 S	0.29369 0.4602 S	0.56891 0.1411 S	B
B_4	0.56306 0.1462 S	0.81328 0.0141 S	0.64262 0.0857 S	0.32262 0.4358 S	0.69673 0.0548 S	0.76591 0.0267 S	0.16395 0.6931 S	B
B_5	0.11630 0.7839 S	-0.49692 0.2103 S	-0.07318 0.8633 S	0.07816 0.8540 S	0.06450 0.8794 S	-0.02486 0.9534 S	-0.22114 0.5987 S	B
B_6	0.19634 0.6412 S	0.22672 0.5892 S	0.28170 0.4991 S	-0.10953 0.7963 S	0.34637 0.4006 S	0.44292 0.2717 S	0.23918 0.5683 S	B
B_7	0.58908 0.1244 S	-0.16355 0.6958 S	0.72115 0.0433 S	0.42108 0.2989 S	-0.06704 0.8747 S	0.51510 0.1914 S	0.40361 0.3214 S	B
B_8	0.75357 0.0308 S	0.48561 0.2405 S	0.70623 0.0502 S	0.57293 0.1213 S	0.75974 0.0287 S	0.88460 0.0033 S	0.46846 0.2411 S	B
B_9	0.19730 0.6395 S	-0.2.490 0.5424 S	0.09949 0.8147 S	-0.00067 0.9987 S	0.24048 0.5662 S	0.22542 0.5914 S	-0.03712 0.9305 S	B

	B_2	B_3	B_4	B_5	B_6	B_7	B_8	
JUNE_BS	0.11376 0.7794 8	0.51656 0.1000 8	0.79687 0.3310 8	-0.35511 0.3880 8	0.47023 0.2397 8	0.76069 0.0284 8	0.65937 0.0756 8	BS
NO	0.17059 0.6868 8	-0.2 [illegible]4 0.3543 8	-0.37117 0.3653 8	0.19677 0.6405 8	-0.10074 0.8128 8	-0.27789 0.5022 8	-0.48677 0.2212 8	
MATRIC	-0.3[illegible]587 0.4420 7	0.13494 0.7733 7	0.42311 0.3379 7	-0.60274 0.1520 7	0.32617 0.4258 7	0.35236 0.4382 7	0.49078 0.2746 7	MA
IQ	0.20309 0.6241 8	0.325[illegible] 0.1396 8	0.39310 0.3421 8	-0.34871 [illegible].3772 8	0.59121 0.1203 8	0.71571 0.0458 8	0.46613 0.0773 8	IQ
PRT	-0.07675 0.8567 8	-0.41624 0.3050 8	-0.25785 0.5343 8	-0.48501 0.2232 8	-0.48843 0.2192 8	0.09124 0.8299 8	-0.47473 0.2344 8	PRT
PRTE	-0.27365 0.5119 8	-0.01303 0.9756 8	-0.29715 0.4748 8	-0.20930 0.6189 8	-0.25357 0.5445 8	0.15631 0.7117 8	-0.26754 0.4898 8	PRT
LP	-0.07984 0.8509 8	0.52942 0.1241 8	-0.25565 0.5411 8	0.67220 0.0673 8	0.23411 0.5766 8	-0.14898 0.7248 8	0.08389 0.8434 8	LP
BIOGRAPH	0.43368 0.2830 8	0.40690 0.3144 8	-0.26651 0.5235 8	-0.05230 0.9021 8	0.09025 0.8317 8	0.70829 0.0493 8	-0.02567 0.9515 8	BIO
INTVIEW	0.17427 0.7086 7	-0.40002 0.3739 7	0.05882 0.9003 7	-0.69202 0.0849 7	-0.12204 0.7944 7	0.43424 0.3303 7	-0.16024 0.7314 7	INT
LSP	0.12313 0.7715 8	0.10695 0.8010 8	0.11611 0.7842 8	-0.37822 0.3556 8	0.03167 0.9407 8	0.42121 0.2967 8	0.16853 0.6899 8	LSP
L_1	0.32793 0.4277 8	0.49657 0.2107 8	0.48563 0.2225 8	-0.06780 0.8733 8	0.33825 0.4125 8	0.78494 0.0211 8	0.73203 0.0390 8	L1
L_2	0.51436 0.1922 8	0.36290 0.3769 8	0.46560 0.2450 8	0.19913 0.6364 8	0.33974 0.3814 8	0.50721 0.1998 8	0.63943 0.0878 8	L2
L_3	0.08001 0.8506 8	0.76381 0.0274 8	0.28315 0.4968 8	0.49532 0.2120 8	0.70779 0.0514 8	0.26066 0.5329 8	0.48842 0.0691 8	L3
L_4	0.47392 0.2355 8	0.37762 0.3550 8	0.56564 0.1439 8	0.26374 0.5279 8	0.53708 0.1699 8	0.44166 0.2733 8	0.74249 0.0349 8	L4

	B_2	B_3	B_4	B_5	B_6	B_7	B_8	
L_5	0.40559 0.3109 8	0.40314 0.3220 8	0.56306 0.1462 8	0.11630 0.7839 8	0.19636 0.6413 8	0.58903 0.1244 8	0.75227 0.0308 8	L5
L_6	-0.33883 0.4161 8	-0.14613 0.7263 8	0.81328 0.0141 8	-0.49692 0.2103 8	0.22672 0.5892 8	-0.16355 0.6788 8	0.66541 0.0608 8	L6
L_7	0.58796 0.1253 8	0.19126 0.6674 8	0.64262 0.0857 8	-0.07318 0.8633 8	0.29170 0.4991 8	0.72115 0.0435 8	0.70423 0.0502 8	L7
L_8	-0.03237 0.9378 8	0.52317 0.1734 8	0.32262 0.4338 8	0.07916 0.8540 8	-0.10953 0.7963 8	0.42108 0.2986 8	0.59293 0.1213 8	L8
L_9	-0.06287 0.8824 8	0.18566 0.6578 8	0.67673 0.0548 8	0.06450 0.8794 8	0.34637 0.4006 8	-0.06704 0.8747 8	0.75974 0.0287 8	L9
L_10	0.39945 0.3269 8	0.29369 0.4802 8	0.76991 0.0267 8	-0.02486 0.9534 8	0.44292 0.2717 8	0.51810 0.1914 8	0.88460 0.0033 8	L10
B_1	-0.35177 0.3929 8	0.56891 0.1411 8	0.16395 0.6981 8	-0.22114 0.5987 8	0.23918 0.5683 8	0.40361 0.3214 8	0.46844 0.2417 8	B1
B_2	1.00000 0.0 8	-0.16851 0.6900 8	0.15582 0.7125 8	-0.11343 0.7891 8	0.16576 0.6949 8	0.71447 0.0464 8	0.05407 0.8988 8	B2
B_3	-0.1685. 0.6900 8	1.00000 0.0 8	-0.18673 0.6579 8	0.56940 0.1407 8	0.54201 0.1652 8	0.26052 0.5332 8	0.37537 0.3395 8	B3
B_4	0.15582 0.7125 8	-0.18673 0.6579 8	1.00000 0.0 8	-0.54509 0.1624 8	0.20832 0.6206 8	0.27484 0.5100 8	0.84048 0.0090 8	B4
B_5	-0.11343 0.7891 8	0.56940 0.1407 8	-0.54509 0.1624 8	1.00000 0.0 8	0.13102 0.7571 8	-0.27615 0.5079 8	-0.20023 0.6345 8	B5
B_6	0.16576 0.6949 8	0.54201 0.1652 8	0.20832 0.6206 8	0.13102 0.7571 8	1.00000 0.0 8	0.34076 0.4088 8	0.49548 0.2118 8	B6
B_7	0.71447 0.0464 8	0.26052 0.5332 8	0.27484 0.5100 8	-0.27615 0.5079 8	0.34076 0.4088 8	1.00000 0.0 8	0.40279 0.3222 8	B7
B_8	0.05407 0.8988 8	0.37737 0.3395 8	0.84048 0.0090 8	-0.20023 0.6345 8	0.49548 0.2118 8	0.40279 0.3222 8	1.00000 0.0 8	B8
B_9	0.00473 0.9911 8	0.73457 0.0379 8	-0.30190 0.4674 8	0.83706 0.0095 8	0.65206 0.0797 8	-0.02312 0.9367 8	0.12091 0.7766 8	B9

APPENDIX 26

INTERCORRELATIONS OF PREDICTOR VARIABLES FOR THE DISADVANTAGED STUDENTS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 /
Number of Observations

	JUNE_BS	NC	MATRIC	IQ	PRT	PRTE	LP	
JUNE_BS	1.00000 0.0 17	-0.13101 0.6162 17	0.13390 0.6210 16	0.03797 0.8850 17	-0.14882 0.5686 17	-0.21990 0.3964 17	-0.16775 0.5199 17	BS
NC	-0.13101 0.6162 17	1.00000 0.0 18	0.06967 0.7905 17	-0.29941 0.2274 18	0.00455 0.9794 18	0.16463 0.5139 18	0.16410 0.5153 18	
MATRIC	0.13390 0.6210 16	0.06947 0.7905 17	1.00000 0.0 17	0.07033 0.7885 17	0.07857 0.7635 17	-0.13802 0.5973 17	-0.19402 0.4556 17	MA
IQ	0.03797 0.8850 17	-0.29941 0.2274 18	0.07033 0.7885 17	1.00000 0.0 18	-0.05063 0.8419 18	0.00656 0.9794 18	0.04053 0.8731 18	IQ
PRT	-0.14882 0.5686 17	0.00455 0.9794 18	0.07857 0.7635 17	-0.05063 0.8419 18	1.00000 0.0 18	0.36100 0.1411 18	-0.29867 0.2286 18	PRT
PRTE	-0.21990 0.3964 17	0.16463 0.5139 18	-0.13802 0.5973 17	0.00656 0.9794 18	0.36100 0.1411 18	1.00000 0.0 18	0.78218 0.0001 18	PRTE
LP	-0.16775 0.5199 17	0.16410 0.5153 18	-0.19402 0.4556 17	0.04053 0.8731 18	-0.29867 0.2286 18	0.78218 0.0001 18	1.00000 0.0 18	LP
BIOGRAPH	0.12616 0.6295 17	0.24081 0.3357 18	0.21365 0.4103 17	-0.04070 0.8726 18	0.15165 0.5480 18	-0.11510 0.6493 18	-0.21911 0.3824 18	BIO
INTVIEW	0.21184 0.4144 17	0.30311 0.2215 18	0.13264 0.6118 17	-0.50675 0.0319 18	-0.18527 0.4617 18	-0.24190 0.3335 18	-0.12378 0.6246 18	INT
LSP	-0.10067 0.7006 17	0.53251 0.0229 18	0.16262 0.5324 17	-0.10787 0.6701 18	-0.14553 0.5645 18	-0.37524 0.1249 18	-0.28678 0.2436 18	LSP
L_1	-0.22678 0.3814 17	0.23592 0.3460 18	0.28984 0.2591 17	0.04077 0.8724 18	-0.03769 0.8820 18	-0.56456 0.0147 18	-0.55256 0.0174 18	L1
L_2	-0.27049 0.2937 17	0.22133 0.3763 18	0.24195 0.3495 17	-0.36296 0.1388 18	-0.02851 0.9106 18	-0.48543 0.0411 18	-0.47772 0.0450 18	L2
L_3	-0.38253 0.1297 17	0.32104 0.1939 18	0.19618 0.4458 17	-0.56991 0.0135 18	0.00142 0.9949 18	-0.01272 0.9601 18	-0.01410 0.9557 18	L3
L_4	0.02272 0.9310 17	0.04399 0.8624 18	0.38824 0.1236 17	0.14356 0.5698 18	-0.20680 0.4103 18	-0.15711 0.5336 18	-0.02261 0.9290 18	L4

	JUNE_SS	NO	MATRIC	IQ	PRT	PRTE	LP	
L_5	-0.13860 0.5430 17	0.33304 0.1769 18	0.32605 0.2015 17	-0.25938 0.2984 18	-0.07518 0.7669 18	-0.44079 0.0671 18	-0.40036 0.0992 18	L
L_6	0.30389 0.2357 17	0.03106 0.9026 18	-0.00305 0.9907 17	-0.29172 0.2402 18	-0.14531 0.5631 18	-0.39537 0.1044 18	-0.30752 0.2145 18	L
L_7	0.13127 0.6155 17	0.20441 0.4159 18	0.49731 0.0462 17	0.00728 0.9771 18	-0.15837 0.5302 18	-0.51426 0.0290 18	-0.42046 0.0923 18	L
L_8	0.07577 0.7725 17	-0.10173 0.6877 18	-0.26490 0.2677 17	-0.58677 0.0105 18	0.16602 0.5103 18	-0.12393 0.6242 18	-0.23774 0.3421 18	L
L_9	0.28429 0.2686 17	-0.00163 0.9949 18	0.14868 0.5690 17	-0.32231 0.1921 18	0.12551 0.6197 18	-0.35187 0.1522 18	-0.44375 0.0650 18	L
L_10	0.05507 0.8337 17	0.02137 0.9329 18	0.12796 0.6245 17	-0.00535 0.9832 18	-0.04996 0.8439 18	-0.58934 0.0102 18	-0.56869 0.0138 18	L
B_1	0.08647 0.7408 17	-0.01797 0.9435 18	-0.55839 0.0198 17	-0.29933 0.2276 18	-0.30729 0.2148 18	-0.10377 0.6820 18	0.09911 0.6956 18	B
B_2	-0.04115 0.8754 17	-0.08447 0.7389 18	-0.27941 0.2774 17	-0.00712 0.9776 18	0.00315 0.9901 18	0.24693 0.3232 18	0.25060 0.3159 18	B
B_3	0.25024 0.3327 17	0.06347 0.8024 18	-0.06127 0.8153 17	0.13141 0.6032 18	-0.16502 0.5129 18	0.13226 0.6009 18	0.24541 0.3259 18	B
B_4	0.47347 0.0549 17	0.00990 0.9689 18	0.12543 0.6315 17	0.00807 0.9746 18	-0.19929 0.4279 18	0.02951 0.9070 18	0.16321 0.5168 18	B
B_5	0.10452 0.6897 17	0.01975 0.9360 18	-0.22449 0.3820 17	-0.31263 0.2066 18	0.10104 0.6900 18	0.06997 0.7826 18	0.00410 0.9871 18	B
B_6	-0.01697 0.9485 17	0.28249 0.2560 18	0.03060 0.9471 17	-0.43735 0.0695 18	-0.11145 0.6597 18	0.03489 0.8907 18	0.11017 0.6634 18	B
B_7	0.02304 0.9331 17	-0.06109 0.8097 18	-0.46790 0.0582 17	-0.16663 0.5087 18	-0.14471 0.5137 18	0.09378 0.7113 18	0.20601 0.4121 18	B
B_8	0.40242 0.1073 17	0.04072 0.8725 18	0.03251 0.9014 17	0.07739 0.7682 18	-0.20259 0.4201 18	0.06990 0.7228 18	0.22735 0.3643 18	B
B_9	0.04335 0.8687 17	0.21901 0.3848 18	-0.08530 0.7448 17	-0.49112 0.0385 18	-0.02675 0.9141 18	0.06373 0.8017 18	0.08307 0.7432 18	B

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4	
JUNE_83	0.13076 0.6295 17	0.21196 0.4144 17	-0.10067 0.7006 17	-0.22673 0.3814 17	-0.27049 0.2937 17	-0.38333 0.1297 17	0.02272 0.9316 17	B
NO	0.24081 0.3357 18	0.30311 0.2215 18	0.53251 0.0229 18	0.23592 0.3460 18	0.22183 0.3783 18	0.32104 0.1939 18	0.04399 0.8634 18	
MATRIC	0.21367 0.4103 17	0.13264 0.6112 17	0.16262 0.5324 17	0.28736 0.2591 17	0.24193 0.3495 17	0.15010 0.5650 17	0.38534 0.1256 17	M
IS	-0.04070 0.8724 18	-0.50675 0.0319 18	-0.10737 0.6701 18	0.04077 0.8724 18	-0.36294 0.1386 18	-0.56991 0.0133 18	0.14356 0.5678 18	I
PRT	0.15165 0.5480 18	-0.13527 0.4617 18	-0.14553 0.5645 18	-0.03769 0.8820 18	-0.02851 0.9106 18	0.00162 0.9949 18	-0.2068 0.4103 18	P
PRTE	-0.11510 0.6493 18	-0.24190 0.3335 18	-0.37524 0.1249 18	-0.56456 0.0147 18	-0.48543 0.0411 18	-0.01272 0.9601 18	-0.15711 0.5336 18	P
LP	-0.21911 0.3824 18	-0.12378 0.6246 18	-0.28678 0.2486 18	-0.53256 0.0174 18	-0.47772 0.0450 18	-0.01410 0.9557 18	-0.02261 0.9290 18	L
BIOGRAPH	1.00000 0.0 18	0.24852 0.3200 18	0.40817 0.0927 18	-0.01651 0.9482 18	0.04922 0.8462 18	0.18734 0.4566 18	0.15968 0.5268 18	B
INTVIEW	0.24852 0.3200 18	1.00000 0.0 18	0.52609 0.0249 18	-0.06921 0.7849 18	0.25590 0.3054 18	0.56843 0.0136 18	0.12654 0.6168 18	I
LSP	0.40817 0.0927 18	0.52609 0.0249 18	1.00000 0.0 18	0.20148 0.4227 18	0.30963 0.2112 18	0.32640 0.1862 18	0.24632 0.3248 18	L
L_1	-0.01651 0.9462 18	-0.06921 0.7849 18	0.20148 0.4227 18	1.00000 0.0 18	0.73842 0.0005 18	0.19174 0.4459 18	0.34403 0.1621 18	L
L_2	0.04922 0.8462 18	0.25590 0.3054 18	0.30963 0.2112 18	0.73842 0.0005 18	1.00000 0.0 18	0.51747 0.0278 18	0.09694 0.7020 18	L
L_3	0.18734 0.4566 18	0.56843 0.0136 18	0.32640 0.1862 18	0.19174 0.4459 18	0.51747 0.0278 18	1.00000 0.0 18	0.09719 0.7012 18	L
L_4	0.15968 0.5268 18	0.12654 0.6168 18	0.24632 0.3248 18	0.34403 0.1621 18	0.09694 0.7020 18	0.09719 0.7012 18	1.00000 0.0 18	L

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4	
L_5	-0.10418 0.6178 18	0.35557 0.1476 18	0.35424 0.1468 18	0.71315 0.0009 18	0.74465 0.0004 18	0.61194 0.0070 18	0.32183 0.1927 18	L
L_6	0.09523 0.7070 18	0.34113 0.3331 18	0.10297 0.6843 18	0.44355 0.0652 18	0.69871 0.0013 18	0.18177 0.4704 18	0.20837 0.4066 18	L
L_7	0.21627 0.3887 18	0.14992 0.5527 18	0.24615 0.3857 18	0.77477 0.0002 18	0.75844 0.0003 18	0.28732 0.2477 18	0.36199 0.1399 18	L
L_8	0.07406 0.7703 18	0.15309 0.5442 18	-0.13923 0.5814 18	-0.08765 0.7295 18	0.27356 0.2720 18	0.26921 0.4046 18	-0.32277 0.1914 18	L
L_9	0.03040 0.9424 18	0.34692 0.1611 18	0.11298 0.6553 18	0.24849 0.3201 18	0.52937 0.0101 18	0.28960 0.2438 18	-0.24426 0.3287 18	L
L_10	0.13312 0.5985 18	0.06164 0.8080 18	0.17954 0.4759 18	0.64742 0.0037 18	0.44847 0.0619 18	0.21653 0.3861 18	0.47655 0.0456 18	L
B_1	-0.34027 0.1671 18	0.13125 0.6037 18	-0.02564 0.9196 18	-0.18170 0.4706 18	0.21532 0.3909 18	-0.09430 0.7097 18	-0.61396 0.0067 18	B
B_2	-0.33812 0.1700 18	-0.09183 0.7171 18	-0.06313 0.8035 18	-0.18874 0.4532 18	0.07188 0.7769 18	0.04271 0.8664 18	-0.37315 0.1272 18	B
B_3	0.00243 0.9924 18	0.03005 0.8437 18	-0.08739 0.7302 18	-0.11624 0.6460 18	0.09943 0.6947 18	-0.13433 0.5945 18	-0.35416 0.1493 18	B
B_4	0.18065 0.4732 18	0.26070 0.2957 18	0.08954 0.7238 18	-0.11467 0.6505 18	0.08315 0.7429 18	0.01170 0.9633 18	0.21902 0.3840 18	B
B_5	-0.37747 0.1225 18	-0.17123 0.4968 18	-0.14874 0.5558 18	0.05956 0.8144 18	0.33601 0.1728 18	-0.05250 0.8361 18	-0.45878 0.0555 18	B
B_6	0.13633 0.5596 18	0.41533 0.0865 18	0.03478 0.8910 18	-0.09247 0.7152 18	0.35211 0.1519 18	0.59304 0.0092 18	-0.40304 0.0954 18	B
B_7	-0.38795 0.1097 18	0.01337 0.9517 18	-0.05226 0.8368 18	-0.21320 0.3956 18	0.16042 0.5248 18	-0.02519 0.9210 18	-0.55904 0.0157 18	B
B_8	0.10202 0.6871 18	0.17315 0.4920 18	0.00142 0.9955 18	-0.12837 0.6117 18	0.16149 0.5086 18	-0.06812 0.7883 18	-0.07455 0.7674 18	B
B_9	-0.10554 0.6768 18	0.21144 0.3996 18	-0.05548 0.8269 18	-0.03541 0.8891 18	0.44131 0.0668 18	0.46799 0.0928 18	-0.54701 0.0188 18	B

	L_5	L_6	L_7	L_8	L_9	L_10	S_1	
JUNE_BG	-0.19868 0.5430 17	0.30388 0.2357 17	0.13127 0.6155 17	0.07579 0.7725 17	0.28429 0.2688 17	0.05507 0.8337 17	0.08667 0.7408 17	
MO	0.33304 0.1769 18	0.03106 0.9026 18	0.20441 0.4159 18	-0.10175 0.6879 18	-0.00163 0.9949 18	0.02137 0.9329 18	-0.01799 0.9436 18	
MATRIC	0.32605 0.2015 17	-0.00305 0.9907 17	0.48931 0.0462 17	-0.28490 0.2677 17	0.14868 0.5690 17	0.12776 0.6245 17	-0.05838 0.8188 17	MA
IG	-0.25938 0.2986 18	-0.29172 0.2402 18	0.00725 0.9771 18	-0.58679 0.0105 18	-0.32231 0.1921 18	-0.00535 0.9832 18	-0.29933 0.2274 18	IG
PRT	-0.07516 0.7669 18	-0.14531 0.5651 18	-0.15037 0.5502 18	0.14602 0.5103 18	0.12581 0.6197 18	-0.04998 0.8439 18	-0.30737 0.2148 18	PR
PRTE	-0.44079 0.0671 18	-0.39537 0.1044 18	-0.51426 0.0290 18	-0.12393 0.6242 18	-0.35187 0.1522 18	-0.58834 0.0102 18	-0.10377 0.6820 18	PE
LP	-0.40086 0.0992 18	-0.30732 0.2145 18	-0.42046 0.0823 18	-0.23774 0.3421 18	-0.44395 0.0650 18	-0.56869 0.0138 18	0.09911 0.6956 18	LP
BIOGRAPH	-0.12615 0.6178 18	0.09523 0.7070 18	0.21627 0.3887 18	0.07406 0.7703 18	-0.05040 0.8426 18	0.13312 0.5985 18	-0.34027 0.1671 18	BI
INTVIEW	0.35557 0.1476 18	0.24113 0.3351 18	0.14992 0.5527 18	0.15309 0.5442 18	0.34482 0.1611 18	0.06164 0.8060 18	0.13125 0.6037 18	INT
LSP	0.35624 0.1468 18	0.10297 0.6843 18	0.26615 0.2857 18	-0.13923 0.5816 18	0.11298 0.6553 18	0.17954 0.4759 18	-0.02564 0.9196 18	LSP
L_1	0.71315 0.0009 18	0.44353 0.0652 18	0.77477 0.0002 18	-0.08765 0.7295 18	0.24849 0.3201 18	0.64742 0.0037 18	-0.18170 0.4706 18	L1
L_2	0.74468 0.0004 18	0.69871 0.0013 18	0.75844 0.0003 18	0.27356 0.2720 18	0.58737 0.0101 18	0.44847 0.0619 18	0.21532 0.3909 18	L2
L_3	0.61194 0.0070 18	0.18177 0.4704 18	0.28732 0.2477 18	0.20921 0.4048 18	0.28760 0.2438 18	0.21653 0.3881 18	-0.09430 0.7097 18	L3
L_4	0.32183 0.1937 18	0.20833 0.4068 18	0.36199 0.1399 18	-0.32277 0.1914 18	-0.24426 0.3287 18	0.47655 0.0456 18	-0.61396 0.0067 18	L4

	L_5	L_6	L_7	L_8	L_9	L_10	B_1	
L_5	1.00000 0.0 18	0.46761 0.0504 18	0.66155 0.0028 18	0.07932 0.7539 18	0.44084 0.0617 18	0.62309 0.0057 18	-0.10777 0.6646 18	L
L_6	0.46761 0.0504 18	1.00000 0.0 18	0.72644 0.0006 18	0.44698 0.0629 18	0.63439 0.0047 18	0.41366 0.0879 18	0.34212 0.1646 18	L
L_7	0.66155 0.0028 18	0.72644 0.0006 18	1.00000 0.0 18	0.04295 0.8656 18	0.52610 0.0249 18	0.58697 0.0104 18	-0.09938 0.6948 18	L
L_8	0.07932 0.7539 18	0.44698 0.0629 18	0.04295 0.8656 18	1.00000 0.0 18	0.67034 0.0023 18	-0.08325 0.7426 18	0.46448 0.0521 18	L
L_9	0.44084 0.0617 18	0.63439 0.0047 18	0.52610 0.0249 18	0.67034 0.0023 18	1.00000 0.0 18	0.13502 0.5932 18	0.41602 0.0860 18	L
L_10	0.62309 0.0057 18	0.41366 0.0879 18	0.58697 0.0104 18	-0.08325 0.7426 18	0.13502 0.5932 18	1.00000 0.0 18	-0.34439 0.1617 18	L
B_1	-0.10777 0.6646 18	0.34212 0.1646 18	-0.09938 0.6948 18	0.46448 0.0521 18	0.41602 0.0860 18	-0.34439 0.1617 18	1.00000 0.0 18	B
B_2	0.07356 0.7717 18	0.25904 0.2993 18	-0.03225 0.8989 18	0.22300 0.3737 18	0.36733 0.1337 18	-0.31020 0.2103 18	0.51110 0.0302 18	B
B_3	-0.04768 0.8510 18	0.23300 0.3521 18	0.07932 0.7544 18	0.10606 0.6753 18	0.41526 0.0966 18	-0.37158 0.1289 18	0.49362 0.0374 18	B
B_4	0.15230 0.5463 18	0.56516 0.0145 18	0.30756 0.2144 18	0.21332 0.3954 18	0.41734 0.0949 18	-0.07204 0.7763 18	0.14654 0.5618 18	B
B_5	0.14304 0.5712 18	0.39902 0.1009 18	0.02627 0.9176 18	0.34300 0.1387 18	0.37585 0.1039 18	-0.21343 0.3947 18	0.42442 0.0056 18	B
B_6	0.32996 0.1811 18	0.25576 0.3057 18	0.18229 0.4691 18	0.47590 0.0459 18	0.47915 0.0442 18	-0.13325 0.5981 18	0.34059 0.1647 18	B
B_7	-0.01482 0.9534 18	0.34290 0.1636 18	-0.07349 0.7720 18	0.33736 0.1122 18	0.44878 0.0617 18	-0.37522 0.1249 18	0.85279 0.0001 18	B
B_8	0.03843 0.8179 18	0.44419 0.0648 18	0.21539 0.3907 18	0.17771 0.4805 18	0.46291 0.0531 18	-0.24625 0.3246 18	0.35547 0.1477 18	B
B_9	0.31999 0.1955 18	0.40494 0.0935 18	0.14805 0.5577 18	0.54684 0.0189 18	0.56713 0.0141 18	-0.21410 0.3936 18	0.59993 0.0100 18	B

	B_2	B_3	B_4	B_5	B_6	B_7	B_8	
JUNT_BS	-0.04115 0.8734 17	0.25024 0.3327 17	0.47347 0.0549 17	0.10452 0.6897 17	-0.01697 0.9465 17	0.02204 0.9331 17	0.40242 0.1093 17	b'
NB	-0.03447 0.7387 18	0.04347 0.8024 18	0.00990 0.9689 18	0.01975 0.9380 18	0.28249 0.2560 18	-0.06108 0.8097 18	0.04072 0.8735 18	
MATRIC	-0.27741 0.2774 17	-0.06127 0.8153 17	0.12543 0.6315 17	-0.22647 0.3820 17	0.05060 0.8471 17	-0.46790 0.0522 17	0.03351 0.9014 17	Mp
IG	-0.00712 0.9776 18	0.13141 0.6033 18	0.00807 0.9744 18	-0.31243 0.2064 18	-0.43733 0.0695 18	-0.16663 0.5067 18	0.07739 0.7602 18	IG
PRT	0.00315 0.9901 18	-0.14302 0.5129 18	-0.19929 0.4279 18	0.10104 0.6900 18	-0.11143 0.6597 18	-0.16471 0.5137 18	-0.20259 0.4201 18	Pt
PRTE	0.24693 0.3232 18	0.13226 0.6009 18	0.02967 0.9070 18	0.06997 0.7826 18	0.03489 0.8907 18	0.09378 0.7113 18	0.08990 0.7220 18	Pe
LP	0.25060 0.3159 18	0.24561 0.3259 18	0.16351 0.5168 18	0.00410 0.9871 18	0.11017 0.6634 18	0.20601 0.4121 18	0.22735 0.3643 18	LP
BIOGRAPH	-0.33812 0.1700 18	0.00243 0.9924 18	0.18065 0.4732 18	-0.37747 0.1225 18	0.13633 0.5896 18	-0.38995 0.1097 18	0.10202 0.6871 18	bio
INTVIEW	-0.09183 0.7171 18	0.05005 0.8437 18	0.26090 0.2957 18	-0.17125 0.4968 18	0.41533 0.0865 18	0.01537 0.9517 18	0.17315 0.4920 18	INT
LSP	-0.06313 0.8035 18	-0.08739 0.7302 18	0.08954 0.7238 18	-0.14874 0.5558 18	0.03478 0.8910 18	-0.05226 0.8363 18	0.00142 0.9955 18	LSI
L_1	-0.13874 0.4532 18	-0.11624 0.6460 18	-0.11467 0.6505 18	0.03954 0.8144 18	-0.09247 0.7152 18	-0.21320 0.3954 18	-0.12037 0.6117 18	L1
L_2	0.07188 0.7769 18	0.09943 0.6947 18	0.08315 0.7429 18	0.33601 0.1728 18	0.35211 0.1319 18	0.16042 0.5243 18	0.10147 0.6804 18	L2
L_3	0.04271 0.8664 18	-0.13453 0.5945 18	0.01170 0.9633 18	-0.05250 0.8361 18	0.59504 0.0092 18	-0.02519 0.9210 18	-0.06812 0.7883 18	L3
L_4	-0.37315 0.1272 18	-0.33416 0.1493 18	0.21802 0.3848 18	-0.45878 0.0555 18	-0.40504 0.0954 18	-0.55964 0.0157 18	-0.07495 0.7473 18	L4

	B_2	B_3	B_4	B_5	B_6	B_7	B_8	
L_5	0.07356 0.7717 18	-0.04768 0.8510 18	0.13230 0.5463 18	0.14304 0.5712 18	0.32996 0.1811 18	-0.01482 0.9534 18	0.05865 0.8179 18	L
L_6	0.25704 0.2993 18	0.23306 0.3521 18	0.56516 0.0143 18	0.39902 0.1009 18	0.25574 0.3057 18	0.74290 0.1636 18	0.44419 0.0648 18	L
L_7	-0.03333 0.8987 18	0.07532 0.7544 18	0.30754 0.2144 18	0.02627 0.9176 18	0.18229 0.4691 18	-0.07349 0.7720 18	0.21539 0.3907 18	L
L_8	0.22300 0.3777 18	0.10604 0.6753 18	0.21332 0.3934 18	0.36300 0.1387 18	0.47590 0.0459 18	0.38736 0.1122 18	0.17771 0.4805 18	L
L_9	0.34733 0.1337 18	0.41526 0.0866 18	0.41734 0.0847 18	0.39583 0.1039 18	0.47915 0.0442 18	0.44378 0.0617 18	0.46291 0.0531 18	L
L_10	-0.31020 0.2103 18	-0.37158 0.1299 18	-0.07204 0.7763 18	-0.21363 0.3947 18	-0.13325 0.5781 18	-0.37522 0.1249 18	-0.24625 0.3246 18	L
B_1	0.51110 0.0302 18	0.49362 0.0374 18	0.14654 0.5618 18	0.62442 0.0056 18	0.34059 0.1667 18	0.85279 0.0001 18	0.35547 0.1477 18	B
B_2	1.00000 0.0 18	0.60647 0.0076 18	0.55238 0.0174 18	0.71963 0.0008 18	0.19942 0.4276 18	0.88476 0.0001 18	0.64422 0.0039 18	B
B_3	0.60647 0.0076 18	1.00000 0.0 18	0.61756 0.0063 18	0.51487 0.0288 18	0.30727 0.2149 18	0.63616 0.0045 18	0.89883 0.0001 18	B
B_4	0.55238 0.0174 18	0.61756 0.0063 18	1.00000 0.0 18	0.32290 0.1914 18	0.23786 0.3419 18	0.41509 0.0867 18	0.89981 0.0001 18	B
B_5	0.71963 0.0008 18	0.51487 0.0288 18	0.32290 0.1914 18	1.00000 0.0 18	0.20668 0.4106 18	0.77584 0.0002 18	0.46548 0.0516 18	B
B_6	0.19942 0.4276 18	0.30727 0.2149 18	0.23786 0.3419 18	0.20668 0.4106 18	1.00000 0.0 18	0.30585 0.2171 18	0.30279 0.2216 18	B
B_7	0.88476 0.0001 18	0.63616 0.0045 18	0.41509 0.0867 18	0.77584 0.0002 18	0.30585 0.2171 18	1.00000 0.0 18	0.58418 0.0109 18	B
B_8	0.64422 0.0039 18	0.89883 0.0001 18	0.89981 0.0001 18	0.46548 0.0516 18	0.30279 0.2216 18	0.58418 0.0109 18	1.00000 0.0 18	B
B_9	0.53820 0.0212 18	0.50582 0.0322 18	0.33030 0.1541 18	0.69620 0.0013 18	0.84024 0.0001 18	0.64470 0.0037 18	0.47572 0.0460 18	B

APPENDIX 27

INTERCORRELATIONS OF PREDICTOR VARIABLES FOR THE LOW MODIFIABLE STUDENTS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / Number of Observations

	JUNE_BS	NC	MATRIC	IQ	PRT	PRTE	LP
JUNE_BS	1.00000 0.0 17	-0.41300 0.0994 17	0.23083 0.4078 15	0.23666 0.3604 17	-0.00649 0.9803 17	0.10549 0.6870 17	-0.04885 0.8523 17
NC	-0.41300 0.0994 17	1.00000 0.0 17	-0.37910 0.1435 15	-0.37759 0.1351 17	0.06431 0.8063 17	0.08831 0.7361 17	0.23711 0.3595 17
MATRIC	0.23083 0.4078 15	-0.37910 0.1435 15	1.00000 0.0 15	0.22150 0.4276 15	0.15012 0.5933 15	0.03731 0.8950 15	-0.49014 0.0636 15
IQ	0.23666 0.3604 17	-0.37759 0.1351 17	0.22150 0.4276 15	1.00000 0.0 17	0.38474 0.1273 17	0.40449 0.1073 17	-0.23107 0.3722 17
PRT	-0.00649 0.9803 17	0.06431 0.8063 17	0.15012 0.5933 15	0.38474 0.1273 17	1.00000 0.0 17	0.83684 0.0001 17	-0.52787 0.0294 17
PRTE	0.10549 0.6870 17	0.08831 0.7361 17	0.03731 0.8950 15	0.40449 0.1073 17	0.83684 0.0001 17	1.00000 0.0 17	-0.13241 0.6124 17
LP	-0.04885 0.8523 17	0.23711 0.3595 17	-0.49014 0.0636 15	-0.23107 0.3722 17	-0.52787 0.0294 17	-0.13241 0.6124 17	1.00000 0.0 17
BIOGRAPH	0.43806 0.0786 17	-0.22764 0.3793 17	0.15439 0.5827 15	0.41945 0.0937 17	0.71885 0.0011 17	0.58856 0.0129 17	-0.36471 0.1477 17
INTVIEW	0.20538 0.4291 17	0.27606 0.2835 17	0.00395 0.9889 15	-0.29912 0.2435 17	0.22448 0.3864 17	0.27040 0.2939 17	-0.05825 0.8243 17
LSP	0.30753 0.2298 17	-0.24768 0.3378 17	0.07298 0.7960 15	0.24004 0.3534 17	0.20807 0.4229 17	-0.01094 0.9668 17	-0.35717 0.1593 17
L_1	0.31689 0.2152 17	-0.65677 0.0042 17	0.77324 0.0007 15	0.38545 0.1265 17	0.07999 0.7602 17	0.03853 0.8833 17	-0.41394 0.0986 17
L_2	0.09826 0.7073 17	-0.45911 0.0638 17	0.54828 0.0343 15	-0.22548 0.3842 17	-0.24899 0.3352 17	-0.35604 0.1607 17	-0.36389 0.3023 17
L_3	-0.04501 0.8638 17	-0.36941 0.1223 17	0.13646 0.6277 15	-0.36893 0.1450 17	-0.24197 0.3494 17	-0.13372 0.5954 17	0.02856 0.9134 17
L_4	0.22421 0.3870 17	-0.47565 0.0805 17	0.30355 0.2714 15	0.14992 0.5658 17	-0.46663 0.0590 17	-0.46114 0.0624 17	-0.08558 0.7446 17

	JUNE_55	NC	MATRID	IG	PRT	PRTE	LP	
L_5	0.16191 0.5347 17	-0.39573 0.1155 17	0.44193 0.0991 15	-0.24052 0.3524 17	-0.37836 0.1131 17	-0.45757 0.0648 17	-0.10116 0.6954 17	L
L_6	0.31420 0.2161 17	-0.41800 0.0730 17	0.11522 0.6826 15	-0.15830 0.5440 17	-0.51767 0.0333 17	-0.50284 0.0376 17	-0.05755 0.8286 17	L
L_7	0.35844 0.1577 17	-0.37741 0.1333 17	0.46322 0.0070 15	0.14827 0.5701 17	-0.23665 0.4262 17	-0.19566 0.4588 17	-0.25033 0.3327 17	L
L_8	0.36751 0.1447 17	-0.48223 0.0500 17	0.08046 0.7756 15	-0.42054 0.0923 17	-0.32984 0.1960 17	-0.38059 0.1318 17	-0.03947 0.8[illegible] 17	L
L_9	0.10376 0.6919 17	-0.37716 0.1336 17	0.07805 0.7822 15	-0.21535 0.4060 17	-0.56946 0.[illegible]70 17	-0.52771 0.0287 17	-0.00379 0.9733 17	L
L_10	0.34693 0.1724 17	-0.50202 0.0400 17	0.31888 0.2467 15	0.11866 0.6501 17	-0.28496 0.2676 17	-0.25744 0.3183 17	-0.16807 0.5191 17	L
B_1	0.42735 0.0871 17	-0.06122 0.8155 17	-0.10285 0.7153 15	-0.18479 0.4777 17	-0.03660 0.8891 17	0.12134 0.6427 17	0.14632 0.5752 17	B
B_2	0.03806 0.8847 17	0.27008 0.2945 17	0.05217 0.8535 15	-0.02520 0.9233 17	0.28066 0.2752 17	0.2[illegible] 0.4[illegible]57 17	-0.32142 0.2084 17	B
B_3	0.06126 0.1542 17	-0.01454 0.9558 17	0.15896 0.5715 15	0.06271 0.8110 17	-0.20135 0.4384 17	0.04725 0.8571 17	0.44419 0.0741 17	B
B_4	0.42210 0.0915 17	-0.16668 0.5226 17	0.16314 0.5613 15	-0.03039 0.9078 17	-0.33023 0.1[illegible]55 17	-0.28918 0.2603 17	-0.08882 0.7344 17	B
B_5	-0.00831 0.9748 17	0.22377 0.3879 17	0.03112 0.9123 15	-0.63030 0.0047 17	-0.40322 0.1095 17	-0.28675 0.2645 17	0.37329 0.1400 17	B
B_6	0.12490 0.6329 17	-0.02779 0.9157 17	0.03196 0.9100 15	-0.51964 0.0325 17	-0.22049 0.3951 17	-0.13409 0.6079 17	0.06637 0.8002 17	B
B_7	0.29671 0.2475 17	0.11886 0.6496 17	-0.03544 0.9002 15	-0.12342 0.6097 17	0.14087 0.5897 17	0.19652 0.4497 17	-0.09428 0.7189 17	B
B_8	0.48326 0.0494 17	-0.11925 0.6435 17	0.18561 0.5078 15	0.01478 0.9551 17	-0.33266 0.1920 17	-0.16639 0.5233 17	0.18875 0.4676 17	B
B_9	0.08054 0.7536 17	0.09542 0 7151 17	0.03730 0.8950 15	-0.48549 0.0024 17	-0.35598 0.1608 17	-0.23774 0.3582 17	0.23604 0.3617 17	B

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4	
JUNE_BG	0.13806 0.0756 17	0.20538 0.4291 17	0.30753 0.2298 17	0.31689 0.2152 17	0.09826 0.7075 17	-0.04501 0.8633 17	0.22421 0.3873 17	BG
NO	-0.22761 0.3793 17	0.27606 0.2858 17	-0.24758 0.3378 17	-0.65677 0.0042 17	-0.45911 0.0638 17	-0.38941 0.1223 17	-0.43560 0.0835 17	
PATRIC	0.15439 0.5527 15	0.03390 0.9089 13	0.07225 0.7960 15	0.77524 0.0007 15	0.54622 0.0343 15	0.13646 0.6777 15	0.38333 0.2714 15	PA
IS	0.41945 0.0737 17	-0.29712 0.2433 17	0.24004 0.3534 17	0.28545 0.1268 17	-0.22549 0.3842 17	-0.36603 0.1453 17	0.14992 0.5658 17	IS
PRT	0.71893 0.0011 17	0.22443 0.3864 17	0.20307 0.4229 17	0.07999 0.7602 17	-0.24899 0.3352 17	-0.24197 0.3494 17	-0.46643 0.0590 17	PRT
PRTS	0.56856 0.0129 17	0.27040 0.2939 17	-0.01094 0.9668 17	0.03853 0.8833 17	-0.33604 0.1607 17	-0.13872 0.5954 17	-0.46116 0.0624 17	PRTS
LP	-0.34471 0.1477 17	-0.05325 0.8243 17	-0.35717 0.1593 17	-0.41394 0.0964 17	-0.26889 0.3023 17	0.02856 0.9134 17	-0.08558 0.7440 17	LP
BIOGRAPH	1.00000 0.0 17	0.39066 0.1210 17	0.49389 0.0439 17	0.07899 0.7631 17	-0.01695 0.9424 17	-0.17595 0.4994 17	-0.22349 0.3856 17	BIOGRAPH
INTVIEW	0.39066 0.1210 17	1.00000 0.0 17	0.29894 0.2438 17	-0.21329 0.4111 17	0.08083 0.7578 17	0.28959 0.2596 17	-0.22979 0.3750 17	INTVIEW
LSP	0.49389 0.0439 17	0.29894 0.2438 17	1.00000 0.0 17	-0.03194 0.9031 17	0.26743 0.2994 17	0.17951 0.4906 17	0.00075 0.9977 17	LSP
L_1	0.07899 0.7631 17	-0.21329 0.4111 17	-0.03194 0.9031 17	1.00000 0.0 17	0.49123 0.0452 17	0.14331 0.5832 17	0.52075 0.0321 17	L_1
L_2	-0.01695 0.9424 17	0.08083 0.7578 17	0.26743 0.2994 17	0.49123 0.0452 17	1.00000 0.0 17	0.60922 0.0094 17	0.31216 0.2225 17	L_2
L_3	-0.17595 0.4994 17	0.28959 0.2596 17	0.17951 0.4906 17	0.14331 0.5832 17	0.60922 0.0094 17	1.00000 0.0 17	0.18393 0.4798 17	L_3
L_4	-0.22349 0.3856 17	-0.22979 0.3750 17	0.00075 0.9977 17	0.52075 0.0321 17	0.31216 0.2225 17	0.18393 0.4798 17	1.00000 0.0 17	L_4

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4
L_5	-0.30790	0.03360	0.23267	0.50290	0.65959	0.62524	0.50492
	0.2293	0.8981	0.3693	0.0396	0.0040	0.0072	0.0430
	17	17	17	17	17	17	17
L_6	-0.09718	-0.06003	0.19914	0.19559	0.63096	0.40780	0.54393
	0.7094	0.8190	0.4433	0.4519	0.0066	0.1023	0.0240
	17	17	17	17	17	17	17
L_7	0.09467	0.07574	0.03203	0.67243	0.64638	0.20152	0.54734
	0.7183	0.7727	0.9029	0.0031	0.0051	0.4311	0.0234
	17	17	17	17	17	17	17
L_8	-0.00055	0.10086	0.23568	0.17974	0.44009	0.39416	0.15490
	0.9983	0.7001	0.3625	0.4700	0.0771	0.1175	0.5530
	17	17	17	17	17	17	17
L_9	-0.31917	-0.04775	0.28197	0.18642	0.70291	0.55303	0.32618
	0.2118	0.8556	0.2729	0.4737	0.0016	0.0213	0.2013
	17	17	17	17	17	17	17
L_10	-0.17314	-0.22695	0.01658	0.61433	0.44944	0.38282	0.75022
	0.5063	0.3810	0.9496	0.0087	0.0703	0.1294	0.0005
	17	17	17	17	17	17	17
B_1	0.24432	0.43061	0.33547	-0.14762	0.20680	0.15153	-0.47655
	0.3446	0.0844	0.1880	0.5718	0.4258	0.5615	0.0531
	17	17	17	17	17	17	17
B_2	0.34908	0.70848	0.53912	-0.05832	0.30405	0.20412	-0.12133
	0.1697	0.0015	0.0255	0.8240	0.2354	0.4320	0.6427
	17	17	17	17	17	17	17
B_3	0.12490	0.28775	0.27733	0.00355	0.22865	0.04844	-0.10401
	0.6329	0.2627	0.2903	0.9892	0.3774	0.8535	0.6912
	17	17	17	17	17	17	17
B_4	0.13141	0.32315	0.36124	0.17707	0.46884	0.21460	0.61248
	0.6151	0.2058	0.1543	0.4966	0.0576	0.4082	0.0090
	17	17	17	17	17	17	17
B_5	-0.37640	-0.02166	-0.02889	-0.23961	0.27388	0.22995	-0.13334
	0.1364	0.9342	0.9124	0.3543	0.2874	0.3746	0.6099
	17	17	17	17	17	17	17
B_6	-0.09538	0.43342	0.11723	-0.24744	0.43528	0.65575	-0.31210
	0.7158	0.0822	0.6541	0.3383	0.0808	0.0043	0.2226
	17	17	17	17	17	17	17
B_7	0.36133	0.69144	0.53116	-0.12875	0.31037	0.21685	-0.37706
	0.1542	0.0021	0.0282	0.6218	0.2246	0.4032	0.1357
	17	17	17	17	17	17	17
B_8	0.15740	0.37622	0.39300	0.12003	0.44033	0.17013	0.35021
	0.5463	0.1367	0.1186	0.6463	0.0769	0.5139	0.1682
	17	17	17	17	17	17	17
B_9	-0.25737	0.28317	0.06491	-0.29038	0.47564	0.56284	-0.29011
	0.3186	0.2707	0.8048	0.2579	0.0805	0.0187	0.2762
	17	17	17	17	17	17	17

	L_5	L_6	L_7	L_8	L_9	L_10	B_1	
JUNE_85	0.16191 0.5347 17	0.31430 0.2161 17	0.33844 0.1577 17	0.36751 0.1467 17	0.[illegible]376 0.6719 17	0.34698 0.1724 17	0.42737 0.0871 17	B-
NO	-0.39573 0.1157 17	-0.31600 0.2230 17	-0.37741 0.1353 17	-0.48223 0.0500 17	-0.37716 0.1354 17	-0.50202 0.0400 17	-0.04123 0.8735 17	
MATRIC	0.44135 0.0991 15	0.11322 0.6826 15	0.66322 0.0070 15	0.02046 0.7756 15	0.07805 0.7822 15	0.31568 0.2467 15	-0.10255 0.7153 15	MA
IS	-0.24052 0.3826 17	-0.13830 0.5440 17	0.14827 0.5701 17	-0.42054 0.0928 17	-0.21555 0.4040 17	0.11646 0.6501 17	-0.19479 0.4777 17	IS
PRT	-0.39856 0.1131 17	-0.31747 0.2333 17	-0.20665 0.4262 17	-0.32764 0.1960 17	-0.56946 0.0170 17	-0.28496 0.2676 17	-0.03660 0.8891 17	PR
PRTE	-0.45757 0.0642 17	-0.50284 0.0396 17	-0.19266 0.4588 17	-0.38059 0.1318 17	-0.52971 0.0287 17	-0.25744 0.3183 17	0.12134 0.6427 17	PR
LP	-0.10146 0.6984 17	-0.05365 0.8380 17	-0.25023 0.3327 17	-0.03963 0.8800 17	-0.00879 0.9733 17	-0.16907 0.5191 17	0.14452 0.5752 17	LI
BIOGRAPH	-0.30790 0.2293 17	-0.08715 0.7394 17	0.09449 0.7183 17	-0.00055 0.9983 17	-0.31917 0.2118 17	-0.17314 0.5063 17	0.24432 0.3446 17	BI
INTVIEW	0.03360 0.8951 17	-0.06003 0.8190 17	0.07574 0.7727 17	0.10086 0.7001 17	-0.04775 0.8556 17	-0.22695 0.3810 17	0.43061 0.0844 17	IN
LSP	0.23247 0.3603 17	0.19914 0.4435 17	0.03203 0.9029 17	0.23566 0.3625 17	0.28197 0.2729 17	0.01656 0.9496 17	0.33547 0.1900 17	LS
L_1	0.50290 0.0396 17	0.19559 0.4519 17	0.47243 0.0031 17	0.17974 0.4900 17	0.12642 0.6737 17	0.61433 0.0087 17	-0.14762 0.5718 17	L1
L_2	0.65959 0.0040 17	0.63096 0.0044 17	0.64638 0.0051 17	0.44009 0.0771 17	0.70291 0.0016 17	0.44944 0.0703 17	0.20680 0.4253 17	L2
L_3	0.62624 0.0072 17	0.40780 0.1023 17	0.20452 0.4311 17	0.39416 0.1175 17	0.55363 0.0213 17	0.38282 0.1294 17	0.15153 0.5615 17	L3
L_4	0.58438 0.0138 17	0.54393 0.0240 17	0.54584 0.0234 17	0.15480 0.5530 17	0.32618 0.2013 17	0.75022 0.0005 17	-0.47653 0.0531 17	L4

	L_5	L_6	L_7	L_8	L_9	L_10	B_1	
L_5	1.00000 0.0 17	0.35137 0.1203 17	0.49294 0.0444 17	0.50139 0.0403 17	0.53354 0.0267 17	0.70887 0.0014 17	-0.10703 0.6770 17	L5
L_6	0.35137 0.1203 17	1.00000 0.0 17	0.54330 0.0242 17	0.33548 0.1851 17	0.51953 0.0031 17	0.58127 0.0144 17	0.11456 0.6615 17	L6
L_7	0.49294 0.0444 17	0.54330 0.0242 17	1.00000 0.0 17	0.22346 0.3884 17	0.43449 0.0814 17	0.64809 0.0049 17	0.02441 0.9259 17	L7
L_8	0.50139 0.0403 17	0.33548 0.1956 17	0.22346 0.3884 17	1.00000 0.0 17	0.44089 0.0767 17	0.21965 0.3970 17	0.47693 0.0529 17	L8
L_9	0.53354 0.0267 17	0.51953 0.0031 17	0.43449 0.0814 17	0.44089 0.0767 17	1.00000 0.0 17	0.47117 0.0563 17	0.31278 0.2213 17	L9
L_10	0.70887 0.0014 17	0.58127 0.0144 17	0.64809 0.0049 17	0.21965 0.3970 17	0.47117 0.0563 17	1.00000 0.0 17	-0.30310 0.2370 17	L10
B_1	-0.10703 0.6770 17	0.11456 0.6615 17	0.02441 0.9259 17	0.47693 0.0529 17	0.31278 0.2213 17	-0.30310 0.2370 17	1.00000 0.0 17	B1
B_2	0.14408 0.5611 17	0.06215 0.8127 17	0.29642 0.2480 17	-0.05826 0.8242 17	0.17993 0.4895 17	0.01373 0.9583 17	0.32527 0.2027 17	B2
B_3	0.02464 0.9252 17	0.14703 0.5166 17	0.09209 0.7252 17	0.02011 0.9389 17	0.26812 0.2981 17	-0.21538 0.4064 17	0.57103 0.0167 17	B3
B_4	0.40185 0.1098 17	0.76290 0.0004 17	0.60217 0.0105 17	0.21450 0.4084 17	0.59075 0.0125 17	0.49216 0.0446 17	0.09935 0.7044 17	B4
B_5	0.21596 0.4053 17	0.16786 0.5196 17	-0.15176 0.5609 17	0.34652 0.1730 17	0.25785 0.3177 17	-0.17342 0.5052 17	0.34683 0.1548 17	B5
B_6	0.20967 0.4193 17	0.29345 0.2530 17	0.03222 0.9023 17	0.33039 0.1952 17	0.41237 0.1000 17	-0.05614 0.8305 17	0.52101 0.0320 17	B6
B_7	0.01437 0.9563 17	0.10977 0.6744 17	0.18927 0.4669 17	0.27214 0.2906 17	0.30634 0.2317 17	-0.13440 0.6733 17	0.83265 0.0001 17	B7
B_8	0.28167 0.2734 17	0.40307 0.0104 17	0.45291 0.0679 17	0.15424 0.5545 17	0.54366 0.0241 17	0.20778 0.4236 17	0.36130 0.1267 17	B8
B_9	0.25279 0.3276 17	0.28511 0.2673 17	-0.03577 0.8916 17	0.40159 0.1101 17	0.41188 0.1004 17	-0.12695 0.6273 17	0.53832 0.0255 17	B

	B_2	B_3	B_4	B_5	B_6	B_7	B_8	
JUNG_BS	0.03306	0.36176	0.42210	-0.00831	0.12490	0.27671	0.48326	
	0.8847	0.1542	0.0915	0.9748	0.6329	0.2475	0.0494	B
	17	17	17	17	17	17	17	
NQ	0.27008	-0.01454	-0.16668	0.22377	-0.02779	0.11086	-0.11923	
	0.2945	0.9558	0.5226	0.3879	0.9157	0.6474	0.6485	
	17	17	17	17	17	17	17	
MATRIC	0.07117	0.15096	0.16314	0.03112	0.03176	-0.03564	0.12561	
	0.8033	0.5715	0.5613	0.9123	0.9100	0.9002	0.5075	Mr
	15	15	15	15	15	15	15	
IC	-0.02520	0.06271	-0.03039	-0.65030	-0.51964	-0.13342	0.01478	
	0.7233	0.8110	0.9078	0.0047	0.0325	0.6077	0.9551	IC
	17	17	17	17	17	17	17	
FRT	0.28066	-0.20135	-0.33023	-0.40322	-0.22047	0.14057	-0.33266	
	0.2752	0.4384	0.1955	0.1085	0.3951	0.5897	0.1920	Ft
	17	17	17	17	17	17	17	
PRTE	0.20252	0.04725	-0.28918	-0.28675	-0.13409	0.19652	-0.16639	
	0.4357	0.8571	0.2603	0.2645	0.6079	0.4497	0.5233	Ftl
	17	17	17	17	17	17	17	
LF	-0.[illegible]42	0.44419	-0.08882	0.37329	0.06637	-0.09428	0.18878	Lf
	0.2084	0.0741	0.7346	0.1400	0.8002	0.7189	0.4676	
	17	17	17	17	17	17	17	
BIOGRAPH	0.34908	0.12490	0.13141	-0.37648	-0.09538	0.36133	0.15740	
	0.1697	0.6327	0.6151	0.1364	0.7158	0.1542	0.5463	Bk
	17	17	17	17	17	17	17	
INTVIEW	0.70848	0.28773	0.32315	-0.02166	0.43342	0.69144	0.37422	
	0.0015	0.2627	0.2058	0.9342	0.0822	0.0021	0.1367	INT
	17	17	17	17	17	17	17	
LSP	0.53912	0.27233	0.36124	-0.02889	0.11723	0.53116	0.39300	
	0.0255	0.2903	0.1543	0.9124	0.6541	0.0282	0.1186	LSP
	17	17	17	17	17	17	17	
L_1	-0.05832	0.00755	0.17707	-0.23961	-0.24744	-0.12895	0.12003	
	0.8240	0.9792	0.4966	0.3543	0.3383	0.6218	0.6463	L1
	17	17	17	17	17	17	17	
L_2	0.30405	0.22865	0.46884	0.27388	0.43528	0.31097	0.44033	
	0.2354	0.3774	0.0576	0.2874	0.0808	0.2246	0.0769	L2
	17	17	17	17	17	17	17	
L_3	0.20412	0.04344	0.21460	0.22795	0.65575	0.21635	0.17013	
	0.4320	0.8685	0.4082	0.3746	0.0043	0.4032	0.5139	L3
	17	17	17	17	17	17	17	
L_4	-0.12133	-0.10401	0.61248	-0.13334	-0.31210	-0.37706	0.35021	
	0.6427	0.6912	0.0090	0.6099	0.2226	0.1357	0.1682	L4
	17	17	17	17	17	17	17	

	B_2	B_3	B_4	B_5	B_6	B_7	B_8
L_5	0.14408 0.1811 17	0.02464 0.9257 17	0.40185 0.1092 17	0.21586 0.4055 17	0.20967 0.4193 17	0.01477 0.95[illegible] 17	0.28167 0.2734 17
L_6	0.06217 0.8127 17	0.16908 0.5166 17	0.76290 0.0004 17	0.16786 0.5196 17	0.29345 0.2530 17	0.10997 0.6744 17	0.[illegible]0307 0.6104 17
L_7	0.29462 0.2450 17	0.09307 0.7251 17	0.60217 0.0105 17	-0.15174 0.5607 17	0.03222 0.9022 17	0.13[illegible]7 0.4[illegible]69 17	0.48271 0.0477 17
L_8	-0.05526 0.8242 17	0.02011 0.9387 17	0.21450 0.4084 17	0.34632 0.1730 17	0.37039 0.1752 17	0.272[illegible]4 0.2906 17	0.15424 0.5545 17
L_9	0.17773 0.4873 17	0.26812 0.2951 17	0.59075 0.0125 17	0.25735 0.3177 17	0.41237 0.1000 17	0.30634 0.2317 17	0.54366 0.0241 17
L_10	0.01373 0.7583 17	-0.21538 0.4064 17	0.49218 0.0448 17	-0.17362 0.5052 17	-0.05616 0.8305 17	-0.18660 0.4733 17	0.20778 0.4236 17
B_1	0.32527 0.2027 17	0.57103 0.0167 17	0.09935 0.7044 17	0.36083 0.1548 17	0.52101 0.0320 17	0.83265 0.0001 17	0.38530 0.1267 17
B_2	1.00000 0.0 17	0.17296 0.5068 17	0.43522 0.0808 17	-0.14139 0.5883 17	0.21680 0.4033 17	0.79452 0.0001 17	0.38679 0.1251 17
B_3	0.17296 0.5068 17	1.00000 0.0 17	0.32662 0.2007 17	0.41058 0.1016 17	0.20488 0.4302 17	0.46793 0.0582 17	0.77651 0.0002 17
B_4	0.43522 0.0808 17	0.32662 0.2007 17	1.00000 0.0 17	0.01658 0.9496 17	0.06922 0.7918 17	0.31868 0.2125 17	0.84918 0.0001 17
B_5	-0.14139 0.5883 17	0.41058 0.1016 17	0.01658 0.9496 17	1.00000 0.0 17	0.39922 0.1124 17	0.14870 0.5684 17	0.24047 0.3525 17
B_6	0.21680 0.4033 17	0.20488 0.4302 17	0.06922 0.7918 17	0.39922 0.1124 17	1.00000 0.0 17	0.46154 0.0622 17	0.16062 0.5380 17
B_7	0.79452 0.0001 17	0.46793 0.0582 17	0.31868 0.2125 17	0.14870 0.5684 17	0.46154 0.0622 17	1.00000 0.0 17	0.47394 0.0546 17
B_8	0.38679 0.1251 17	0.77651 0.0002 17	0.84918 0.0001 17	0.24047 0.3525 17	0.16062 0.5380 17	0.47394 0.0546 17	1.00000 0.0 17
B_9	0.07485 0.7752 17	0.34916 0.1695 17	0.05548 0.8325 17	0.78265 0.0002 17	0.88316 0.0001 17	0.38953 0.1222 17	0.23205 0.3701 17

APPENDIX 28

INTERCORRELATIONS OF PREDICTOR VARIABLES FOR THE HIGH MODIFIABLE STUDENTS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	JUNE_BS	NO	MATRIC	IQ	PRT	PRTE	LP	
JUNE_BS	1.00000 0.0 8	-0.16106 0.7032 8	0.67319 0.0673 8	0.56993 0.1402 8	-0.04953 0.9072 8	-0.26824 0.5207 8	-0.36104 0.3796 8	BS
NO	-0.16106 0.7032 8	1.00000 0.0 9	0.24691 0.5219 9	0.03430 0.9302 9	-0.28392 0.4591 9	-0.74029 0.0226 9	-0.42376 0.2557 9	
MATRIC	0.67319 0.0673 8	0.24691 0.5219 9	1.00000 0.0 9	0.13589 0.6838 9	-0.13131 0.7363 9	-0.22269 0.5647 9	-0.08425 0.8294 9	MA
IQ	0.56993 0.1402 8	0.03430 0.9302 9	0.13589 0.6838 9	1.00000 0.0 9	-0.68278 0.0427 9	-0.46233 0.2102 9	0.21130 0.5852 9	IQ
PRT	-0.04953 0.9072 8	-0.28392 0.4591 9	-0.13131 0.7363 9	-0.68278 0.0427 9	1.00000 0.0 9	0.43125 0.2465 9	-0.53902 0.1343 9	PR
PRTE	-0.26824 0.5207 8	-0.74029 0.0226 9	-0.22269 0.5647 9	-0.46233 0.2102 9	0.43125 0.2465 9	1.00000 0.0 9	0.52749 0.1444 9	PR
LP	-0.36104 0.3796 8	-0.42376 0.2557 9	-0.08425 0.8294 9	0.21130 0.5852 9	-0.53902 0.1343 9	0.52749 0.1444 9	1.00000 0.0 9	LI
BIOGRAPH	0.09371 0.8253 8	0.43799 0.2383 9	0.00487 0.9901 9	0.21291 0.5823 9	-0.05787 0.8824 9	-0.75499 0.0187 9	-0.65034 0.0579 9	BI
INTVIEW	0.34131 0.4537 7	0.36826 0.3694 8	0.64605 0.0835 8	-0.42666 0.2918 8	0.04806 0.9100 8	-0.30536 0.4620 8	-0.28883 0.4878 8	IN
LSP	-0.29964 0.4709 8	0.69639 0.0364 9	0.23286 0.5465 9	-0.38238 0.3098 9	-0.14275 0.7141 9	-0.52182 0.1496 9	-0.35273 0.3518 9	LS
L_1	-0.15508 0.7139 8	0.85368 0.0034 9	0.00409 0.9917 9	0.05881 0.8805 9	-0.11904 0.7603 9	-0.78779 0.0329 9	-0.54868 0.1261 9	L
L_2	-0.34205 0.4069 8	0.72430 0.0273 9	-0.27498 0.4739 9	-0.04700 0.9044 9	0.03918 0.9203 9	-0.61361 0.0788 9	-0.60974 0.0813 9	L
L_3	-0.15791 0.7088 8	0.79635 0.0102 9	0.04235 0.9139 9	-0.07307 0.8518 9	-0.13719 0.7249 9	-0.82894 0.0057 9	-0.64460 0.0609 9	L
L_4	-0.10229 0.8095 8	0.52146 0.1499 9	0.11579 0.7667 9	-0.05749 0.8832 9	-0.44701 0.2277 9	-0.54125 0.1323 9	-0.08437 0.8291 9	L

	JUNE_DS	NO	MATRIC	ID	PRT	PRTE	LP	
L_5	-0.07540 0.8592 5	0.60879 0.0486 9	0.07656 0.8546 9	-0.03615 0.9264 9	-0.11739 0.7636 9	-0.58237 0.0997 9	-0.43317 0.2412 9	L5
L_6	0.07477 0.8563 6	0.28375 0.4590 9	0.37475 0.3203 9	-0.20635 0.5943 9	0.25297 0.3113 9	0.15470 0.6711 9	-0.09378 0.8102 9	L6
L_7	0.13338 0.7438 7	0.78073 0.0198 9	0.12454 0.7456 9	0.12494 0.7452 9	-0.03329 0.8313 9	-0.77681 0.0138 9	-0.64678 0.0598 9	L7
L_8	0.02832 0.9469 3	-0.15993 0.6312 9	-0.14391 0.7112 9	-0.53627 0.5405 9	0.69422 0.0350 9	0.20507 0.5764 9	-0.44134 0.2103 9	L8
L_9	0.45992 0.2515 8	0.04093 0.9167 9	0.02095 0.9573 9	-0.02050 0.9582 9	0.58211 0.1001 9	-0.19963 0.6066 9	-0.73449 0.0242 9	L9
L_10	-0.05049 0.9055 8	0.79822 0.0099 9	-0.07179 0.8544 9	0.25455 0.5086 9	-0.27205 0.4788 9	-0.91170 0.0006 9	-0.59496 0.0910 9	L10
B_1	-0.09007 0.8320 8	-0.10571 0.7866 9	-0.39791 0.2889 9	0.33755 0.3743 9	-0.06915 0.8597 9	0.26481 0.4911 9	0.31233 0.4132 9	B1
B_2	0.02128 0.9601 8	-0.35319 0.3511 9	-0.50845 0.1622 9	0.42987 0.2482 9	0.01134 0.9769 9	0.18371 0.6361 9	0.14063 0.6793 9	B2
B_3	0.22840 0.5864 8	-0.28202 0.4622 9	-0.23306 0.5462 9	0.54092 0.1326 9	-0.01214 0.9753 9	-0.03298 0.9329 9	-0.01935 0.9606 9	B3
B_4	0.46570 0.2449 8	-0.31211 0.4136 9	0.40385 0.2811 9	0.28699 0.4540 9	0.02626 0.9465 9	0.21983 0.5698 9	0.18050 0.6421 9	B4
B_5	-0.17734 0.6744 8	-0.33322 0.5459 9	-0.65325 0.0564 9	0.12103 0.7564 9	0.22005 0.5694 9	0.16733 0.6632 9	-0.04713 0.9001 9	B5
B_6	0.10728 0.8004 8	0.16651 0.6685 9	0.12408 0.7305 9	0.19681 0.6118 9	-0.13310 0.7328 9	-0.33875 0.3725 9	-0.19091 0.6227 9	B6
B_7	-0.02243 0.9580 8	-0.28193 0.4625 9	-0.50614 0.1644 9	0.42838 0.2500 9	-0.02057 0.9581 9	0.23233 0.5475 9	0.23622 0.5400 9	B7
B_8	0.38380 0.3479 8	-0.32763 0.3894 9	0.10542 0.7872 9	0.45126 0.2228 9	0.00844 0.9828 9	0.10739 0.7833 9	0.09239 0.8133 9	B8
B_9	-0.05070 0.9051 8	-0.03737 0.8911 9	-0.40416 0.2807 9	0.23805 0.5374 9	0.06836 0.8613 9	-0.12284 0.7529 9	-0.17905 0.6446 9	B9

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4	
JUNE_BS	0.09371 0.6253 8	0.34431 0.4557 7	-0.27964 0.4709 8	-0.13508 0.7139 8	-0.34208 0.4669 8	-0.18791 0.7068 8	-0.10227 0.8093 8	BS
NO	0.43799 0.2373 9	0.36825 0.3674 8	0.69839 0.0364 9	0.85368 0.0034 9	0.72430 0.0273 9	0.79435 0.0102 9	0.52146 0.1499 9	
MATRIC	0.00487 0.9901 9	0.64605 0.0835 8	0.23284 0.5465 9	0.00409 0.9917 9	-0.27498 0.4739 9	0.04235 0.9179 9	0.11573 0.7667 9	MAT
IQ	0.21291 0.5323 9	-0.42666 0.2713 8	-0.70238 0.3098 9	0.05851 0.8805 9	-0.04700 0.9044 9	-0.07737 0.8[illegible]8 9	-0.05749 0.8532 9	IQ
PRT	-0.05787 0.8824 9	0.04806 0.9100 8	-0.14273 0.7141 9	-0.11904 0.7603 9	0.03916 0.9203 9	-0.13719 0.7249 9	-0.44701 0.2277 9	PRT
PRTE	-0.75499 0.0187 9	-0.30536 0.4625 8	-0.52182 0.1496 9	-0.70779 0.0329 9	-0.61361 0.0783 9	-0.82894 0.0057 9	-0.54123 0.1323 9	PRTE
LP	-0.65034 0.0579 9	-0.28883 0.4678 8	-0.35273 0.3518 9	-0.54868 0.1261 9	-0.60974 0.0813 9	-0.64468 0.0609 9	-0.05437 0.8291 9	LP
BIOGRAPH	1.00000 0.0 9	0.10009 0.8136 8	0.41133 0.2714 9	0.33899 0.3722 9	0.34549 0.3625 9	0.63915 0.0638 9	0.23417 0.5442 9	BIO
INTVIEW	0.10009 0.8136 8	1.00000 0.0 8	0.58828 0.1250 8	0.08753 0.8367 8	0.06958 0.8700 8	0.44946 0.2639 8	0.63831 0.0885 8	INT
LSP	0.41133 0.2714 9	0.58828 0.1250 8	1.00000 0.0 9	0.51810 0.1530 9	0.40038 0.2856 9	0.78769 0.0117 9	0.77775 0.0136 9	LSP
L_1	0.33899 0.3722 9	0.08753 0.8367 8	0.51910 0.1530 9	1.00000 0.0 9	[illegible]1786 0.[illegible]005 9	0.78137 0.0129 9	0.38579 0.3051 9	L1
L_2	0.34549 0.3625 9	0.06958 0.8700 8	0.40038 0.2856 9	0.91786 0.0005 9	1.00000 0.0 9	0.78543 0.0121 9	0.35627 0.3467 9	L2
L_3	0.63915 0.0638 9	0.44946 0.2639 8	0.78769 0.0117 9	0.78137 0.0129 9	0.78543 0.0121 9	1.00000 0.0 9	0.68655 0.0411 9	L3
L_4	0.23417 0.5442 9	0.63831 0.0885 8	0.77775 0.0136 9	0.38579 0.3051 9	0.35627 0.3467 9	0.68655 0.0411 9	1.00000 0.0 9	L4

	BIOGRAPH	INTVIEW	LSP	L_1	L_2	L_3	L_4	
L_5	0.10540 0.7873 9	0.31614 0.4456 8	0.47686 0.1736 9	0.84426 0.0042 9	0.82332 0.0064 9	0.77109 0.0150 9	0.47361 0.1979 9	L5
L_6	-0.44672 0.2280 9	0.19646 0.6410 8	-0.08943 0.8190 9	0.28897 0.4507 9	0.23714 0.5390 9	-0.01996 0.9593 9	-0.28130 0.4634 9	L6
L_7	0.38633 0.3044 9	0.23107 0.5819 8	0.48305 0.1875 9	0.93621 0.0002 9	0.87473 0.0020 9	0.82697 0.0057 9	0.60087 0.2549 9	L7
L_8	0.05816 0.8819 9	-0.09519 0.8171 8	-0.41030 0.2727 9	-0.04488 0.9087 9	0.17127 0.6595 9	-0.07383 0.8463 9	-0.63055 0.0687 9	L8
L_9	0.19327 0.6103 9	0.06733 0.8704 8	-0.22915 0.5531 9	0.32549 0.3927 9	0.46650 0.2056 9	0.24398 0.5270 9	-0.32391 0.3953 9	L9
L_10	0.75181 0.0195 9	0.23059 0.5827 8	0.52444 0.1472 9	0.77252 0.0147 9	0.80267 0.0092 9	0.88755 0.0014 9	0.52843 0.1436 9	L10
B_1	-0.38870 0.3012 9	-0.59756 0.1177 8	-0.70915 0.0324 9	0.01527 0.9689 9	0.14124 0.7170 9	-0.41863 0.2621 9	-0.48815 0.1825 9	b1
B_2	-0.21642 0.5760 9	-0.88051 0.0039 8	-0.72528 0.0270 9	0.03918 0.9203 9	0.08849 0.8209 9	-0.41392 0.2681 9	-0.60914 0.0816 9	b2
B_3	-0.00071 0.9984 9	-0.66255 0.0621 8	-0.67208 0.0474 9	0.04407 0.9104 9	0.08272 0.8324 9	-0.23320 0.5459 9	-0.64750 0.0594 9	b3
B_4	-0.41493 0.2668 9	-0.14529 0.7314 8	-0.51606 0.1550 9	-0.17660 0.6494 9	-0.27830 0.4654 9	-0.39238 0.2962 9	-0.56283 0.1146 9	b4
B_5	-0.20299 0.6004 9	-0.77726 0.0232 8	-0.49238 0.1781 9	0.23805 0.5374 9	0.33595 0.3768 9	-0.20257 0.6012 9	-0.43239 0.2449 9	b5
B_6	0.12051 0.7574 9	0.18752 0.6566 8	0.00782 0.9841 9	0.22862 0.5541 9	0.30447 0.4257 9	0.38004 0.3130 9	0.01442 0.9706 9	b6
B_7	-0.30505 0.4248 9	-0.83829 0.0093 8	-0.77981 0.0132 9	0.03271 0.9334 9	0.11750 0.7634 9	-0.45073 0.2234 9	-0.61105 0.0804 9	b7
B_8	-0.23624 0.5406 9	-0.44401 0.2704 8	-0.65133 0.0574 9	-0.07691 0.8441 9	-0.11413 0.7700 9	-0.34726 0.3599 9	-0.66482 0.0507 9	b8
B_9	-0.06475 0.8686 9	-0.44815 0.2654 8	-0.36825 0.3295 9	0.35056 0.3550 9	0.48125 0.1897 9	0.12824 0.7423 9	-0.31792 0.4044 9	b9

	L_5	L_6	L_7	L_8	L_9	L_10	S_1
JUNE_BS	-0.07546 0.8572 8	0.07477 0.8603 8	0.13838 0.7478 0	0.02932 0.9469 8	0.42992 0.2315 8	-0.05049 0.9055 8	-0.09007 0.8320 8
NO	0.66899 0.0488 9	0.5395 0.1590 9	0.75073 0.0138 9	-0.15983 0.6812 9	0.04093 0.9167 9	0.79822 0.0099 9	-0.10571 0.7866 9
MATRIC	0.07456 0.8448 9	0.37478 0.3203 9	0.12654 0.7456 9	-0.14391 0.7118 9	0.02095 0.9573 9	-0.07179 0.8544 9	-0.37771 0.2859 9
IQ	-0.03615 0.9264 9	-0.20635 0.5943 9	0.12494 0.7486 9	-0.23627 0.5406 9	-0.02050 0.9582 9	0.25455 0.5084 9	0.33755 0.3743 9
PRT	-0.11737 0.7636 9	0.25597 0.5113 9	-0.08329 0.8313 9	0.69422 0.0380 9	0.58211 0.1001 9	-0.27205 0.4783 9	-0.06915 0.8597 9
PRTE	-0.58239 0.0999 9	0.15470 0.6911 9	-0.77681 0.0138 9	0.20507 0.5966 9	-0.19963 0.6066 9	-0.91170 0.0006 9	0.26481 0.4911 9
LP	-0.43317 0.2442 9	-0.09378 0.8103 9	-0.64678 0.0598 9	-0.46224 0.2103 9	-0.73449 0.0242 9	-0.89496 0.0910 9	0.31233 0.4132 9
BIOGRAPH	0.10540 0.7873 9	-0.44672 0.2280 9	0.38633 0.3044 9	0.05816 0.8819 9	0.19327 0.6183 9	0.75181 0.0195 9	-0.36870 0.3012 9
INTVIEW	0.31614 0.4456 8	0.19646 0.6410 8	0.23107 0.5819 8	-0.09819 0.8171 8	0.04933 0.8704 8	0.23059 0.5827 8	-0.59756 0.1177 8
LSP	0.49686 0.1736 9	-0.08943 0.8190 9	0.48305 0.1878 9	-0.41030 0.2727 9	-0.22913 0.5531 9	0.52444 0.1472 9	-0.70915 0.0324 9
L_1	0.84426 0.0042 9	0.28897 0.4507 9	0.93621 0.0002 9	-0.04488 0.9097 9	0.32549 0.3927 9	0.77252 0.0147 9	0.01527 0.9689 9
L_2	0.82332 0.0064 9	0.23714 0.5390 9	0.87473 0.0020 9	0.17129 0.6595 9	0.46650 0.2056 9	0.80267 0.0092 9	0.14124 0.7170 9
L_3	0.77109 0.0130 9	-0.01996 0.9593 9	0.82387 0.0057 9	-0.07583 0.8463 9	0.24398 0.5270 9	0.88755 0.0014 9	-0.41843 0.2621 9
L_4	0.47361 0.1978 9	-0.28130 0.4634 9	0.40089 0.2849 9	-0.63055 0.0687 9	-0.32381 0.3953 9	0.52843 0.1436 9	-0.48815 0.1825 9

	L_5	L_6	L_7	L_8	L_9	L_10	B_1	
L_5	1.00000 0.0 9	0.43155 0.2461 9	0.91927 0.0005 9	0.04000 0.9186 9	0.42254 0.2572 9	0.60761 0.0826 9	-0.09948 0.7990 9	L5
L_6	0.43155 0.2461 9	1.00000 0.0 9	0.27427 0.4421 9	0.48597 0.1816 9	0.42774 0.2508 9	-0.11076 0.7767 9	0.33365 0.3802 9	L6
L_7	0.91927 0.0005 9	0.27427 0.4421 9	1.00000 0.0 9	0.05375 0.8903 9	0.51421 0.1567 9	0.76852 0.0155 9	-0.12139 0.7557 9	L7
L_8	0.04000 0.9186 9	0.48597 0.1816 9	0.05375 0.8903 9	1.00000 0.0 9	0.73915 0.0115 9	-0.03254 0.9338 9	0.31640 0.4068 9	L8
L_9	0.42254 0.2572 9	0.42774 0.2508 9	0.51421 0.1567 9	0.73915 0.0115 9	1.00000 0.0 9	0.24934 0.5176 9	0.13641 0.7264 9	L9
L_10	0.60761 0.0826 9	-0.11076 0.7767 9	0.76852 0.0155 9	-0.03254 0.9338 9	0.24934 0.5176 9	1.00000 0.0 9	-0.08689 0.8241 9	L10
B_1	-0.09948 0.7990 9	0.33365 0.3802 9	-0.12139 0.7557 9	0.31640 0.4068 9	0.13641 0.7264 9	-0.08689 0.8241 9	1.00000 0.0 9	b1
B_2	-0.09458 0.8088 9	-0.02186 0.9555 9	-0.01187 0.9758 9	0.20236 0.6016 9	0.24629 0.5229 9	-0.16201 0.6771 9	0.68187 0.0431 9	b2
B_3	0.06969 0.8582 9	0.13885 0.7216 9	0.14795 0.7040 9	0.45236 0.2215 9	0.50682 0.1638 9	-0.03463 0.9295 9	0.49326 0.1772 9	b3
B_4	0.08944 0.8190 9	0.57445 0.1057 9	0.00400 0.9919 9	0.37585 0.3188 9	0.38740 0.3030 9	-0.43262 0.2448 9	0.20584 0.5952 9	b4
B_5	0.10007 0.7978 9	-0.01591 0.9676 9	0.15894 0.6830 9	0.20962 0.5901 9	0.32725 0.3900 9	-0.05606 0.8361 9	0.53970 0.1171 9	b5
B_6	0.58808 0.0958 9	0.40477 0.2799 9	0.46024 0.2125 9	0.43846 0.2378 9	0.51501 0.1559 9	0.29642 0.4396 9	-0.00702 0.9857 9	b6
B_7	-0.10455 0.7889 9	0.12155 0.7554 9	-0.05762 0.8829 9	0.26601 0.4690 9	0.22215 0.5656 9	-0.14497 0.7098 9	0.86931 0.0023 9	b7
B_8	0.08807 0.8217 9	0.40049 0.2855 9	0.08108 0.8357 9	0.45460 0.2189 9	0.49017 0.1804 9	-0.26435 0.4918 9	0.37975 0.3134 9	b8
B_9	0.51260 0.1582 9	0.28841 0.4517 9	0.46241 0.2101 9	0.48399 0.1868 9	0.63094 0.0684 9	0.17746 0.6478 9	0.41979 0.2604 9	b9

	B_2	B_3	B_4	B_5	B_6	B_7	B_8	
JUNE_BS	0.02128 0.9601 8	0.22540 0.5844 8	0.46570 0.2449 8	-0.17734 0.6744 8	0.10726 0.7804 8	-0.02243 0.9580 8	0.38390 0.3479 8	BS
NO	-0.38319 0.3511 9	-0.26202 0.4622 9	-0.31211 0.4136 9	-0.23322 0.5439 9	0.16681 0.6685 9	-0.28165 0.4625 9	-0.32763 0.3894 9	
MATRIC	-0.30843 0.1622 9	-0.23306 0.5462 9	0.40355 0.2811 9	-0.65325 0.0564 9	0.12468 0.7505 9	-0.30614 0.1644 9	0.10542 0.7872 9	MA
IQ	0.43987 0.2482 9	0.54092 0.1326 9	0.26697 0.4540 9	0.12103 0.7564 9	0.19681 0.6113 9	0.42832 0.2500 9	0.45126 0.2228 9	IQ
PRT	0.01134 0.9769 9	-0.01214 0.9753 9	0.02626 0.9465 9	0.22005 0.5694 9	-0.13310 0.7328 9	-0.02059 0.9581 9	0.00846 0.9828 9	PC
PRTE	0.18371 0.6361 9	-0.03298 0.9329 9	0.21983 0.5698 9	0.16933 0.6632 9	-0.33875 0.3725 9	0.23233 0.5475 9	0.10739 0.7833 9	PE
LP	0.16083 0.6793 9	-0.01935 0.9606 9	0.18050 0.6421 9	-0.04913 0.9001 9	-0.19091 0.6227 9	0.23628 0.5405 9	0.09229 0.8133 9	LP
BIOGRAPH	-0.21642 0.5760 9	-0.00071 0.9984 9	-0.41493 0.2668 9	-0.20299 0.6004 9	0.12051 0.7574 9	-0.30505 0.4246 9	-0.23624 0.5406 9	bio
INTVIEW	-0.88051 0.0039 8	-0.68255 0.0621 8	-0.14529 0.7314 8	-0.77726 0.0232 8	0.18752 0.6566 8	-0.83829 0.0093 8	-0.44401 0.2704 8	INT
LSP	-0.72528 0.0270 9	-0.67208 0.0474 9	-0.51606 0.1550 9	-0.49238 0.1781 9	0.00782 0.9841 9	-0.77981 0.0132 9	-0.65133 0.0574 9	LS
L_1	0.03918 0.9203 9	0.04407 0.9104 9	-0.17660 0.6494 9	0.38053 0.5374 9	0.22862 0.5541 9	0.03271 0.9334 9	-0.07691 0.8441 9	L1
L_2	0.08649 0.8209 9	0.08272 0.8324 9	-0.27830 0.4684 9	0.33595 0.3768 9	0.30447 0.4257 9	0.11750 0.7634 9	-0.11413 0.7700 9	L2
L_3	-0.41392 0.2681 9	-0.23359 0.5459 9	-0.39238 0.2962 9	-0.20257 0.6012 9	0.38004 0.3130 9	-0.45073 0.2234 9	-0.34726 0.3599 9	L3
L_4	-0.60914 0.0816 9	-0.64750 0.0594 9	-0.56283 0.1146 9	-0.43258 0.2449 9	0.01442 0.9706 9	-0.61105 0.0804 9	-0.64482 0.0607 9	L4

	B_2	B_3	B_4	B_5	B_6	B_7	B_8	
L_5	-0.09438 0.3098 ?	0.04787 0.6562 ?	0.08944 0.3190 ?	0.10007 0.7978 ?	0.56301 0.0052 ?	-0.10455 0.7589 ?	0.05207 0.6217 ?	L5
L_6	-0.02196 0.9555 ?	0.13685 0.7214 ?	0.57445 0.1057 ?	-0.01591 0.9476 ?	0.40477 0.2797 ?	0.15155 0.7556 ?	0.40049 0.2855 ?	L6
L_7	-0.01187 0.9758 ?	0.14775 0.7040 ?	0.00400 0.9919 ?	0.15354 0.6830 ?	0.46024 0.2125 ?	-0.05762 0.8629 ?	0.08108 0.8357 ?	L7
L_8	0.20236 0.4016 ?	0.45236 0.2215 ?	0.37585 0.3168 ?	0.20662 0.5901 ?	0.43846 0.2378 ?	0.24601 0.4890 ?	0.45460 0.2139 ?	L8
L_9	0.24629 0.5229 ?	0.50682 0.1638 ?	0.38740 0.3030 ?	0.32725 0.3900 ?	0.51501 0.1559 ?	0.22215 0.5656 ?	0.49017 0.1804 ?	L9
L_10	-0.16201 0.6771 ?	-0.03463 0.9275 ?	-0.43262 0.2448 ?	-0.05606 0.8861 ?	0.29642 0.4396 ?	-0.14497 0.7098 ?	-0.26435 0.4918 ?	L10
B_1	0.68187 0.0431 ?	0.49328 0.1772 ?	0.20584 0.5952 ?	0.55970 0.1171 ?	-0.00702 0.9857 ?	0.86931 0.0073 ?	0.37975 0.3134 ?	B1
B_2	1.00000 0.0 ?	0.82398 0.0063 ?	0.33278 0.3815 ?	0.90891 0.0007 ?	-0.03089 0.9371 ?	0.93430 0.0001 ?	0.62806 0.0701 ?	B2
B_3	0.82398 0.0063 ?	1.00000 0.0 ?	0.64927 0.0534 ?	0.63701 0.0650 ?	0.46359 0.2068 ?	0.75830 0.0179 ?	0.90172 0.0009 ?	B3
B_4	0.33278 0.3815 ?	0.64927 0.0534 ?	1.00000 0.0 ?	0.10485 0.7884 ?	0.55506 0.1208 ?	0.30896 0.4185 ?	0.91427 0.0006 ?	B4
B_5	0.90891 0.0007 ?	0.63701 0.0650 ?	0.10485 0.7884 ?	1.00000 0.0 ?	-0.11370 0.7708 ?	0.84283 0.0043 ?	0.39890 0.2876 ?	B5
B_6	-0.03089 0.9371 ?	0.46359 0.2068 ?	0.55506 0.1208 ?	-0.11370 0.7708 ?	1.00000 0.0 ?	-0.02374 0.9517 ?	0.56245 0.1149 ?	B6
B_7	0.93430 0.0001 ?	0.75830 0.0179 ?	0.30896 0.4185 ?	0.84283 0.0043 ?	-0.02374 0.9517 ?	1.00000 0.0 ?	0.57954 0.1019 ?	B7
B_8	0.62806 0.0701 ?	0.90172 0.0009 ?	0.91427 0.0006 ?	0.39890 0.2876 ?	0.56245 0.1149 ?	0.57954 0.1019 ?	1.00000 0.0 ?	B8
B_9	0.66757 0.0494 ?	0.82807 0.0056 ?	0.49171 0.1788 ?	0.67529 0.0459 ?	0.65599 0.0550 ?	0.62267 0.0733 ?	0.73079 0.0265 ?	B9