STUDENT ATTITUDES TOWARDS BASIC FEATURES OF A COLLEGE OF EDUCATION COURSE

BY

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To the staff and students of Madeley College of Education.

To my wife and family.

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Summary of this Research

The overall objective of this research was to find out if there were student attitudes relevant to teaching, which were important to success in the training course as measured by final results, and which changed as the course progressed.

The central objective was therefore to examine a number of hypotheses about the attitudes of students in a College of Education. The most important of these hypotheses was to find out what attitudes students actually held towards basic features of the course, to see whether there were significant differences in attitude between different portions of each year group of the sample, and to see whether individual student attitudes changed during the course. In this way it was hoped to discover how far the attitudes which a student takes up in his first year are determinants of his success on the course, how far possible estrangement between tutorial and student attitudes increases the problem of communication, and how far student attitudes towards basic features of the course become more or less favourable as the course progresses. These 'basic features of the course' were determined by an assessment of the consensus of opinion among staff and third year students; and, as a result of this preliminary assessment, it was decided to investigate the five areas of (a) Attitude towards work (b) Attitude to authority (c) Attitude to one another (d) Attitude to children and (e) Attitude to life in general, which was based chiefly on the continuum of the progressive/conservative outlook of the student.

However, attitudes do not exist in isolation, so it seemed useful to examine at the same time other personality variables which might have a

bearing on the student's attitudinal organisation. This was undertaken in order to see if there were any significant connections between particular attitudes and other personality variables, and to see if any of these affected the student's success in the course. It was also thought possible that results from this area of the investigation might show whether any common personality patterns existed among students, whether individual personality change took place during the course, and, if so, whether there was a pattern of direction in such change. These personality variables could be tested by published tests, but the attitude scales clearly had to be constructed.

These attitude scales used the Likert technique of construction, and it was thought worthwhile, in validating them, to test out a further major hypothesis. This was to find out whether the individual statement value of these scales changed over a comparatively long-term period, and, if so, how this affected the measuring capacity of the total instrument. It was hoped that by successive validation over a period of four years, instead of the more usual single validation, there might be developed a more effective long-term measurement instrument. At the same time, it was hoped that these successive analyses might provide further information about the dynamic nature of significant attitude statements in a relatively closed community.

The experiment therefore consisted in examining the attitudes and major personality variables of students throughout four successive years. In this way the progress of a single year-group through the course could be followed, a comparison between year groups who were unknown to, and unaffected by, each other could be made, and a broad comparison of the attitudinal situation

between the first, second and third years of the course could be repeatedly checked. It was hoped that in this way the significance of student attitudes as a factor in the course might emerge. For example, what number of students significantly change their attitudes during the three years of the course, what attention needs to be paid to attitude development when designing courses and organisational structures in a college, or can attitudes in actual fact be thought of as affective objectives in a particular course.

The statistical methods used in this experiment were chiefly those of correlation, significance of difference between means and simple factor analysis, but these varied in accordance with the nature of the material being used. The whole experiment covered a period of four years from initial validation to final administration of the tests, and took place in one college.

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CHAPTER ONE

STATEMENT OF THE PROBLEM

Background to this Investigation

Higher Education in this country has undergone a major expansion since the war. The result has been that the majority of students in provincial universities and colleges have been first generation students coming from a wider social area and covering a somewhat greater range of intelligence (Robbins 1963) than pre-war college populations. At the same time expansion has meant a new influx of staff into higher education (W. Taylor 1969) who were bound to bring fresh ideas on education and thus provide a background conducive to change. The power of assimilation of traditional institutions of higher education has thus been eroded by the size of post war expansion.

In addition, the role of higher education has also been affected by change. The pre-war concept of a more or less static society is giving way to that of a dynamic, planned society, based on an awareness of the importance of change itself; and places of higher education are more and more seen as instruments in this process of change. There is thus developing a new impetus in the examination of traditional techniques of higher education. The university is becoming more aware of its role as a teaching institution in selecting and examining its students (Furneaux 1961), while the college of education is increasing its effort to become a place of higher education as distinct from one of mainly professional training (Weaver 1966, James 1972).

It is from the basis of this kind of thinking that this research starts. W.D. Wall (1968) has said that in fact we are witnessing a revolution in the initial education of teachers, and yet there is surprisingly little research

which directly bears on the effectiveness of the preparation of students for teaching. In fact, the N.F.E.R. Conference on research into teacher education (1968) showed just how little is actually known, how little teacher educators in this country are geared to active research, and how many lines of investigation are immediately necessary. The present investigation is an attempt to pursue one of those lines; namely, that of the significance of attitudes and attitude change in the training course in one college of education.

Need for the Investigation

It has frequently been assumed (Allen 1963; W. Taylor 1969) that the attempt to compress training for a lifetime of teaching into a three-year course could be considered quite impossible unless it were conceived as a matter of fostering certain attitudes. Yet this claim has never been substantiated either in respect of a single college or of colleges in general. How far attitudes which are considered as conducive to effective teaching, are encouraged or engendered during the period of the college course is thus a question which very much needs to be examined.

At the same time, however, one cannot look at attitudes in a particular situation totally in isolation. It is necessary to look at other trends in the situation to see if they have any significant relation with the attitudes exhibited. It may well be that particular clusters of student attitude are the result of particular features, such as student age, subject department, professional orientation, individual personality, or reaction to staff attitudes. An examination of the relationship between student attitudes and other features of the course is therefore also necessary.

Furthermore, much doubt has been thrown (Cohen 1964) on the usefulness of attitudes as a psychological concept at all. While attitudes undoubtedly exist and are influential determinants of behaviour, their relation to the situational background and the uncertainty of their permanence renders their measurement somewhat suspect. There thus needs to be some examination of the long term validity of attitude scale measurement, particularly when a selected base sample is used. Thus this too needs to be considered very carefully before the results from the investigation can be effectively evaluated, since the basis of the whole problem investigated here is one of comparative evaluation rather than one of measurement against some fixed and invariable criteria.

Purpose of the Investigation

The overall purpose of this investigation, therefore, is to discover what actually happens to certain student attitudes, if anything, during the period of the course, how far this is linked with course success, and how far significant attitudes themselves are likely to change over a period of time involving completely dissociated groups of students.

Thus the scope of the experiment is to examine attitudes to some of the basic features of the college course in order to discover what is their level, whether they, in actual fact, do change as the course progresses, and, if so, in what direction. The possible significance between these attitudes and other features of the course, and the possibly dynamic nature of the attitudes themselves, will also form part of the investigation.

Limitations on the field in investigation

Obviously there are two problems, implicit in this statement of purpose, which need to be considered. The first is to consider the limits of the context in which these attitudes operate. In this research the context was limited to one college of education, and to the criteria operative in that course. The second problem was to consider what attitudes were to be investigated . These similarly need to be related to the situational background, and were therefore defined by the consensus of opinion among third year students and staff, since these together help to determine what is the end-product of the course. Thus they were empirically determined with reference to this college situation rather than on any theoretical basis of what attitudes should be inculcated in teacher training generally.

General Method of Approach

The experiment therefore took the form of repeated testings of a programme of attitude and personality variables (see p. 41 Ch. 3) over a period of four years. The first year was concerned with establishing the attitude scales to be used, and this was done on a sample of a whole third year group of students. The remaining three years were spent in annually testing a representative sample from each year of the course. In this way a picture of the attitudes of one group of students in each year of their course was obtained, together with nine comparative pictures of the different year groups of students taking part in the course during the test period. Thus what were typical first, second and third year student attitudes could be determined, as well as how a student's attitude developed through the successive years of his course. In addition, other variables such as student age, sex,

social class, school achievement, sociometric status and course success were taken into consideration. The sample was also divided into its various subject and educational groupings. It was hoped to establish any significant linkages between all these variables and groupings by the emergence of repeated significant correlations or differences between means and the use of factor analysis where possible.

At the same time the unrevised schedule of 305 attitude statements, and the revised attitude scales developed from it, were subjected to repeated analysis. This was done in order to gauge the change in the significance of the individual statements in the attitude scales over a period of four years, thus involving student samples which had no direct influential connection with one another.

Conclusion

This research thus sought to discover some part of the attitudinal structure of an individual college, to uncover evidence which college teachers might find useful, and which might prove valuable in showing some of the determinants of student success in a college course. At the same time, it also sought to discover if attitude scales remain valid instruments of measurement over a relatively long period of time, or whether the attitude situation in a college is so dynamic as to make objective scales representative only of the sample on which they are based.

CHAPTER TWO

RESEARCH ON ATTITUDES AND PERSONALITY QUALITIES IN THE TRAINING COURSE

Introductory Statement

The volume of English research into teacher education has so far been very small indeed, and American research, though much more voluminous, has likewise been rather indecisive in its results. Hence an investigation into any one of the variables in a college course has to take account of the fact that there are a large number of as yet uninvestigated factors in the course which may have relevance to the aspect under examination.

An investigation into attitudes in a college course faces a number of difficulties of this nature. One is that the relevance of student attitudes in the course cannot emerge until an attempt has been made at charting the objectives of the course. There is also the problem of measurement of variables which are likely to be multi-dimensional and interactive. Then there is the further problem that different institutions are likely to have different internal organisations, as well as objectives, and these too may produce different effects on their students.

One possible solution to this problem of the complex ramifications of evaluation, as L. Cohen (1968) points out, is to limit it by formulating a number of specific statements which reflect aspects of the general goals of teacher training. The extent to which the student accepts or rejects these statements, and their implications about a teacher's values and attitudes will indicate his progress towards that stated objectives. This solution does not escape the problem of discovering objectives, nor does it take into

account situational or formative influences on attitudes, but, within its limitations, it does make evaluation of existing attitude strength possible, and hence can yield some useful information about the training course. This restricted view of attitude measurement is therefore taken in this research.

However, the complex ramifications of evaluation referred to by Cohen do demand a consideration of more than just previous attitude research in this summary of research, so that this present investigation can be seen in its proper context. Thus, this summary is concerned with finding out what is known about (i) educational objectives basic to the teaching of teaching and (ii) previous attitude research in teacher education, including the situational impact of the institution on the attitudinal structure of the student.

Research into Teacher Effectiveness.

An attempt to examine the professional objectives of colleges of education must concern itself with the research on the topic of teaching effectiveness, which has taken place both in the sphere of teaching practice and in that of actual teaching. Teacher effectiveness has attracted a great deal of study in America and, to a much less extent, in England, but the results have so far been negligible. In fact, so negligible have they been that many researchers have abandoned the field of competence research as being too simple an approach, and have tended to concentrate on the study of classroom interactions (Biddle and Elena 1964). However, while it is no exaggeration to say, as Biddle and Elena pointed out and as Cope (1969) has since re-affirmed, that we do not know how to select for, train for or evaluate teacher

effectiveness, it is nevertheless necessary to continue the search, since it is so practically essential. The following consideration of investigations into teaching practice and teaching are therefore both considered.

Research into Teaching Practice Criterion

There have been three lines of research followed in the search for improvement in the teaching of teaching; of which the third is specifically concerned with the criteria for successful teaching performance. The first line of research has aimed at changing the style of supervision (Eggleston and Caspari 1965, Coltham 1966, Clark 1967), with the aim of securing more practical aid to the student. The second has directed itself towards considering the impact of teaching practice on the student. This has been the line followed by McGrath (1950) in the U.S.A., and investigations such as those of Collier (1959), Tibble (1959) and Carroll (1962) in England. In general they have found that it is the immediate situational problems, such as worry over discipline, inducing pupils to work, adjusting instruction to pupil needs, and so on, which are the most pressing concern of the student. From this research it would seem that the main training need is for the teaching situation to be analysed in terms of specific functional skills, and the student to be trained in these. This is the third line of research which has been pursued by investigations such as that of L. H. Stewart (1956).

Stewart's investigation into specific practice requirements for teaching success maps the outline of the functional situation. Using the critical incident technique, developed by Flanagan (1954), he found that organisation, planning, interpersonal relationships, subject matter, instructional

procedures and class management were the most important requirements for teaching success. A similar experiment by Bush and Allen (1967) at Stanford University into the training of specific teaching skills resulted in a programme concentrating on the six skills of organisation, presentation, stimulation, questioning, testing and rapport. In their test programme Bush and Allen produced a significant difference between the test and the control group in teaching competence, as well as in the student's ability to analyse his own performance.

Poppleton (1968) followed a slightly different line in her effort to structure the teaching practice situation by tabulating the criteria against which the student's performance in it should be judged. She developed an assessment form of the global characteristics thought to be significant for teaching practice success by both college supervisors and schools. Both parties rated highly the power of self assessment, subject knowledge and preparation, originality and the ability to arouse active participation, but, after that, the supervisors tended to accent academic qualities while the schools tended to concentrate on the personality aspects of the student's performance. Start, while at Manchester University, also began developing a similar structured assessment form for use by college staff. These rating schedules present a useful step in the direction of standardising the teaching practice assessment situation and arriving at agreement on the main objectives, but as Biddle and Elena (1964) earlier pointed out, they do not constitute a master blueprint for the teaching of teaching; they are only an effective guide to a range of teaching situations.

These schedules, however, do serve to highlight the important part that affective factors have to play in teaching, and this conclusion has been reinforced by a number of researches relating personality qualities to effectiveness in teaching. Lovell (1951) pointed to the need for empathy as well as intellectual ability in successful teachers, Evans (1952) confirmed this by pointing to the need for empathy and feedback in the pupil-teacher relationship, and Tarpey (1960) similarly emphasised the importance of sympathy and understanding in teacher trainees. Skinner (1949) concentrated on the student's need to have an ability to arouse interest and evoke co-operation, which was reiterated by Allen (1963) as a need to have personal resilience underlying efforts of presentation. Uttley (1952) found a significant correlation between student's rankings of one another on qualities of leadership, mental alertness and emotional stability with teaching practice success as assessed by college tutors. Phillips (1953) resear in the following year into selection methods for college students showed a similar correlation between personal qualities and teaching success. Phillips listed these qualities as sympathetic understanding of children, friendliness and emotional stability, and found a .505 correlation between these and teaching practice success; and Dale (1966) further confirmed the importance of these same qualities in a separate experiment on selection for teacher training.

However, a student's success in teaching cannot be arrived at simply by a summation of certain personality factors. The fact that the criterion of effective teaching must be a composite one, taking account of interactive factors, is pointed out by Evans (1952). She suggested that a criterion can

be arrived at partly by reference to the feelings of the worker, partly by reference to the products of the labour involved and partly by reference to those with whom the worker comes in contact. Robertson (1957) reinforced this kind of conclusion in producing a profile of teaching qualities which consisted of eight clusters of interrelated personality traits which he claimed were essential to effective teaching performance. Halliwell (1965) similarly emphasised the fact that as the criteria for effectiveness in teaching can be intellectual goals, affective attitudinal goals or general educational goals, the fairest criterion is likely to be a composite one, which, though it may not very accurately reflect one aspect of the teacher's performance, will do most justice to his all-round effectiveness as a teacher. It would therefore seem that successful teacher performance is multi-dimensional and consisting of interactive factors, rather than univariate in its action.

This multi-dimensionality makes the problem of measurement difficult, but there are other complicating factors too. Wiseman and Start (1965) showed that the actual predictive value of teaching practice assessment over the first five years of the teacher's life is very small. Robertson (1957) has shown that the influence of the teaching practice school can have a great effect on the student's final grade. Thus there are practical factors in the situation as well as the multi-dimensionality of teaching performance which make valid measurement very difficult indeed, and practical outcomes from the research difficult to apply.

Finally, some researches, such as that of Cope currently taking place at Bristol, have been devoted to an examination of the whole web of pressures which go to make up the teaching practice experience for the student. Interaction analysis (Amidon and Hough 1967, Flanders 1969) is a parallel attempt to objectify the dynamic relation of the verbal components of the teaching situation. However, as Cope says in her review of research into teacher education (1969), research has only just begun to get under way in this field in the last six or seven years in this country, and there is little so far which makes explicit the objectives of teacher education or the degree of success in achieving them. Even so, the possibility of linking 'process' with 'product' variables in the course has emerged and represents a real opportunity for eventually arriving at a better determination of teaching effectiveness, though it has occurred too late to have much direct effect on this present research design, apart from supporting its relevance.

Research into Teaching

These conclusions seem to have been broadly substantiated by parallel research into teacher effectiveness in the profession. The Stanford University Secondary Teacher Education Project (Bush and Allen 1967) lists five functional qualities as being peculiar to the teacher as a professional person. These are concern for children concern for the teacher's own professional standards, active awareness of the school as part of the community and awareness of the teacher's own active role in the community. None of these have been really investigated by research, nor do they seem to form a

significant part of the training programme for teachers* (Inlow 1960). The investigation by Goodacre (1968) showed that frequently not more than one in three teachers live in the area from which the school draws its pupils, and often the influence of different class origin makes it difficult for teachers to thoroughly understand their pupils, as well as making an actual difference in the amount by which pupils can profit from their education. Generally, Goodacre found the teacher's attitude to the child's home background and to the child himself, was related to the personality dimension of authoritarianism in the teacher. Thus, democratic teachers tended to be more favourable in their attitude towards their pupils' home backgrounds, to show more concern for children and to be less pessimistic in their estimates of the school's ability to influence pupil values. These functional attitudes therefore appear to emanate from the personal value structure of the teacher, not as a reaction to the social milieu of the school in which he teaches.

Ryans (1960, 1964) in his ten year investigation into effective teacher qualities, found a very similar pattern of generalised, multi-dimensional teacher qualities to that found by teaching practice research.

* It is interesting to note, however, that when asked to define the basic areas in the teacher training course the tutor and student informal committees in this investigation both independently returned at least two of these five qualities as being critical for student success in the course.

The main problem for him was one of defining the major dimensions of teacher classroom behaviour. He suggested that these are three-fold:-

Pattern Xo	warm, understanding VS aloof, egocentric behaviour
Pattern Yo	responsible, business like VS evading, unplanned behaviou
Pattern Zo	stimulating, imaginative VS dull, routine behaviour

At least one of these dimensions (Type Zo) has been substantiated by later research (B. Rosenshine 1970) as having a positive correlation with pupil achievement, and pattern Xo has been shown to have a relationship with pupil/teacher adjustment if not achievement (Davies 1961). Ryans further suggested that the qualities which go with high scores on these scales are generosity of judgement, high verbal intelligence, democratic outlook and good emotional adjustment. From this work he developed self-report inventories which sought to identify attitudes and early experience which might be predictive of these patterns of behaviour, though this was an effort which later research has so far shown to be somewhat suspect.

Later research, as listed by Biddle in 1964 and Flanders 1969, tended to show that Ryans was the culminating point of a particular direction in the search for the constituents of teacher effectiveness. Ryans had attempted to find the general dimensions of teacher behaviour which were most conducive to teaching effectiveness, but later research has tended to emphasise the interactive nature of the situation which produces these behaviours. Biddle sums up the difficulty of the problem in his seven-fold sequential

classification* of teacher effectiveness, and Flanders (1969) supports him with his simpler model of presage-, process-, and product variables. In this way it has been shown that teacher properties, such as attitudes or motivations cannot be the sole determinants of effectiveness, but are an important generalising factor in such success.

These broad conclusions have been supplemented by English research on teacher qualities. Vernon (1960) found that teachers are as diverse in traits as persons from any other occupational group, so that the possibility of finding a distinct teacher personality is unlikely. Thompson's investigation (1958) into sex differences in teaching attitudes among graduates agreed with Ryans' findings, though it did confirm some sex differences in attitude. Thompson found that women were more religious, social, tender-minded and educationally progressive than men, but both were diverse in the range of their personality qualities. Thus the early evidence of Strong's Interest Blank (1943), where a distinctive teacher pattern did not emerge, was largely substantiated, though whether this is due entirely to the nature of the job or to extraneous factors, such as the pressure of demand for teachers, has not been clarified.

Hence, while a characteristic teacher personality has not emerged, it seems possible that the successful teacher may be characterised by a small number of personality qualities, resulting in recognisable dimensions of classroom behaviour and attendant teacher attitudes. However, there would

* Teacher effectiveness classification. (Biddle and Elena)

A. Sequence variables:- formative experiences, teacher properties, teacher behaviours, immediate effects long term consequence

also seem to be a number of important qualifications to this general conclusion. One is that there seems to be a division of opinion on the criteria of judgement between the college on the one hand and the school on the other. Poppleton (1968) noted that after agreement on the basic functional qualities of teaching practice students, teachers tended to stress affective factors while college supervisors stressed intellectual factors as being necessary for teaching success. Drabick (1967) similarly stressed a division between the 'idealistic' college training and the 'realistic' school training. The second major qualification is that in arriving at any general conclusion allowance must be made for extraneous factors in the interpretation of research situations, just as much as in measurement situations. It is this fact, already evident in this survey so far, that led Ryans to stress that variations in criteria (which he divided into the three broad classes of ongoing teacher behaviour, the product of such behaviour, and the concomitants of such behaviour) could lead to apparently conflicting conclusions, unless there was careful consideration of the actual research models. For example, Popplcton's general conclusion would have emerged much less clearly if her teacher sample had been more representative of University trained Secondary teachers. The third qualification is that one must also accept Ryans' later limitation (1964) that predictivity cannot be guaranteed from his research, it only shows the characteristics of successful teachers at that time. The final qualification to be noted is that Ryans' conclusions are only true on an actuarial basis, and certainly cannot be applied directly to the individual in a particular situation.

The conclusion from this field of research would therefore seem to be that attempts to isolate teacher 'qualities' can lead to over-simplification

in interpretation of the teaching situation, and hence failure in prediction of teaching success. Nevertheless, it is legitimate as Biddle pointed out, to consider such qualities as one of the generalising factors underlying teaching behaviour. He listed these qualities as intelligence, warmth of personal relationships, democratic outlook, and empathy with children. Flanders (1969) in the latest attempt to sum up research on teacher effectiveness, arrives at two conclusions. First, that too much research still relates to isolated, single-shot, correlational studies which have little to do with educational objectives. Second, that there has begun in the last few years a promising change towards identifying and studying 'process' variables in teaching. It is a major object of this present research to see how far those personal qualities and attitudes which staff and students think important in the course, and which might well be described as 'process' variables, actually affect success in the course.

Attitude Research in Teacher Education

Reasons for Studying Attitudes in Teacher Education

Cope (1969) points out that the majority of experiments going on at the present time in teacher training are arising from the colleges themselves on an ad hoc basis, and not on the basis of organised research. Cane (1967) also made the point that little investigation was as yet taking place in teacher education, and W. Taylor (1969) echoed him in saying that there is a pressing need to investigate what goes on in the actual process of the training course. There is a need therefore for more, organised, long-term investigation. Furthermore, the research on teaching effectiveness, and

the opinions of the profession as elicited by Cattell (1931) through to Poppleton (1968), all seem to show the importance of non-cognitive objectives in the teaching of teaching. Hence, the monitoring of some basic student attitudes during the course should give some indication of what happens to students during the course in what is generally held to be an important area of their training.

In addition to this, however, it is becoming more and more realised that higher education must diversify more effectively in the analysis of its own goals and paths of training in order to meet the varying needs of its population. Cornall (1964) points out that we do not know what are the different functions and training effects of different institutions, such as polytechnics, traditional universities and so on, and yet we need to know this if we are going to cater more effectively for the full range of the higher education population. This is even more true when the internal situation of a college is considered. Different types of student are likely to need different treatment. Duffy and Crissy, as long ago as 1944, noted that able students were likely to have high theoretical and aesthetic and low political and economic scores. Evans (1953), using the attitude test 'Teachers and Teaching', found that uncritical enthusiasm and acceptance were more likely to be found among the less intelligent students. This type of student was also found to prefer the direct, formal lecture method of instruction to the discussion/discovery type of approach. Adorno (1950) likewise itemised the authoritarian personality as having a blind belief in authority and a liking for given information, while Koenig and McKeachie (1959) showed the preference of liberal minded students for participation in

small groups. Beard (1967) suggests that certain attitudes preclude critical thinking, while others promote it, and implies that the fostering of originality is the University's main aim. Thus the need to cater in teaching methods and consequent organisation for the different needs of different students seems to be quite well established, though largely ignored in practice despite reinforcement by the Hale report (1964).

There is the further possibility, however, that instead of merely catering for students' needs, an educational institution has a duty to directly promote certain attitudes. This has immediate application in a College of Education aiming at the inculcation of 'teaching' attitudes. Unfortunately, however, hard evidence suggesting that colleges can effectively inculcate such attitudes is rare. Newcomb's (1943) investigation of Bennington appeared to show how the general atmosphere of a college could affect the adoption of attitudes by incoming students, but his follow-up study in 1967 failed to support his earlier results nearly so conclusively. Evans (1965) commented that the results of the Bennington experiment were not enough to gauge either the degree of influence the college exerted, or the amount of action resulting from these attitudes after the student left college, and these are both important weaknesses of the original experiment. Furthermore, experiments in the last decade (Plant 1962 , Lehmann 1963) have shown that frequently the same amount and direction of attitudinal change occurs in college drop-outs as in students who remain in college, so it would appear that the influence of maturation must also be allowed for. It would therefore seem that the possibility that a college can have a direct and conscious influence on students is one that is as yet not proven. In fact,

it would appear that our understanding of the complex, interactive nature of learning environments must be considerably increased before this can become more than a possibility. However, the possibility does exist, and provides a further reason for examining what happens to student attitudes during the training course.

The Impact of the Institution on Student Attitudes

The next area of research to consider would therefore appear to be concerned with the effect of the institution on the possible achievement of affective course objectives. The need for such investigations into the impact of educational institutions on the student has been emphasised repeatedly in the last few years. Riesman (1959) in America pointed to the diversity of American educational institutions and suggested a need for a new emphasis on discovering the nature of learning environments and institutions. W. Taylor (1969) makes the point that information such as that contained in Conant's 'Education of American Teachers' (1963) is almost completely lacking in England, and urges the need for a systematic analysis of the college of education course as a necessary step in the evaluation of objectives. A very useful preliminary to such an analysis, of course, would be a taxonomy of educational objectives, such as that of Bloom (1957). Bloom made the point that education is total and that therefore affective objectives must rank equal in importance to cognitive objectives. He also made the important distinction between 'knowing' and 'doing' which Shipman (1967) echoes in considering the relation between theory and practice in the college of education. Academic theory is illuminated, and motivation for its mastery increased, by related practice in the functional situation.

Shipman (1965) also notes that the impact of the institution changes with growth in its size, so that the pattern of social organisation in the College is very much a factor in the qualitative growth of its students. Thus the importance of investigating institutional effect in detail, and some of the kinds of factor which might be usefully investigated, have been emphasised, though the actual volume of English research is still very slight.

Jacob's investigation (1957) into the value outcomes of teaching general education courses in the social sciences in American colleges was one of the most far-ranging researches of this kind. He found little evidence of actual change in student values, though considerable support for the view that the college tends to socialise rather than liberalise student values. The impact of the course seems to be in the direction of greater homogeneity of values rather than real change; and this holds true whether it is the influence of the curriculum, the instructor or the teaching methods that are taken into consideration. Only in the case of a few, usually small, colleges of distinctiv character are there exceptions to this general rule. In these colleges, where a high level of college expectancy in a particular direction for their students seems to exist, there is a student response which is markedly different from the national pattern. Students seem drawn to live up to the college standard, even if it means a considerable departure from previous ways of thinking. The overall result of this nation-wide survey therefore was that college courses, except in a few particular cases, tend to have little impact on student redirection of values, but considerable effect on encouragement to respond to a college based norm, which generally was confirmatory of already existent student values. In short, it was the

encouragement of homogeneity of outlook in values that was the colleges' chief contribution in value education, but college size and distinctiveness of orientation did have its effect.

Marsland (1969) in England, develops the theme of the professional socialisation of the student much further in his paper presented to the fifth annual conference of the Society for Research into Higher Education. He studied student orientations in a single year-group at the beginning and end of their course, by means of self-completed questionnaires, and noted that considerable change had taken place during the course. In what was an exploratory investigation he tentatively makes the point that there are in effect four sociological routes through the social system of teacher education. These are the professional, apprentice, independent and anticipatory routes, with the major dichotomy existing between the professional and the apprentice routes. Each of these routes has its own attitudinal structure, and he exposes the colleges' structural dilemna in either aiming at early professional identification (with consequent conservatism), or postponing identity crystallisation in order to obtain student identification with a progressive and innovative definition of the teacher role. He thus suggests that student attitude structure is to a considerable extent a concomitant of course organisation. He also makes clear that the structural organisation of the college, both formal and informal, makes a difference to the students' attitudes towards a teaching career. For example, students who evaluate the Education part of the training course highly tend to become more affective and educational in their classroom orientations. One of his major conclusions therefore is a demand for analysis of the functional relationships between

the elements of the social structure and culture of the college as an organisational system, because of the influence of these elements on the student's attitude structure and his perception of his professional role.

L. Cohen (1968) in his summary of recent attitude research, supported Marsland's position. Cohen divided attitude investigations into two categories: those which did, and those which did not, take into account the situational influence of the institution. He pointed to Newcomb's (1943) study as exposing the significant influences for future investigations of home environment, the college peer-group and sub-groupings, and the influence of the college as a total membership group. There have been a number of investigations on peer group influence, of which perhaps the most important has been that of Wilson (1966), which concluded that faculty importance accounts for only 25% of the total influence on the student. Attitudinal relationships between staff and students (Bushnell 1960, Shipman 1967, Lortie 1959, and Corwin 1961) in a number of different types of professional institution have also been studied, and there has generally been found to be a tacit agreement developing between students and staff quite early in the course on the ideas which the course represented, as well as on the more practical requirements of work loads and course requirements. Shipman particularly points out that this type of 'response set' might well help to account for differences between self-reported attitudes and actual behaviour, and could help in explaining the widely noted difference between attitudes adopted while a student and those subsequently adopted when in the profession. Clearly, the movement towards analysing the institution as a dynamic learning environment is only just beginning. The College Characteristic

Index (Pace and Stern 1958) is an example of the kind of instrument developed for this purpose. Boyer and Michael's (1968) investigation is an example of this kind of research model. They compared staff/student perceptions of college environments in religious and non-religious colleges, and found significant differences in the unity of perception between the two types of college. In England little work of this kind has been done so far, but enough has been done to establish its importance as a major influence on the attitudinal structure of the student, and on the importance of finding out more about what students' attitudes actually are.

Sanford (1962) summed up the major part of the American work that has been done on the attitudinal and personality effects of a college education. He begins by pointing out that there has been too little research in this direction and that, while the value of a college education is generally assumed, there is very little empirical evidence to support such an assumption. However, he points to the work of Webster, Freedman and Heist (Chapter 24) to show that there is in general a change among students during college towards greater liberalism and some sophistication in political, religious and social views. This, while a more encouraging view than that of Jacobs, is still only a tentative one. Furthermore, the authors stress that no link between student change and educational activity can be found, so that this is still not a very encouraging finding, except in its affirmation that change does take place. W. Taylor (1969) likewise looks at the English scene in teacher education to see if there is evidence of attitude or value change. He points out that the literature of teacher education frequently emphasises a value orientation for the colleges of a liberal education round

a vocational core, based on a view of the teacher's function as being a socialising rather than merely an instructional one. This concept of a child-centred education implies a person-centred training (Langeveld, M.J. 1963), but there is little evidence that this is more than partially successful in influencing student role behaviour and personality formation. Taylor concludes that the lack of hard evidence makes it difficult to assess the role in this important area of the influence of teacher training on the teacher's attitudes and values, but that it is vital that this should be done, since it is from these that the teacher's response to specific problems will be derived. Thus both American and English research emphasise the need for further investigation of the attitudinal effects of college courses.

However, investigations on institutional effect may tend to obscure the possibility that deep-seated personality dispositions do not change easily, and that behavioural reactions in a situation may be the result of interaction between a personality disposition and the situation rather than simply the result of attitude alignment engendered by the situation. In this sense Marsland's work may be an oversimplification of the actual, interactive situation. The complementary viewpoint therefore needs to be borne in mind that attitudes are as much an expression of the deeper personality structure of the individual as of his reaction to a particular learning environment.

The Nature of Attitudes and their Relation to Behaviour

Thus it is necessary to try to establish the psychological nature of attitudes themselves in order to see how far they are likely to be influenced, and how far they are important in influencing behaviour. The great

difficulty in predicting levels of performance, generally, in normal people, seems to be in the multi-variate origin of an individual's behaviour. Motivational factors, pathological weaknesses, levels of aspiration, and so on, all make their contribution to behaviour, and any attempt at their individual assessment increases the subjectivity of the final prediction (Taft 1959). What seems to be the best approach is one which does not seek to isolate the apparently discrete roots of behaviour, nor the absolutely immediate situational frame of reference, but the half-way house of the relatively permanent attitudinal base which every individual has, and which consistently affects his behaviour.

Cattell's (1949) Ergic Theory of Attitudes illustrates how attitudes can be important determinants in behaviour. He stressed that an attitude is an amalgam of the five aspects contained in the following sentence:- "In these circumstances /I/ want so much/ to do this/ with that." In doing so, he underlined the fact that an attitude is concerned with the direction, the goal, and the strength of the resulting behaviour; and that in a certain situation it is only a predisposition towards particular behaviour. Gage (1963) later summarised American attitude research, and said that all definitions agree on four fundamental points. These are (i) that attitudes are largely socially formed, arising out of individual experience and training, (ii) that they are orientations towards others or towards objects, (iii) that they are selective, providing a basis for consistency of behaviour, (iv) that they reflect a disposition to an activity, not just a verbalisation, and therefore represent the underlying personality dispositions or motivational urges of the individual.

The difficulty, however, lies in distinguishing where this personality disposition ceases to be sufficiently deep-seated to be so-called and becomes a dispositional attitude. Eysenck's (1952) postulation of the organisation of attitudes into four levels partially meets this problem. A classification supplementary to this is that supplied by Bloom (1957), and is in terms of the attitude's degree of commitment to action. At its most strongly held level, action consonant with the attitude is likely to emerge throughout the range of situations to which that attitude is applicable, but at its weakest level, that of specific opinion, other situational factors may easily inhibit action appropriate to that opinion. Thus it seems that attitudes are basic to any study of behaviour, but that it would be unjustified to expect a constant strength and direction of action to result from a particular attitude held at a particular level. In fact, A. R. Cohen (1964) makes it clear that this relation of attitude to action remains an unsolved problem, and that procedures for producing attitude change may do no more than cause cognitive re-alignments.

Attitude Change

It thus appears that attitude patterns in students, within the limitations noted above, are a promising field to explore in trying to discover how to train them more effectively. However, this rests on the assumptions that attitudes can be changed, that they can be measured accurately, and that role conceptions are the same for all categories of teacher and of personality.

Such evidence as there is for our ability to change attitudes points to free group discussion as a better method than lectures. Abercrombie's (1960) investigation into perception and free group discussion showed distinct changes

in attitude on the part of group members, and a reduction in aggression of some of the more forceful members. Barnett (1964) reported similar findings, and also a positive increase in the amount of critical thinking going on in the group. King and Janis (1956) showed how unconscious attitude change can take place in students who are forced to become actively involved in a topic. This is paralleled by Kelman's (1962) experiments, which aimed at showing that an attitudinal quality can be fostered merely by practising the requisite behaviour for it. Lewin (1958) and Bennett (1955) have both done work on student involvement as a method of changing attitudes. Bennett found that asking for group decision about future action increased the level of commitment, while Lewin used a consensus of perceived opinion in the group as the lever with which to change individual attitudes. Rabinowitz and Travers (1955) in America tried to establish the respective impacts of conventional and progressive teaching programmes on pupils, and this study was followed up by Steele (1958) in England. The progressive programme in both experiments yielded clear improvement in pupil/teacher attitudes and learning participation. Methods for securing overt attitude change thus do seem to have been explored to some extent, but how far the attitude change shown is a valid and permanent response is as yet uncertain. Oliver (1953), for example, showed that a sample of teachers' professed educational beliefs were consistent with modern theory, but their classroom practice showed no implementation of these beliefs. Shipman (1966) similarly, in his analysis of a training college, found that there were a number of determinants of behaviour in the college system. Behaviour seemed to be less a response to specific, official demands so much as a generalised

accommodation to institutional pressures in the social system. He would thus appear to suggest that this generalised pressure discounts the possibility of effective attitude change by specific and isolated techniques. It is this generalised pressure to which the student tends to conform while in college, and which may well account for his quite frequently rapid change in attitude when translated to the separate pressure system of the school.

Studies of general attitude change have likewise shown uncertainties in their prediction of subsequent action. Butcher (1965), comparing groups of students and teachers, found gains in naturalism and radicalism during the college course, but found reversal of these gains after some time in full-time teaching. Morrison and McIntyre (1967) found similar changes in opinions about education between the last year in college and the first year of teaching. Such gains in attitude during the College course have been reported quite frequently (Callis 1950, Palmer 1954) and a similar decrease with actual teaching experience (Day 1959, Lipscomb 1956, Rabinowitz and Rosenbaum 1960) has likewise been noted. It is extremely likely that this is due to the change from the 'idealistic' frame of reference of the college to the 'realistic' one of the school (Drabick 1967, Finlayson and Cohen 1967, Gross 1965), but it may also be due to uncertainties of measurement.

The difficulties of attitude measurement are illustrated by a number of studies which have, for example, examined the validity of the M.T.A.I. Tiegland (1966) found that the student with the highest positive attitude change in his sample, had also the highest scores on a deference scale

designed to show their acceptance of staff influence. The possibility of 'faking good' on the M.T.A.I. has also been shown by a number of experiments (Oliver and Butcher 1962, Rossi Yengo and Boyd 1966, Eson 1956). Clearly, there is some pressure on students to make the expected responses. Shipman (1967) suggested that students give 'onstage' responses which may be incongruent with their backstage beliefs, and Hammon (1959) reported that only by conforming to the expectations of the academic staff could the engineering students in her sample hope to survive the course.

Furthermore, there is the additional complicating factor in attitude measurement that role conception may be different for different kinds of student, and different again from that of college staff. Steele's study, for example, found that infant students were more progressively orientated than junior students both at the beginning and the end of the course. Finlayson and Cohen's study supported this conclusion in finding that students training to teach older children were much more authoritarian than infant trainees. Sorenson (1967) showed the anxiety and hostility produced in students on teaching practice owing to conflict on role conception between college supervisors and school staff. He followed this up (Sorenson and Halpert 1968) with an investigation which identified role disagreement between student and supervisor as a major stress factor in 60% of the students sampled. There are therefore a number of factors in this area which may distort measurement. However, while role conflict is thus shown as a complicating factor in the specific situation (Cohen 1965), it would also seem to be true that the general teacher stereotype among students is quite a stable one (Medley and Klein 1956, Trabue 1953). The chief characteristics

of this stereotype are empathy and competence, and, as Symonds (1955) points out, may well have many of its roots in the deeper personality structure of the student.

Thus studies of attitude change have shown their occurrence, but not their permanence, or their translation into effective action, or, in fact, the certain validity of the actual change. It would seem that more investigation is required. One direction is that suggested by Sanford (1962) that student culture should be viewed not as "an aggregate of student attitudes, but as a dynamic totality of understandings and agreements on the student role", and this would certainly seem to be a more realistic view in including both the formative influences and the range of situational expression available to a given attitude at a given time. At the same time, it seems possible that the older, more restricted view can have considerable validity, provided that the limitations attaching to it are kept in mind, and that the attitude investigated is of a generalised nature at a fairly basic level of behaviour.

Basic Attitudes involved in the Course

The depth of the attitude construct being measured is therefore of considerable importance. Much work has been done by factor analysis to try to determine what are the basic social attitude factors. Eysenck (1952) following up earlier work, suggested R & T as being orthogonal axes, and a third was added by George (1954), which seemed to identify with neuroticism. These are not culturally invariate (Digman 1962), but, despite powerful criticisms of Eysenck's work, do point to some orientations which may be basic to western societies. Allport and Vernon, following an independent

line based on Spranger's types, drew up their 'Study of Values' in 1931 for use among college students, and this has been continually revised ever since. Later work seems to show that 'theoretical' (stress being laid on truth and cognitive values) and 'social' (stress being laid on the value of human relations) are positive and independent value attitude systems. Adorno's work (1950) on the authoritarian personality likewise seemed to establish another basic personality characteristic, which could be vital in its effect on student orientations. In fact, the Activities Index, developed by Stern Stein and Bloom (1956) and the College Characteristics Index by Pace and Stern (1958) serve to show just how college learning needs to be correlated with students' basic needs and personality characteristics. Similarly, work on the students' concept of self (Mead 1951, Jersild 1960) has shown this to have an important effect on student performance. Torrance (1959) showed that the majority of problem cases in college arose out of gross mistakes in the students' own estimate of themselves. A number of basic personality sets which have immediate reference to the course have thus been isolated.

How far these deep-seated traits relate to more generalised attitudes, such as attitudes towards the course, towards teaching and towards children, is a further question. Joyce and Weatherall (1959) found that 75% of students preferred the informational lecture and formal type of work to the more discussive seminar and informal organisation of work. McLeish (1968) in an investigation relating personality traits with university teaching methods, found that tough minded introverts with high security needs favoured 'given' information, while extroverted radicals favoured the

responsibility and freedom to be found in discussive methods and assignments. Thimme Gowda (1948) found that student opinion on various aspects of their course bears little relation to success in it, and there would appear to be deeper personality factors involved. Evans (1967), using the M.T.A.I. and the study of values found minimal personality change, though some evidence of attitude change in a one-year course. It thus seems possible that the student brings into college certain basic sets, which are likely to militate for or against his success in the course, and which are not easily amenable to influence. He also brings with him related attitude sets, which are more amenable to overt change, though the permanence and essential validity of this change is open to question.

Conclusions from this Survey of Research

What thus emerges as broad conclusions from this survey of research, which might be useful for this present investigation, are the following:-

(a) There is a lack of relation between research into successful teacher performance and the field of attitudes in teacher education. Very little has been done to relate the personality qualities and attitudes which may be characteristic of the successful teacher with attitudes existing during the training course. How far do attitudes involved in effective teaching exist at the beginning of the course and how far do they emerge during its course? This lack of relation is partly because the objectives of the teaching of teaching and the characteristics of the effective teacher are not yet very fully conceptualised, but, even so, those characteristics which have emerged have not been followed up in investigations

into training. Such qualities would appear to include attitudes towards children, generosity of judgement and democratic outlook as defined by Ryans, as well as attitudes towards authority (Adorno, Evans) and sociability and warmth.

(b) Furthermore, because of the methodological and definitional difficulties encountered in trying to decide what is an effective teacher, there have been very few attempts to evaluate the way in which colleges attempt to influence their students, and what relationship this influence has with subsequent teaching performance. Howard (1963) points out that it is assumed that something happens to people during training that changes them in the direction of becoming good teachers, but that there is little empirical support for such an assumption. There is a need, therefore, to find out what happens during the course to student attitudes which may have some functional relevance to the job of teaching.

(c) In addition, the relationship between attitude and action has not been sufficiently established by many of the investigations so far carried out. It would seem that, at the least, attitudes must be validated against action criteria, though a more sophisticated research model would also seem to require consideration of the dynamic, on-going situation which has been shown to influence attitude expression.

(d) Allied to this conclusion are two other considerations which are closely related to it. One is the fact that students have been shown to respond in what they know is the 'required' direction. This is partly a methodological problem involving the depth of attitude sampled and the ways in which attitude statements are presented, as well as a matter

of the dynamic social interactions inside the institution suggested by investigations such as that of Halloran (1967), who made it clear that an individual's behaviour is affected by the system of social constraints and 'action opportunities' surrounding him as well as by his attitudes. The other consideration is the fact that the differing depths at which attitudes are sampled occasionally produces conflicting research results. Where an attitude stops and its personality quality base begins is difficult to determine. This suggests two methodological considerations: first it is useful to combine investigations of both levels into a single model, so that detection of change at different levels can be facilitated; and second, at the attitude level it is important to try to measure wholistic rather than specific constructs, since it would seem likely that with specific constructs change may occur with relatively slight changes in the overall situation.

(e) Finally, there is also the fact that similarity of teacher role conception may not exist between students on different types of course, and is not likely to develop uniformly throughout the course for all students. This points to the methodological necessity, in any investigation, of comparing different parts of the sample with each other as well as looking merely at the whole undifferentiated population.

To sum up, it has been made abundantly clear throughout this survey that there is a paucity of research into what the training course actually achieves. W. Taylor (1969) has stressed the absence of, as well as the pressing need for, such research, and this present investigation is an attempt to do something in one particular direction to fill the gap.

Thus the first two of the above general conclusions give pointers to the subject area of this research, and the last three qualify its methodological approach. They thus helped to determine the development of the following research model.

CHAPTER THREE

LAY OUT AND ORGANISATION OF THIS EXPERIMENT

Introductory Statement

Conclusions derived from the foregoing survey of research suggested that certain features should be incorporated in the present research design. These were:-

(i) That the subject area of the investigation should be related to those personality qualities which seemed most likely to be important in effective teaching.

(ii) That attention should be paid to the situational variables in the investigation.

(iii) That there should be action criteria for the attitudes under consideration wherever that was possible.

(iv) That there should be an effort to test the personality orientations to be sampled at both the attitude level and at the level of deeper, more permanent personality dispositions.

(v) That examination of parts of the sample as well as of the whole should be carried out to see if any significant differences emerged.

One other general feature of the research design is important here. Wispe's (1951) experiments on the relation of personality and response to different teaching methods had shown how a particular teaching method could produce different individual reactions in the group on which it was used. In this college, students were grouped by subject choice and the age-range of the children they intended to teach; no attempt was made to group

by personality factors or intelligence. It was therefore envisaged that, since different personalities were likely to be affected by different parts of the course in different ways, an unequivocal picture of student attitudes over the whole college was not likely to emerge. What seemed more likely was that in some teaching circumstances individual reactions inside the student body might cancel each other out, and there appear to be no overall change even when significant, individual change had taken place. It was essential, therefore, to look at individual attitude variation as well as group variation in this research design, and to be prepared for only slight indications of change, though the actuarial nature of the results (Ryans 1964) had also continually to be borne in mind.

Lay-Out of the Experiment and Initial Development of the Original Material

Lay-Out of the Test Programme

Stages of Administration

A summary of the stages of administration of the test programme was as follows:-

Test	Course Years Tested	Number Tested		% of the year tested	Date
		No.	Year Total		
Try-Out Test programme	Year 3	122	160	76	July 1965
Revised test programme (1st issue)	Year 1	127	260	49	Jan. 1966
	Year 2	141	230	61	
	Year 3	115	185	62	
Revised test programme (2nd issue)	Year 1	240	260	92	Jan. 1967
	Year 2	201	250	80	
	Year 3	156	230	67	
Revised test programme (3rd issue)	Year 2	207	250	82	Jan. 1968
	Year 3	185	250	74	

Table 1: Timetable of administrations of the test programme.

The tests were initially given to all Third Year students as a try out programme after their Final Examination in 1965. They were administered at this time in order to maximise honesty of response, since the students knew that their final Certificate grades were now completed, and there was therefore no longer a built in requirement to make 'onstage' responses. Student attendance at the test sessions was voluntary, and the confidential nature of the test scripts stressed. The broad reasons for the investigation had to be given, in order that the students would be motivated to respond responsibly, but it was thought important to avoid going into detail in order not to run the risk of 'leading' the responses. It was also considered essential that the scripts should not be anonymously completed for two reasons. One was that anonymity would destroy the possibility of monitoring individual student change throughout the course. The other was that student co-operation in discussion of the items was invited at the try out stage and this needed named scripts in order to follow up individual comments.

The matter of voluntary attendance was also important. What principle to operate on had to be decided on in advance, since changes could not be made between later applications of the test without vitiating the research design. It was decided that the voluntary principle was more likely to encourage student co-operation, and since genuine co-operation was essential the risk of skew-sampling had to be accepted. Two precautions were taken to reduce this risk. One was a series of preliminary talks to each test year explaining the idea of the experiment, and stressing the fact that the attitudes of all students needed to be represented if the research was

to have any useful result. The other precaution was to monitor the attendance at each test session to see if a representative number attended from each department of the college. It was, in fact, found that well over half the students from each year attended each session, and over the test programme as a whole the great majority of the college population had attended at least one session (See breakdown of Sample p.88. Chapter 5). It therefore seems likely that a representative response was secured, though possibly the dis-affected student was somewhat under-represented.

The revised test programme was given to all three years of the course in each of the three years following 1965. The number of students in each year was kept roughly to one hundred and fifty, though some variation was bound to occur, owing to the voluntary nature of attendance. In addition, the first year students in the third issue of the test programme were not tested, since they would have been an isolated year in the overall sample. Thus apart from this slight qualification, the test programme was administered over the full three years of a course, and to third year students in the year previous to that course. Hence the whole investigation provided two complete static pictures of the attitudinal and sociometric situation inside the college, a longitudinal picture of a group of students going through the course, and finally, some indication of the predictive validity of the tests as a measure of the students' success in the course.

After the initial try-out test the administration of the tests was organised to take place in January each year. This was done in order to avoid duplication of testing sessions, and to make sure that student views were as nearly representative of that year as possible. Ideally it

would have been useful to test students in addition at the very beginning and end of their course, but this was not done in order to avoid possible test boredom and strain on the college timetable.

Composition of the Test Programme

The initial programme consisted of the following list of variables applicable to every candidate, and given in each application of the test, except where marked with an asterisk. The asterisked items were included only in the try-out test, since they were intended for particular validatory tasks, and would be of no use after the intial testing.

The test programme was as follows:-

(a) Background details of the candidate.

(i) His own subjective estimate of his social class. (ii) The type of school or schools attended. (iii) Pre-college academic achievement. (iv) School posts of responsibility. (v) Sex and age. (vi) Whether Day, Lodgings or Residential student.

(b) Personality variables - as measured by the Bernreuter Inventory.

(i) Neuroticism. (ii) Dominance. (iii) Self-Assertion. (iv) Social Adjustment.

(c) Attitude variables - as measured by an unpublished attitude test.

(i) To work. (ii) To authority. (iii) To one another. (iv) To children (v) To life in general.

(d) Sociometric scores.

(i) Student's own claim to recognition by others. (ii) Student's own claim of acceptance of others. (iii) Other students' recognition of the student. (iv) Other students' degree of acceptance of the student. (v) Student's own level of acceptance by whole year body of students.

(e) Check measures.

(i) Intelligence, as measured by the Valentine Higher Reasoning Test.

(ii) Check list of college activities*. (iii) Percentage Choice Test*

(iv) M.T.A.I.* (v) Cornwell sociometric test*. (vi) Faking measures*.

(vii) Final college results, as they became available in Educational Theory Practice and the students' Main and Subsidiary Subjects.

This list of variables was the result of:-

(i) The initial survey of research relevant to effective teaching and to attitudes and attitude change.

(ii) A series of planning discussions with a small tutor committee, and a rather larger group of third year students.

(iii) Two exploratory investigations carried out earlier, which respectively surveyed the actual background of the student population and examined the general direction of their philosophical beliefs.

There was therefore a considerable amount of exploratory investigation carried out before the actual test programme was decided upon.

Development of the Unpublished part of the Test Programme

Preparation of the Attitude Statements

The apparent lack of clear objectives in the training course revealed by research had suggested the need for preliminary discussion with students and staff to define the objectives considered important in this investigation. These discussions with the two committees were undoubtedly unconsciously guided by the predilections of the investigator, but conscious guidance in the preliminary stages was deliberately eschewed. Only when identifiable objectives appeared, especially those supported by previous research, was

discussion more overtly guided. This guidance was aimed at trying to identify what were the constituent elements of each attitude continuum. A continuum for each attitude scale, ranging from extreme anti-, through neutral, to extreme pro-, was thus constructed, as follows:-

Anti	Neutral	Pro
Attitude A: to work		
1. Negative usefulness of work. 2. Exam. passing concept of education.	1. Desire merely to fulfil a quota. 2. 'Trade Unionist' attitude.	1. Enthusiasm. 2. Insistence on standards of proficiency. 3. Conscientiousness. 4. The subject for its own sake. 5. Belief in transfer effect of work on personality.
Attitude B: to authority		
1. Rebellion. 2. Carping attitudes.	1. Conformity. 2. Passivity.	1. 'Corporate' understanding. 2. Responsibility. 3. Co-operation.
Attitude C: to one another		
1. Selfishness. 2. Introvertedness. 3. 'Hardness'.	1. Willingness to mix. 2. Lack of confidence in personal relationships.	1. Extrovertedness. 2. Tact. 3. Consideration. 4. Friendliness. 5. Helpfulness.
Attitude D: to children		
1. Dogmatic. 2. Domineering. 3. Subject dominated. 4. Authoritarian. 5. Anxious.	1. Permissive. 2. Laissez-faire.	1. Sympathetic. 2. Adaptable. 3. Open minded. 4. Democratic. 5. Confident.
Attitude E: to life in general		
1. Cynical. 2. Pragmatic. 3. Immature. 4. Apathetic. 5. Dependent.	1. Satisfied. 2. Acceptant.	1. Optimistic. 2. Idealistic. 3. Emotionally stable. 4. Respective. 5. Independent.

Table 2: Constituent areas of the Attitude Scales.

Having thus obtained a continuum for each scale, both students and staff were then asked to construct statements subjectively, which would reflect the elements making up each continuum. These statements were then redrafted according to Rinsland's (1937) rules of statement construction, and edited so that roughly equal representation of all elements in each of the continuum was maintained. The intitial total of 305 subjective statements was then ready for the try-out test, as shown in Appendix 1.

Preparation of other Test Measures

A. Sociometric measures.

It had consistently been made apparent throughout the staff and student discussions that the ongoing social relationships inside the college were an important influence in the student's education. The student's fear of anonymity in the eyes of authority was also clearly important in determining his attitude to the institution. These relationships were likely to be altered significantly by a rapid change in the size of the college. Equally clearly, the normal sociometric test, designed to expose the internal relationships of a comparatively small group, was inapplicable directly to large groups. What needed to be known was the general range of social contact and degree of acceptance of a student rather than peer judgement of his capabilities in relation to particular criteria.

A measure was therefore devised consisting simply of the name list of the whole year of students, and each student was asked to check each name with a weighted score. If he could just recognise the person to whom the name belonged he would give a score of 0 to that name, but if the name belonged to someone he knew very well he would give it a score of 5.

Degrees of recognition were thus spaced out between these two scores, according to the candidates own judgement.

This was a uni-dimensional method of measurement, suited to large numbers in its simplicity of administration and marking, while, at the same time, likely to produce a result similar, though not perhaps so directional in its judgement, to the more usual type of sociometric test. Since this type of construction had not been used frequently before, it was highly necessary to validate it with the more conventional type of sociometric test, so Cornwell's test, designed for use with college students, was used for this purpose.

B. Other internal validatory measures.

A percentage choice test and a check list of activities were also devised to act as some measure of validation for measures in the main programme, which it was thought might be difficult to validate at all otherwise. The percentage choice was made up in the same way as the attitude statements except that it was based on a projection rather than a Likert technique. Students were asked what percentage of other students were, in their opinion, likely to be lazy, dull etc. Since they had no way of knowing the real percentage, or being certain of the criterion, it was reasonable to assume that they would project their own attitudes into the resulting percentage. The 'check list' of activities was likewise designed to act as some sort of validatory guide to the information supplied by the candidate at the beginning of the test programme on his chief interests. Again this was designed as asking for the percentage of his leisure time he spent in a specified, all-embracing list of activities in which he engaged, since this was really the measure intended. Clearly, either of these measures would

need a great deal more refinement than that given here before they could act as effective measures in themselves, but it was thought that as rough, validatory measures of other items in the test programme they would act quite effectively in their present form.

C. Faking Measures.

Finally, it was thought essential that some investigation of the possibilities of 'faking good', and the chances of detecting such faking in the attitude tests, should be examined. One obvious precaution, which could be taken at once, was to mix up the statements from the different attitude scales, so that the point of the test would be less obvious. Another was to bury the significant test statements in a mass of relevant, but non-discriminating statements. A third device was to include sets of statements on the same opinion but at different levels of commitment. It was thought the 'faker' would endorse the extreme level of commitment, but overlook the need for a consistent answer on the more non-committal statements in the set, and as the statements in the set were separated at long intervals in the test this possibility was made more likely. Finally, the results of the percentage choice test, based as it was on unconscious projection, would be a further check on the possibility of faked responses on the attitude scales.

Provision was therefore made in the arrangements for the Try Out test for a sample of students to 'fake good' in both the Attitude and the M.T.A.I. to find out four things:- (i) Was the attitude test sufficiently clear in the trend of its statements for it to be susceptible to 'faking good'? (ii) If the attitude test was susceptible to faking, was it more or less so in this sample than the M.T.A.I., which was the only established instrument

in this field? (iii) If the attitude test was susceptible to faking, did the checks built into it actually work in revealing the faker? (iv) Finally, given that student faking could be detected effectively on the attitude test, could this faking sample provide 'norms' of the differences in scores produced by faking, which could be applied as a correction to the actual faker's scores in a real test situation.

Considerations of the Experimental Design

The College

Originally the college had been a small women's college, which had begun to admit men three years before the beginning of this experiment. During the four years with which this investigation was concerned it had been expanding from about 300 to about 800 students. It had two very strong 'wing' courses, one for P.E. for men and one for Home Economics for women, both of which had an apparently strong set of internal loyalties, and both of which were organised on the 'apprentice' conception of teacher socialisation. The rest of the college was organised in the normal range of academic subject departments, with each student studying at least two subjects to a main and a subsidiary level. The college was almost wholly residential, the proportion of day students being in the order of 3% of the sample. The Education Department was organised on 'pastoral' lines of Infant, Junior and Secondary groups, with one tutor responsible for two fairly large educational groups throughout the three years of the course and teaching each of them for one full day each week. Finally, during the major part of the investigation the college was moving into new buildings, as well as absorbing a rapidly

increasing intake each year. This move, involving such administrative problems as a shuttle bus service between the old and the new site, coupled with the increase in size, meant constant recurrence of administrative and teaching problems in the college, with a consequent inevitable reduction of staff contact with students. This reduction in homogeneity of institutional influence on students was felt to be a marked feature of the change-over by a majority of the staff who experienced it.

Thus the external circumstances of the change in character of the college could possibly militate against clear, professional attitude change in the students, but the internal organisation, based on 'pastoral' lines of continuity of tutorial influence on the same group throughout the three years, block allocation of timetable time to subjects, and examination by continuuous assessment, all militated in the opposite direction. This apparent dichotomy of organisational influence was not so great as it might at first appear, however. The first thrid year group in the sample was relatively unaffected by the change in site and size of the college, so if the change did affect the educational impact of the college it would show up in the results of the experiment. It was therefore decided to accept this limitation, which, in fact, might transpire to be an advantage in allowing student attitudes to appear in a less inhibited fashion than in a college not suffering such rapid changes, and in showing the effect of rapid changeover in institutional size.

Nature of the Sample in the College

To obtain a representative student sample it was decided to try to obtain

a minimum of 50 students to be tested from each of the Infant, Junior and Secondary ranges of students in each year of the course. As numbers in the college grew this minimum could be increased, provided that the proportions could be kept the same. Representation from the subject departments was kept equal, in so far as adherence to the principle of voluntary attendance made this possible. Girl/boy representation likewise was kept equal, except where the nature of the course made this impossible. Using a voluntary principle of attendance, which was considered essential for the expression of free opinion, it was impossible to use random sampling to ensure a representative sample. However, since the majority of each college year attended the initial testing programme it is unlikely that it was a very unrepresentative sample of the college. The lazy and disinterested may have made up most of those who did not attend, but no other sampling techniques would have overcome this weakness in any case; only compulsion and supervision could have overcome it and these would have mullified student co-operation generally and the purpose of the investigation wholly.

The range of ability in the student population was considerable. No initial intelligence test was normally given by the college, so this could not be initially taken into account in selection or internal groupings. This is not unusual in training colleges and the resultant range of intelligence in one college, as well as variation between colleges can be considerable, as Valentine's (1961) pre-test survey of Training Colleges shows. The range in pre-college achievement was known, but ignored in internal groupings. Personality tests were not taken in college, so the

initial range was unknown. Selection was on the basis of a wholistic interview by two experienced members of staff, aided by the Headmaster's report and school achievement, and was refined by a co-ordinator for student intake. The college population was therefore likely to cover a wide range of personality and intelligence. Owing to the strong contingents of 'wing' students specialising in P.E. and H.E., the range of school achievement was also wide, since quite frequently these students had the minimum qualification for entry. Furthermore, these students were oriented very strongly towards practical rather than academic subjects. There therefore appeared to be a possibility of some dichotomy of personal orientation in the student body. This, coupled with the wide range in personality, intelligence and school achievement in the sample could lead to very inconclusive results from this experiment. These possible differences of student orientation therefore needed to be examined as part of the research.

Use of Tutor and Student Committees

Tutor and student opinions were consulted in helping to determine the importance of the variables to be examined in this investigation. This was necessary for two reasons. One was the paucity of English research at that time (1964) in this field; a paucity which American research, conducted in a different culture and educational milieu, could only partially replace. The second reason was that this was a research into a particular institution, and it was already clear from research at that time that different institutions might well have different educational impacts on their students. Hence it was necessary to have consultative committees of tutors and students to ensure that the objectives of this investigation were relevant to this institution.

The number on the tutor committee was restricted to five tutors in order to ensure efficiency in discussion and decision taking. A minimum of five years college experience was considered essential for membership, and members had to be in working touch with at least sixty students in the course of their working week. The student committees were limited to two groups each of twenty five members in the third year of their course. They were chosen as being already in working touch, and therefore rapport, with the investigator. These committees were consulted on such points as the type of variable to be examined, the type and range of influential opinion in the college, the chances of sectional opinion existing in the college, and, later, on the statements to be used in the attitude scales.

The tutor committee met initially to decide on the minimum number of variables that might be crucial to success in the course and have relevance to teaching. The student committees then discussed these variables and made their own suggestions, and their recommendations were then taken back to the tutor committee for final decision. The same procedure was followed in deciding on the constituent areas of each attitude scale, and in constructing the actual attitude statements in these areas. The overall pattern was thus one of tutor direction with continuous student consultation and some initiation. The number of meetings was approximately five for the tutor committee and four for each of the student committees spread over the two terms prior to the first administration of the try-out test.

Variables to be tested

Test Variables

Research had shown that qualities of leadership, emotional stability and democratic organisation were important to successful teaching. One or two researches (Dodge1943, Phillips 1953, Dale 1966) had also highlighted the qualities of friendliness and sociability. The tutor committee pointed out that teaching is an occupation which has considerable nervous strain built into it, and it therefore seemed reasonable to explore the extent of marked neuroticism as well. Agreement was therefore finally reached on neuroticism/stability, dominance and sociability as being the basic range of personality qualities to be examined.

The range of attitudes to be explored was likewise arrived at by reference to research and to the committees. Attitude to children had been repeatedly shown by research to be important to teacher performance, and this was completely endorsed by the committees. Attitude to authority was chosen as another crucial variable for two reasons. One was that Evans (1965) had shown that the development of a healthy attitude to authority was crucial in the individual's education, especially at the adolescent stage of development, and it would be useful to see how far this remained a problem at the college stage. The other reason was that research had shown that the authoritarian student is one who prefers 'given' information and directive teaching methods, so that knowledge about this variable could well throw light on the acceptability of teaching methods to be used, or avoided, in the college course.

Furthermore, research had shown that attitudes to teaching methods and work loads could affect student success in the course. These attitudes to particular requirements in the course seemed often to spring from deeper personality orientations. The tutor committee thought that there might be a generalised attitude set between these two levels, which would be in the nature of a habit of consistent application reflected in a general belief in the importance of work. A scale measuring attitude towards work was therefore also decided upon. The remaining attitude scales constructed were a social attitude (i.e. attitude to one another) and a progressive/conservative attitude to life in general. These were chosen partly by reference to research literature and partly because it was hoped they might throw light on some wider questions. A pro-social attitude, for example, had been shown to be a constituent element of the successful teacher. How far was this an important element in student life, and how strongly oriented towards their fellows were they when they entered on the course. Similarly, research had shown that a progressive educational programme had a greater impact on students than a traditional one, though, at the same time, some conservative elements must be incorporated in the function of the teacher as a mediator of the culture. It would therefore be quite useful to know what was the balance of progressive/conservative student orientations in a college population. It was with considerations such as these in mind that the total of five attitudes was made up. These, it was felt, were basic features of the course, and, in addition, might throw light on some wider questions of importar

Check Variables

At the same time, a number of other variables needed to be incorporated in the research design to act as a check on those under investigation. Intelligence was a factor which obviously should be included here. Despite Lovell's (1951) contention that it had little to do with successful teaching it could well be an important variable in a college course, both for its bearing on the level of difficulty of subject courses and its possible relation with particular attitudes. Another check variable of equal importance was that of the sociometric status of the student. Apart from the useful fact that this could well act as a validatory check on some of the other measures under investigation, there was also the point that sociometric data could throw light on how far peer acceptance related to student success in the course. There were also wider questions on which this data could throw light, such as the homogeneity of subject groupings, and the sociometric range of an individual in a large college community. Thus these two variables of intelligence and sociometric status could not only act as useful check variables, but also as independent variables which could throw light on a number of important questions.

There remained a number of background variables, which might be influential for student success, and which might show significant relationships with the variables under investigation. School achievement was the chief one of these, but added to it was the type of secondary school attended by the candidate, his estimate of his own social class on entry to college, his course subjects and educational group in the college, and, of course, his sex, age, and whether he was a Day or Residential student. And, finally, in this category, the students final college marks were also recorded.

In addition to this programme of variables there were also intitially included one or two other measures in order to check points in the investigation One of these was the M.T.A.I., which it was thought it might be useful to use for the value of its own initial result, then for its possibilities for checking faking, and finally as a cross criterion for comparison of results between the published and unpublished parts of the test programme. Another variable used initially was Cornwell's (1961) sociometric test, which was too cumbersome for regular use with large numbers, but seemed suitable as a validating instrument for a simpler scale which it was planned to make up and use. The list of variables was therefore quite a formidable one, but, it was hoped, sufficiently varied and not too long for test boredom to set in among the sample.

Methods of Testing

Having thus decided on the variables to be tested by a review of the relevant research, and by reference to the immediate situation through the use of staff/student committees, the next question to decide was the methods to be used in measuring these variables.

Personality

An important limiting factor in selecting a personality test was the number of students likely to be involved before the end of the experiment. Some 1400 students would be taking the tests, and each student's test programme would result in some 12 mark scales to be marked by hand. Problems of administration and marking therefore had to be considered in an investigation such as this. Hence, it was decided that the personality test chosen should be limited as far as possible to the factors already decided

on as being important for the investigation, provided that such a limitation did not result in the use of an obviously inferior test.

The most used personality inventory has probably been the M.M.P.I., but for this investigation it had two difficulties. One was that most of its 12 scales tended to reflect its original aim of distinguishing between normal and psychiatric personalities, and this was not envisaged as likely to be useful in this kind of test population. The other difficulty was that extensive research with this test had failed to discover any relation between its results and either 'good' or 'bad' teaching personalities. Later tests such as the Guildford-Zimmerman Personality Inventory and Cattell's 16 P.F. test, based on the results of extensive factor analysis, were apparently much more promising in their relation to 'teacher' personality, but there was still a lack of certainty in their relationship, and the qualities measured (particularly in Cattell's test) still tended to be elusive of precise definition. In short, conflicting or uncertain results could be quoted for all the major personality tests which had been used in this area of investigation. Vernon's claim that there is no distinctive 'teacher' personality thus seems to be borne out by this kind of evidence, and therefore no one personality test had a greater claim to be used in this investigation than another.

Hence the grounds for choice of test could be more closely related to the actual variables this research was designed to investigate. It was therefore decided to base the choice of test on the similarity of qualities in the chosen test to those which had been decided on as the main ones to explore in this investigation. The test bearing closest relation to these

was the Bernreuter Personality Inventory, which tested Neuroticism, Self Sufficiency, Dominance, and Social Adjustment. This test had been in research use since 1935, and, though declining in popularity in recent years owing to its dependence on the sincerity of the respondent, it had been found in one of the latest researches to use it (Herbert & Turnbull 1963) to discriminate effectively between the best and worst student in the first and second years of the college course. It is true that Carlisle (1954) had found that it had nil correlation with practical teaching results, but it did appear that it might be an effective instrument for recording personality change during the course, despite the fact that it suffered from the weakness of being based on self report. In the absence therefore of a really good paper and pencil personality test,* what finally clinched the decision on this test was the possibility that its variables might link up with the attitude variables which it had been decided to investigate in this research, and might even form the deeper personality foundation for them. The Bernreuter test was therefore chosen for this research.

Attitudes

At the time this research was being initiated K.M. Evans 'Attitude to Teaching' was the only attitude test of English origin available. This was as much directed towards attitudes to the profession as towards constituents of the function of teaching, and was of such recent origin as to be relatively untried. Of course, there had been numerous attitude investigations in America, and at least one major teacher attitude test, the M.T.A.I. by Cook, Leeds and Callis (1951), had been published. Cook, Leeds and

* See Gage, Handbook of Research on Teaching (1963) for a full discussion of this problem of measurement.

Callis stated that attitudes of teachers towards children and school work can be measured with high reliability, and that they are significantly correlated with the teacher pupil relations found in the teachers' classrooms. Their investigation, resulting in the M.T.A.I. established this fact and the correlated fact that teacher attitudes can be changed in the desired direction by the college course.

Unfortunately, subsequent research using the M.T.A.I. has proved less conclusive. Some experiments, such as that of Stein & Hardy (1957) have found that student teacher attitudes can be measured by the M.T.A.I. with a good degree of reliability and validity; other experiments, such as that of Sandgren and Schmidt (1956), found no relation between M.T.A.I. scores and critic teacher ratings. After extensive investigation no firm conclusion can be reached on the validity of the M.T.A.I., and investigations based on extensive factor analysis seem to show that the tests rest on a single attitudinal factor which may be accounted for largely by the response 'set' of the testee. There is some doubt, therefore, about the test itself, but the possibility of using it in England raises further doubts. K. M. Evans (1958) investigated its use in the U.K. and concluded that it needed re-establishment of norms as well as alterations in wording before it could usefully be used here.

The alternative method of measuring attitudes for this investigation was to construct scales specially for it. This method had two advantages: one was that the attitude variables already decided on could be exactly catered for, and the second was that separate attitude scales could be constructed using a different technique to that used in the construction

of the M.T.A.I. The statements made up by Cook, Leeds and Callis (1951) were general ones all representing teacher reactions to children. If, however, statements were made up somewhat more specifically on what were deemed to be the constituent elements making up teacher reaction to children, then the overall object of the test might become less clear to the testee, and hence less susceptible to faking. The particular nature of attitude change during the course of training might also thus become more apparent.

The Likert method of construction was chosen for making up these attitude scales (Edwards 1957), since it seemed clear that the Guttman technique made the statements too uni-directional, and the Thurstone Chave technique had an inbuilt difficulty for this investigation, apart from being inherently cumbersome. This difficulty was that of the composition of the sample of judges. The composition of this sample could be a cross-section of the normal population, a cross section of authoritative educational opinion, or a cross section of student peer opinion. None of these was wholly satisfactory, so the Likert method was adopted, not only as the best method in itself, but also as avoiding the above difficulty. It would be worthwhile, later on, to compare student and staff attitudes by using the Thurstone Chave technique, but this could be done when the test programme was not so full.

Intelligence

Methods of testing the check variables were then considered, and it was felt that in testing intelligence two kinds of test were relevant to this investigation. There were those intended for individual use on the

population as a whole, such as the W.A.I.S. which were likely to give the most accurate individual result possible, and those intended for more restricted use with sections of the population, such as Heim's AH5 or the Valentine Higher Reasoning Test. As this investigation was dealing with a selected sample of higher education students the latter type seemed likely to be more useful, since the raw scores could be expected to discriminate more sharply between individuals than would be likely with a test for general use. One of the difficulties in previous investigations on intelligence among college samples was the comparative homogeneity of ability in the sample, so a test instrument designed to spread them out as far as possible was indicated. A further consideration was the fact that a training college course could fairly be expected to encourage cognitive processes of analysis and deduction while also continuing the verbal aspect of student learning. Hence, a test, such as the Valentine test, based on verbal logic, could be expected to be relevant to the kind of course given, and this was therefore chosen.

Sociometric Scores

In dealing with the sociometric variables it was important to remember that the number of students in the college was large right from the beginning of the experiment. Furthermore, numbers in educational tutorial groups were being increased from twenty to thirty, and year lectures to mass audiences were being instituted for the first time. Organisational changes, taken for administrative reasons, were thus raising the theoretical issues of what was the optimum size for a teaching group and what were the most suitable teaching methods for different sized groups. Sociometric measurement

could give useful information on these points, but was itself hampered by such changes. Once large numbers made face to face relations of all members in a group impossible then the basis of the normal sociometric test tends to be lost. A simple measure of social recognition therefore seemed indicated, since this would at least give some indication of the maximum size of group in which face to face relationship could still be expected to occur. Cornwell's test ignored this problem, since it was based on a very small residential college, but it could be used here as a validating instrument on a small sample of students. It was decided to use each college year as the base group for this simple recognition test as a basis of the whole college population would have proved administratively impossible. As the year was listed in Education group order this gave some idea of the homogeneity of Education groups, and, by analysis, of subject groupings in that year, though of course it could not give information on cross-year groupings. In addition to this, the test would also provide some internal validatory evidence for some of the other variables, and a possible further source of explanation for individual success or failure in the course.

Some Methodological Difficulties

Having considered the nature of the variables to be tested, and the methods to be used in testing them, it now seemed useful to consider any further, remaining methodological difficulties that might arise.

Securing a reliability coefficient for these tests appeared to present no problem, but obtaining some indication of their validity seemed likely to be much more difficult. One problem was the imperfection of the criteria that already existed, and the other was the need to use action criteria in real life situations as far as possible. It was for this reason that a number of measures were included, in order to have more than one validatory reference, wherever possible, for each measure used.

Another major difficulty envisaged as likely to occur was that of the possibility of insignificant differences emerging between group means. Of course, lack of significance in itself would not necessarily mean a useless result. It could mean a measure of agreement of opinion between groups which in itself, when further analysed, could prove to be an important result. However, what was primarily aimed at was to see if different course groupings did have significantly different attitudinal alignments. Insignificant differences from the same group on successive occasions would likewise need careful consideration. It could mean stability of group opinion lack of sufficient experimental controls, or it could mean individual changes cancelling each other out. Vernon (1939) had pointed out this latter effect, and, in fact, individual variation might well prove to be one of the most useful parts of the investigation, since it might provide ways of identifying the 'at risk' student in time to take preventive action.

Finally, there was the further question of whether attitude measurement was in itself a very valid procedure. A considerable body of attitude research had questioned the validity of 'attitudes', and of attitude tests such as the M.T.A.I. The reasons for this questioning were largely twofold: one was

the fact that attitude change as shown by the tests couldn't always be seen to be reflected in behaviour; and the other was that student attitudes had been shown to be part of the whole dynamic, social complex of the institution and the course rather than a single uni-variate factor. It was felt that this dynamic interaction of the attitude with the situation to produce requisite behaviour had long been acknowledged, but how far this reduced the usefulness of the study of the concept of attitude by itself was less certain. It was hoped that by examining a large number of student background variables, such as sex, subject course, sociometric status, nature of residence and social class, it could transpire that some of the significant variables in the situational background might be revealed. Furthermore, by examining the long-term stability of the attitude scales it was hoped that the stability or otherwise of this general situational influence would be shown. Clearly, if this situational influence did not result in rapidly changing attitudes then the examination of student attitudes applying in that situation would still supply important information. A consideration of the long term stability or otherwise of the attitudes under investigation seemed therefore to be a necessity in the methodological outline of the research.

Conclusion

There were two main reasons for this exhaustive preparation which preceded the initial test in 1965. One was the fear that there could well emerge no hard evidence of attitude change at all from this experiment. The other was that one of the major hypotheses of the research was to look at the nature of the measurement carried out by an attitude scale over a

long-term period. These reasons demanded that the initial preparation of the scales should be as careful as possible in order to try to ensure that what results emerged from the experiment were not due to careless measurement or to lack of initial planning. Having carried out this initial planning, the next procedure was therefore to try to develop as reliable and valid measurement instrument as could be made, so this was the next step in the investigation.

CHAPTER FOUR

VALIDATION AND REVISION OF THE TRY OUT TEST ITEMS

Administration of the Try-Out Test

For the try-out test a whole third year of students (160) was initially convened in June 1965, and the research design explained to them. They were then asked to attend voluntarily the following week in order to take the tests. The precautions outlined in the last chapter, aimed at ensuring honesty of response, were taken. In addition, the test situation itself was made an informal and co-operative one. For example, students could add their own comments to test items or decline to do a particular test in the programme. They worked individually at their own pace, and stopped when they felt that they had done as much as they could usefully do. In this way, acceptance of the test situation as a non-stressful one was likely to be achieved by the majority taking part. The overall aim was thus to construct test conditions which would ensure as much sincerity of response as was possible with a mass audience. One hundred and twenty two volunteers completed the test programme, and their results appear in Appendix 2.

Validation and Revision of the Attitude Tests

Initial Treatment of the Raw Scores

In developing the revised attitude test the first step taken was to see if the subjectively constructed try-out statements were an adequate base from which to make up the revised attitude scales. Hence the results from the unrevised test programme were first used to make a frequency

distribution for each of the subjective attitude scales. These each produced quite a good approximation to the normal curve of distribution (See Diagram 1), and thus seemed to be discriminating effectively.

The curves also showed some evidence of qualitative difference between the scales. The initial make up of the attitude scales had allowed for about 60 statements in each scale. As the numerical base for each statement was the same, it could be expected that the resultant five attitude curves would occupy much the same part of the base line. This did not happen, and thus suggests that the curves may be reflecting homogeneous and qualitatively different attitudes. Obviously, the lack of a certain 'zero' in the summated ratings method prevents an immediate answer to this possibility, but it was a reassurance at this initial stage that some indication had been given that the scales might be measuring different things.

A further initial check was made by finding the split-half reliability co-efficient for the whole scale of 305 unrevised statements and this was found to be .74 when corrected for length. This was a good degree of internal consistency for what was a provisional, subjective scale.

The problem of validity was a more difficult one to tackle at this stage. The overwhelming body of research into 'teacher' attitudes has shown that one of the fundamental difficulties in any experiment of this kind is that of finding adequate criteria for validation. It therefore seemed likely that with unrefined material of this sort any attempt at validation at this stage of the experiment would only produce confusing results. It had been envisaged right from the planning stage that a major effort at validation would have to be undertaken before the results could be

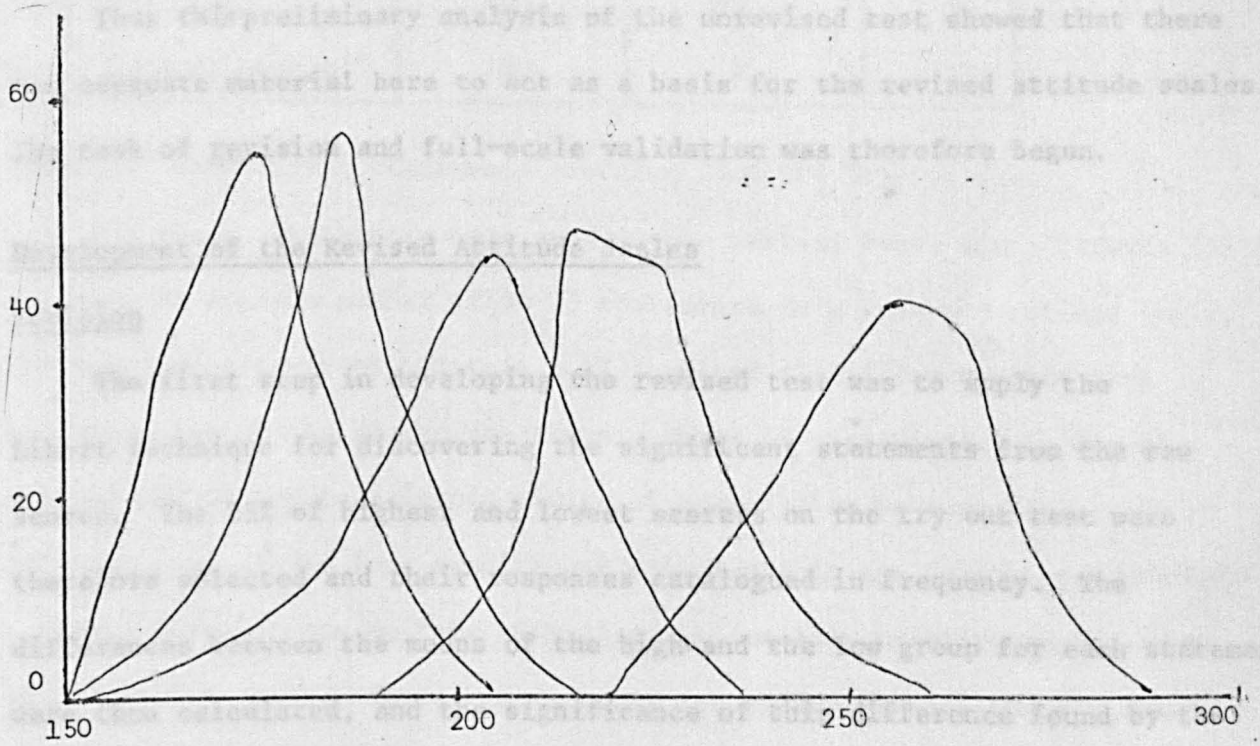

Diagram 1

conceivably considered as useful, but the best point at which to undertake this would obviously be after the test material had been revised and test items that were less significantly discriminatory removed. At this stage, therefore, validation rested on the face validity of the items themselves (as judged by analysis of student comments on the returns) and on the method of statement construction by committees, which ensured some relevance to the course, if not actual validity, of item material.

Thus this preliminary analysis of the unrevised test showed that there was adequate material here to act as a basis for the revised attitude scales. The task of revision and full-scale validation was therefore begun.

Development of the Revised Attitude Scales

Revision

The first step in developing the revised test was to apply the Likert technique for discovering the significant statements from the raw scores. The 25% of highest and lowest scorers on the try out test were therefore selected and their responses catalogued in frequency. The differences between the means of the high and the low group for each statement were then calculated, and the significance of this difference found by the formula $t = X_H - X_L'$. (The significances of all the statements are listed in Appendix 3) $\sqrt{\frac{V_H + V_L}{N \quad N-1}}$

It was found that the following numbers of statements were significant at the 5% level or less in each of the scales:-

Scale	5% level	1% level	Total
A (to work)	8	19	27
B (to authority)	7	11	18
C (to one another)	10	31	41
D (to children)	10	23	33
E (to life in general)	8	9	17

Table 3: Significant Statements emerging from the Try-Out Test.

All these statements were used in the revised test, since Edwards (1957) suggests an optimum number of 20-25 statements in a summated ratings scale, and hence an attempt to maintain a 1% level of significance would have rendered some of the scales dangerously short of statements. It was also decided not to try to maintain parity of composition between the scales by omitting some of the less significant statements in the lengthier C and D scales. Since scores on this type of scale are only relative to the average, and have to be standardised before cross comparison or addition can take place, there was nothing to be gained by trying to secure even representation of scale statements. The original sample was therefore re-marked using all statements significant at the 5% level or less.

Reliability

The split half coefficient was then calculated for the revised test of 136 statements as a whole, and for each of its component scales. A sample of fifty students was chosen by random selection from the original sample, and

the split-half correlations thus obtained were as follows:-

Scale	A	B	C	D	E	Total Score
r	.61	.57	.68	.82	.85	.79
Corrected r	.76	.76	.80	.90	.92	.88

Table 4: Reliability coefficients for the revised scales.

The coefficient of .88 for the total attitude test showed a considerable improvement on the coefficient of .74 for the unrevised test. Edwards (1957) discusses the investigations which have been made into the reliability of attitude tests, and finds that for summated ratings the coefficients range from .78 to about .92, and for equal appearing interval tests down to .68 has been found for 20 item forms. The coefficients obtained for these scales are therefore satisfactory, though the use of the A & B scales individually might not be considered advisable.

Validity

A. The Problem of Criteria

At the time this investigation was being planned (1965), research had already shown that one of the fundamental difficulties with experiments of this kind was that of finding suitable criteria (Ryans 1960). The other major difficulty, that of situational effect, was also just being highlighted (Sanford 1962). Therefore the problem of finding criteria for the attitude test being developed here had to be approached as a very fundamental part of the investigation. Every opportunity had to be taken not only to use quantifiable criteria external to the qualities actually under investigation, but also to use any chances of cross-validation which might occur between different parts of the test programme. Two general points had to be borne in

mind from previous research. One was that as far as possible any criterion used should be internal to the course situation to allow for situational effect. The other was that any criterion measure was likely to be a diffuse one, since one which aimed directly at measuring attitudes as a process variable in the training course just did not exist. The chief problem therefore was to select criteria which had relevance to student/teacher attitudes, but which were not so diffuse as to prevent that relevance emerging reasonably clearly. Obviously, with any single criterion it would be very difficult to attribute different amounts of its measurement to different sources. For the purposes of validation therefore the device was adopted of using a number of relevant criteria, whose cumulative evidence could be accepted as conclusive validation, where one alone would have given only partial indications.

The possible criteria for this attitude test seemed to be fourfold. The obvious one was that of Final Certificate grades, based on the assumption that a teacher training course has as one of its aims the development of 'professional' attitudes in its students. However, the Final Certificate also has to measure the student's cognitive achievement in the course, and, coupled with the uncertainties of tutor grading which have been shown to occur and the lack of predictivity of teaching success, this measure cannot be regarded as a very certain estimate of the 'professional' orientation of the student. The other obvious criterion was that of an already established teacher attitude test. The choice here was restricted to two tests: Evans' Attitude to Teaching as a Career test and the M.T.A.I. Evans' test attempted to assess the students' attitude to the material condition

of the job as well as to the actual nature of the teaching task, so it seemed likely to produce confusing results when used as the criterion of a test concerned only with the nature of the teaching task. The M.T.A.I., on the other hand, was the product of ten years' work by a research team in America. It was already established as a published test, though its validity had been challenged by investigators such as Fuller (1951) and Sandgren & Schimdt (1956). Nevertheless, it seemed the better test to use here, since it was concerned only with the nature of the teaching task, and should therefor be more closely related than Evans' test to the test under construction. The M.T.A.I. was therefore chosen.

The other two criteria which were selected were those of ratings of students by college staff, and the direct judgements of staff themselves on the attitudes being tested. In the case of ratings the criterion had the double weakness that not only are ratings known to correlate poorly together, but also, in this college, no one group of tutors were likely to teach more than a segment of the students under consideration. However, this criterion did have the advantage of being almost a direct measure of the attitudinal qualities in the test, and this was judged to outweigh its inbuilt weaknesses. And finally, the fourth criterion used was a Thurstone/Chave version of the test based on a sample of 40 staff judges. This was incorporated into the research design primarily to contrast staff with student attitudes, but it could also possibly have a validating function. Edwards points out the necessity of matching the judge sample to the sample of testees when using a Thurstone/Chave construction for validation, so the use of separate samples here was a calculated risk. This meant that lack of agreement between the

two samples would not constitute non-validation, but agreement, on the other hand, would give some support to the case for validation, since it would mean that two independent samples had both arrived at the same qualitative judgement about the attitude qualities under consideration.

Thus, if all four of these criteria gave positive indications of agreement with the attitude test then validation could be said to be established. However, imperfections in the criteria must also be taken into account in the following analysis of the validation results, since these give a frame of reference by which to evaluate the amount of agreement occurring between the various measures.

B. Validation Results (See Appendix 4) (1) Final College Results Criterion

The weakness of this measure as a criterion lay in the fact that its measurement was only indirectly concerned with student attitudes. Only in so far as the student's attitudes were likely to affect his performance in the course could the final certificate be said to be a criterion of his attitude level. The certificate's actual measurement was not concerned directly with attitudes at all. There was therefore not likely to be a simple uni-variate relation between the attitude scales and the various parts of this criterion. The four grades on the final certificate represent the student's achievement in his two main subjects, the theory of Education and the practice of Education. Only the last is concerned with classroom teaching, and that is more a measure of classroom management than of attitudes to features underlying the teaching situation. The attitude tests, on the other hand, were concerned with features underlying the college course which had relevance to teaching. There was thus no single measure in either of the two instruments

which appeared to have a direct counterpart in the other. In one respect of course, if correlation appeared between the two total measures then this would constitute strong validation for the attitude tests, but the likelihood of disagreement occurring between them seemed more probable.

It is therefore quite strong evidence of validation that the total Certificate scores do agree with the total attitude scores inside the 1% level of significance. The final college grades were changed to numerical scores and aggregated, and the attitude scores were standardised before being totalled. The total certificate score was then correlated with the total attitude score, and each separate attitude scale, as follows:-

Correlation between total Certificate and Attitude scores	= .31**
Correlation between total Certificate and Attitude A	= .294**
Correlation between total Certificate and Attitude B	= .08
Correlation between total Certificate and Attitude C	= .02
Correlation between total Certificate and Attitude D	= .07
Correlation between total Certificate and Attitude E	= .003

The figure of .31 as the correlation between the two total scores is low enough to justify the initial expectations of disagreement. At the same time, the fact that it is significant at the 1% level does show that students with higher total attitude scores are more successful in the course. But this clearly depends on the candidate's attitude to work (A) rather than on any other attitude. The Certificate thus seems to be validating the attitude tests only with respect to the student's academic work record, rather than to his teaching ability, and in relation to

Attitude A rather than any of the other attitudes. This result therefore, although giving evidence of validation, also highlights the problem of the different composition of these two measures, and indicates the need to analyse further the relation between the various parts of the criterion and the attitude scales.

The Certificate divides itself into three 'academic work' subjects and work in the classroom. If the three 'subject' grades were aggregated and correlated with Attitude A, then, if Attitude A is measuring 'attitude towards work', the correlation should increase. A phi-coefficient was used for this purpose, since the Certificate grades did not adequately break down the sample into more than two groups, and the phi-coefficient is directly comparable with the product moment coefficients previously used. The coefficient was .3088, which, when converted to chi(x^2) was 12.587, which was substantially above the 1% level of significance with 1 degree of freedom. Attitude A would thus appear to be validly measuring the student's attitude towards work in the college.

On the other hand, if the Final Teaching Practice result on the Certificate were measuring teaching ability, then it would seem likely that this ought to relate to those attitudes which have an immediate bearing on the classroom situation, such as Attitudes B and D. These attitudes were therefore correlated separately and together with the final teaching practice result. Attitude D (to children) was found to be significant at the 5% level while B (to authority) was found to be significant at the 1% level (See Table 5). When the two attitudes were combined the correlation was substantially increased to well above the 1% level. It would therefore seem that these attitude scales are valid scales

attempting to measure aspects of the teaching situation involving authority and relationships with children. At the same time it is noticeable that the teaching practice grade takes more note of the student's attitude to authority in the classroom than of his attitude to children.

Furthermore, the teaching practice grade correlates significantly with the aggregate of the other 'academic' grades which appear on the Certificate. In fact the x^2 value for this relationship is far higher than for any of the other relationships considered in Table 5 below. This high correlation shows an academic 'halo' effect, which may well be one of the reasons for the uncertainty of measurement of teaching practice grades already noted by previous investigations; though, equally, it might be evidence of the fact that good subject ability forms a large component of teaching ability. However, investigations such as that of Poppleton (1968) suggest the former conclusion to be the more likely one.

Variables being correlated	Correlation	Value of x^2
Academic Final College Results & Attitude A (to work)	.3088**	12.587
Teaching Practice Final Result & Attitude B (to authority)	.229**	6.914
Teaching Practice Final Result & Attitude C (to children)	.1767*	4.12
Teaching Practice Final Result & Attitudes B & D	.275**	10.003
Teaching Practice Final Result & Academic Subjects	.463**	28.3

Table 5a: Phi-correlations between specific attitudes and grades on the Final Certificate.

What thus emerges from this examination of the criterion of Final Certificate grades is that three of the Attitude scales are validated against the actual behavioural performance of the student in other non-allied situations. At the same time, evidence on the weaknesses of the criterion for the purpose of validating this test also emerges. The Certificate would appear to be measuring mainly the student's academic work levels; even in the teaching practice situation this isstill its main preoccupation, though the nature of the student's authority and interest in children also appear to be taken into account in that order. The initial suspicion of the criterion as having a different direction to that of the attitude scales therefore appears justified, and the attitude tests appear to be measuring what they purport to measure rather better than does the certificate.

(2) Ratings of College Tutors Criterion

The second criterion to be used was that of ratings given by College Tutors of at least five years experience. A sample of fifteen tutors returned ratings on students with whom they were in regular functional contact. The tutors were instructed to assign ratings to these students on the basis of general impression as good or weak students with reference to the overall goal of teaching, rather than on the basis of a specific analysis of particular points. Since this was a'general impression' rating no attempt was made to correlate it with the separate scales, but only to the total standardised attitude score.

In view of the known weakness that combining ratings tends to give regression to the mean, two methods of combination were used. One was simply to take the average of all the ratings given to a student, even though these ranged from one to seven ratings. This was so mathematically suspect that an alternative method was also used. This was to choose the modal rating for each student, and eliminate students with only one rating or wide disparity in their ratings. The correlations obtained by these two methods were as follows:-

Total attitude score with arithmetical average of ratings	= .245**
Total attitude score with 'modal' average of ratings	= .459**

Table 6: Correlations of total attitude scores with tutor ratings. Both correlations were significant, though the modal one was clearly much more so, and provided clear support for validation of the attitude test.

However, since ratings are known to correlate poorly together, and therefore be a poor criterion in themselves, a further comparison was made. This was to correlate the ratings of individual raters together, in order to obtain some indication of the actual value of the criterion itself. There was only one group of students for whom there was a large number of ratings by the same raters, and these all belonged to one department in the college. All tutors in this department shared one office, took the same students for different parts of the weekly programme, and were in daily functional contact with one another. As the following table of correlations between them shows, they agreed with one another at the level usually to be expected of ratings by teachers in discussive

contact about the pupils whom they all teach; that is at the highest level of agreement between ratings that one can normally expect:-

	B	A	Bo	H
B		.53	.45	.57
A			.37	.57
Bo				.44
M.J.	.45	.76	.08	.47

Table 7. Correlations between raters' judgements.

One tutor (M.J.), who was not a member of that department but who rated many of the same students, had her judgements also correlated with theirs to discover the range of correlations when these ideal conditions no longer existed. Clearly the range can increase considerably when tutors are not in discussive contact with one another, and this applied to three quarters of the raters and three quarters of the students rated. The amount of agreement quoted in Table 7 therefore represents the greatest agreement likely to occur in the total sample of raters. The average correlation of the five raters in Table 7 was .46, and this compares very favourably with the .459 correlation between the attitude test and the pooled tutor ratings. The ratings can thus be said to support fully the claim of the Attitude test to validity; in fact, the test is generally more in agreement with student success according to this criterion than individual judgement.

(3) Thurstone/Chave Criterion

The Thurstone Chave version of the test, using staff judges, acted

as a third criterion. A sample of thirty student scripts was chosen by random numbers and re-marked by their Thurstone/Chave values. The scores obtained were then standardised, totalled, and correlated with their original Likert Scores. The correlations obtained were as follows:-

Likert Scores

Thurstone Chave	A Scale	B Scale	C Scale	D Scale	E Scale	Total Attitude Score
Scores	.09	.328	.73**	.438*	.388	.802**

Table 8. Correlation of Thurstone Chave and Likert Scores on the Try-Out Test

This strongly supports the validation of the attitude test as a whole, but not all of the component scales separately; though, except for the 'A' scale, these are contributory in the required direction to the score as a whole. The lack of correlation in Scale A, when previously it had been the only significant one of the correlations with Final College Results, needs explanation, however. After all, the tutors represented in the Thurstone/Chave test are the same set of tutors who make up the judgements for Final Results. The staff judges are clearly putting students' written work, and hence Final Results, in a just order of merit which reflects the students' own attitudes to work. However, tutor attitudes themselves do not agree with those of the students towards work. That is, there is no evidence of 'agreed-on norms' by staff and students at the covert level of attitude expression, though there may well be at the overt level. This, in its proof that staff action can take place in a different direction to the attitudes held, indirectly provides more validation for the A scale than if agreement had been positive throughout. It also shows how much

care is needed in analysing, in any given situation, what attitudes are likely to be significant in influencing action. In the other four attitude scales, of course, there is clearly a measure of agreement between the two samples. Scale C is strongly validated against tutor attitudes and Scale D also receives significant support. Scales B and E, while showing some measure of positive correlation, do not actually achieve significance.

(4) M.T.A.I. Criterion

Finally, a criterion based on attitudes to actual teaching was used. A random sample of twenty two students scored on the M.T.A.I. was taken as a final validation check. It was found that the standardised total attitude scores of these students correlated with their M.T.A.I. scores at .448, which was at the 5% level of significance. This, allowing for the different cultural origins of the two tests and the difficulties cited by K. M. Evans was considered to lend considerable support to the belief that the attitude scales were measuring attitudes basic to the functions of teaching, as well as ones relevant to the course of teacher training.

(5) Conclusion.

Thus when the four criteria are considered together there is good evidence for believing that the attitude test as a whole is a valid measuring instrument, and its component scales appear to be measuring what they claim to measure. This is especially substantiated by the fact that the criteria were selected so as to sample different aspects of the students performance: one covered his college achievement, one his position in the estimation of his superiors, and another his practice in, and attitudes to, the teaching situation. A further fact in support of

validation was that where it was possible to evaluate the criteria themselves at all, they seemed to be rather more suspect measurements of these attitudes than the scales themselves; and, in the absence of guaranteed criteria, validation must be a process involving evaluation of criterion validity almost as much as test validity. In addition, it is to be noted from the following table that where the criterion aims directly at measuring much the same variables as the test (e.g. in the ratings and the Thurstone/Chave test) there is high correlation. It is only where the criterion measures something else, and the attitudes are postulated as being at its foundation, that the correlation drops, though even then it remains significant. In fact, all four of the criteria return significant relationships with the attitude test.

	Final Certificate	Tutor Ratings	Thurstone Chave Test	M.T.A.I.
Correlation	.31**	.459**	.802**	.448*

Table 9. Correlations of the Criteria with the total Attitude Test.

Finally, it will be later shown that there is further evidence of validation from the internal correlations in the test programme, as it was administered in the following years. This test can therefore be said to be a reliable and valid instrument at this stage in the investigation.

The Problem of Faking

A further very important point which needed to be established at this stage was the test's susceptiblity to faking. The try-out test had been necessarily carried out in a non-stressful situation in order to obtain

truthful responses to the statements. The possibility of 'faking' good responses had therefore to be considered.

Faking can be of two kinds. One is the natural, sub-conscious conformity to the subject's self image, which may produce some discrepancy between attitude and action in actual situations. This is not something against which a group attitude test can effectively guard, since it needs clinical methods of detection. The other kind of faking, arising from the use of the test in a situation of stress for the subject, is much more likely to produce discrepancy, since here the subject has a positive, conscious incentive to 'fake good' or 'fake bad'. It is this kind of faking which needs to be guarded against here.

In the absence of any possibility of using an actual stressful situation, in which to set up a separate experimental group, four measures were taken to guard against successful faking in this test. The immediate one was to continue to include all the insignificant statements in the original test shcedule so as to obscure the actual marking scales. Since all the statements had been found to be significant expressions of opinion, which were relvant to the course though often non-discriminatory, this measure alone made it virtually impossible to detect which were the significant statements for the actual test; and faking 'good' on all the 305 statements would have produced so obvious a pattern that it could be easily detected. The other major precaution was to administer the test at a time in the course when it was obvious to all students that the test results could not affect the Certificate results. There seemed therefore to be no real likelihood of conscious faking during this test programme, since the incentive was non-existent and the opportunity for detection ample.

Nevertheless, it was considered worthwhile to ask a sample of 25 volunteer students to try to 'fake good' in order to find out if the test was easily susceptible to faking in a stressful situation. The students were told to respond to the test in what they thought to be a socially acceptable manner, as if they were doing this test as part of an interview for a post they particularly wanted. Inspection of the results showed that some students actually decreased their scores by trying to answer the test from an artificial standpoint, though the poorer students did seem able generally to increase their marks substantially. Both of these tendencies seemed to offer useful indirect evidence for the sincerity of response in the present investigation.

The 'true' and 'fake' marks were both listed for the group and the significant difference between the means was calculated for each scale. Only one scale (Attitude C: towards one another) was found to have a significantly different change in mean (See Table 10.)

	A Scale		B Scale		C Scale		D Scale		E Scale	
	True	Fake	True	Fake	True	Fake	True	Fake	True	Fake
Mean =	94	100	76	80	148	162	139	146	71	74
LSD =	12	9	6	10	14	13	10	10	10	9
Tc =	1.23		1.74		3.7*		1.01		1.12	

critical ration = 2.02 N = 25

Table 10. Significant differences between the means of 'true' and 'faked' attitude scores.

From this it would appear that relatively the students were not able to improve their scores in the two situations, except in Attitude C where the trend of the statements may quite possibly be more easily identifiable to the subjects, though even here it is clear from Table 11 that their relative positions on the scale were barely altered.

	A Scale	B Scale	C Scale	D Scale	E Scale	Total Scores
r =	.44*	.612**	.49*	.39*	.066	.494*

Table 11. Correlations between 'true' and 'faked' attitude scores.

In fact, when the correlations between these two sets of scores are taken into account it becomes even more certain that the relative difference between the two situations is slight. Clearly, faking by the individual on this test is not likely to be certain of success; in fact, in some cases a decrease in score was achieved.

It would therefore seem that burying the significant statements in amass of relevant, but not critical, statements is a sufficient safeguard to avoid effective faking. However, certain other checks had been built in to the initial test, so these were also considered to see if they provided an additional safeguard or not. They consisted of two sets of statements in each scale designed to test the consistency of the subject's responses. One set consisted of three statements at what was thought to be the different levels of 'acceptance of', 'preference for' and 'commitment to' the particular attitude of that scale. It was expected that the normal range of responses would not include endorsement of the extreme commitment level even where levels one and two were endorsed. The pattern of response on these statements

might therefore well indicate the 'faker', who was more likely to adopt the extreme position. The other set of statements consisted of a pair of opposing statements in each scale, which it was thought the faker might fail to notice, since they were widely separated, and he might well tend to endorse both in his anxiety to score highly. However, inspection of these responses from a small sample of students showed that quite often the commitment level was endorsed in the student's true response, and this had not been thought at all likely to occur when this device had been envisaged in the subjective construction of the test. The fact that it did happen destroyed the basis of the device as a faking detector, and hence consideration of these devices in further applications of the test was omitted.

From these results therefore it would appear that the problem of faking was not a serious one as far as this investigation was concerned, since the situatic had been deliberately made non-stressful, and even when conscious faking was attempted it was largely unsuccessful. As far as the wider aspect was concerned, where the test might be used in other situations, the picture was less certain. There seemed to be good reason to believe that faking was likely to be relatively unsuccessful for a group of candidates in a stressful situation, and there also seemed to be reasonable grounds for believing that faking could be detected in individual cases. Nevertheless, before a final conclusion could be arrived at, it would be necessary to carry out a separate investigation specifically on this point, with a group of candidates in an actual stressful situation (e.g. applicants to college), and follow up their progress through college to really determine if faking had occurred in the test. This was not possible in the context of this

investigation, because candidates for entrance to college had only a limited time for interview, and it was not possible to fit in the administration of this test in that time. However, for the purpose of this investigation the possibilities of faking had been shown to be sufficiently remote to be ignored.

Reliability and Validity of the Sociometric Test

The only other unpublished part of the test programme was the Sociometric Test, so this too had to be examined at this stage for its reliability and validity.

It had previously been decided that, in view of the administrative difficulties associated with large numbers of testees, it would be necessary to make this test a simple recognition one. The test therefore instructed each student to give a score to any other student in that year on a basis of weights from 0 to 5, in accordance with how well he/she knew that student as an acquaintance (0 to 2) or as a friend (3 to 5). The students were told that if they could connect a name on the year name-list with a particular person, but not do more than that, then they were to rate that person at nought. This instruction was to give them all a common base point from which to start. The scores were then collected in two forms: the Sociometric 'A' scores were totals derived from all the weightings given by a particular student to other students in his year; the Sociometric 'B' scores were the totals of weightings received from other students by that student. The numbers of students rated by each student, and the number rating each student were also kept as giving some practical limit to the range of acquaintance a student claimed to have, and the range

he actually had.

The reliability of the sociometric test was calculated on a random sample of thirty students and found to be .87. The validity was found to be .56 (1% significance) when correlated with student self-reports of active membership in college activities, and to be .45 (1% significance) when correlated with Cornwell's sociometric test. These correlations compare very favourably with those reported by Moreno (1960) in a survey of the reliability and validity of conventional sociometric techniques of measurement, in which this summated rating technique figured as one of the types of measurement. It seems clear therefore that this test was an effective one, and as its simplicity made it very suitable for use with large numbers, its use was continued throughout the following issues of the test programme. This test seems highly suited to finding those students who have failed to adjust effectively to the social situation in College, but its results will be considered more fully in the later section devoted to a consideration of the results obtained from the whole test programme.

Conclusions

These results therefore give good evidence for believing that this attitude test is a reliable and valid test in an unstressed situation. Furthermore, the fact that three of the validity criteria are behavioural criteria in real life situations suggests that there is reason to believe that the test is measuring tendencies to action in this situation rather than merely cognitive alignments. In addition, it would appear that, wherever it can be checked, the attitude test is a better measure of what it is trying to test than its individual criteria. For example, the

raters' correlations with each other (except in the case of one special small group) are poorer than the correlation of the modal ratings with the test. Similarly the Teaching Practice mark appears to be loaded in a number of directions. Its high correlation with academic subject performance shows one loading, and the fact that it correlates better with attitude to authority than attitude to children shows another loading. Whether these loadings, and their respective weightings, are justifiable factors in teaching practice assessment is outside the scope of this discussion, but they do show that the initial suspicion of this criterion, as incorporating uncertain loadings of different factors, would seem to be justified. The initial suspicions about the quality of the criteria, and the need to have more than one, thus seems to have been borne out.

Two other important points also emerged in this initial application of the try-out test. One was that from an inspection of the Thurstone/Chave results it seemed likely that student/staff opinion diverged in some areas, such as attitude to authority, but coincided in other areas to a far greater degree than was originally expected. The other point was that student and staff opinion respectively showed a greater degree of unanimity than was expected before the experiment began. However, both these points would need to be followed up in the full analysis of the results when the whole experiment was completed.

Finally, the last point to make at this stage of the experiment was that it had been decided to give the whole programme of tests on this occasion, as well as the unrevised attitude tests, so that when these were revised and the sample re-marked, this issue of the tests could be included

with the series of tests which were to take place over the next three years. It was also decided, in these later applications of the programme of tests, to continue administering the full unrevised scales of attitude statements which had been initially given. This was not only because it was an anti-faking device and would maintain parity of test situation between the intitial and later applications of the test, but also because it would enable a check to be made of changes in all the individual statement values during the whole test programme. In this way some measure of the dynamism of attitudes inside the College over a period of 4 years could be obtained.

Having thus now found that the attitude test was a reliable and valid one, and that the sociometric test constituted a valid and reliable check variable, it was possible to continue with the further applications of the schedule of tests in the following three years.

CHAPTER FIVE

EXAMINATION OF THE ATTITUDE TEST AS A MEASUREMENT INSTRUMENT: ADMINISTRATION, RELIABILITY AND VALIDITY OF THE FURTHER TEST PROGRAMME

Introductory Statement

Since one of the major hypotheses of this experiment was to examine the efficacy of measurement of the attitude scales over a period of four years, it was necessary first to examine in detail the reliability and validity of each further issue of the test. This was done in order to consider how the internal items of the test continued or failed to continue to carry out their function, and to discover whether new significant items arose as the four years progressed. That is, this part of the programme was concerned with discovering more about the nature of the measurement carried out by the attitude test. Hence the whole original scale of 305 items was given on each test occasion, and subjected to analysis, so that the attitude scales could be examined in conjunction with their original statement background.

At the same time, however, this ongoing programme of reliability and validity would also throw light on the information, recounted in Chapter 6, relating to the basic experimental hypothesis of finding out what was the longitudinal picture of student attitude and personality qualities existing during the course. There therefore needed to be a concern with the actual levels of reliability and validity, since these determined the usefulness of this information. Hence, this chapter is concerned first with the physical limitations on the various administrations of the test programme, next with the actual levels of reliability and validity, and finally with the nature of the measurement of the attitude scales. This last consideration will indicate

whether there is a possibility of a permanent attitude test emerging from these scales, or whether the attitude situation in college is too dynamic, or dependent on too many inter-active factors, to permit such a possibility.

Limitations on the Administration of the Further Test Programme

The whole series of tests was therefore now administered annually for the next three years (1966, 1967, 1968) to a sample from each of the first, second and third years of students in the college. It was hoped to achieve a minimum number of 150 students in each year, representing as far as possible a cross-section of the college. Of course the voluntary nature of student attendance had to be maintained, but, on the whole, adequate representation over all the sample was achieved (See Table 12 below).

Summary of Test Sample

	1st Year in College							2nd Year in College							3rd Year in College						
	Sec.		J/S		Inf.		Total	Sec.		J/S		Inf.		Total	Sec.		J/S		Inf.		Total
	M	W	M	W	M	W		M	W	M	W	M	W		M	W	M	W	M	W	
Try-Out Test 1965															13	30	14	21		44	122
Students in Year																					160
1st Issue 1966	11	42	8	33	-	33	127	22	29	20	28	4	38	141	16	29	16	19	-	35	115
Students in Year							260							230							185
2nd Issue 1967	29	26	39	91	-	55	240	17	59	30	37	-	58	201	24	30	27	27	-	48	156
Students in Year							260							250							
3rd Issue 1968	-	-	-	-	-	-		35	33	20	43	5	71	207	13	53	22	19	-	78	185
Students in Year														250							250

Table 12. Analysis of the Test Sample during the Test period.

Other difficulties of administration apart from those caused by voluntary attendance presented themselves. One was the physical difficulty of assembling a sample of 150 students in one spot, when the college inhabited two sets of buildings ten miles apart, and one year of students could well be timetabled in both sets of buildings. The timing of the tests likewise caused a further difficulty. As far as possible the tests were administered as near to the middle of the college year as could be arranged, in order to make the resultant attitude picture as representative of that year as possible. Ideally, it would have been useful to supplement these sessions by testing at the very beginning and end of the course as well. However, this would have seriously inconvenienced the College timetable and have increased the possibility of test boredom, so it was decided to omit extra sessions. Finally, there was the factor of the college's increasing size to consider, as affecting the nature of the sample. During the four years of the test programme the college changed from a relatively small one to a large one. The third year used in the try-out test could be said to be the last one representative of a small college, and undisturbed by the physical difficulties of rapid change in size and changeover to new buildings. It was realised that this could be an important factor when considering the results, and might well account for attitudinal differences between different issues of the test.

There were also some difficulties arising from the nature of the sample itself. There was a strong contingent of Domestic Science and Physical Education specialists, amounting very nearly to one third of the sample in each year of students tested. Both of these contingents appeared likely to be practically

biased, and their respective departments were organised on 'apprentice' lines with early identification with the teacher role. This bias, if it existed, could well affect the attitudinal nature and personality make-up c sample as a whole. A further complicating fact in this respect was that th Domestic Science department radically changed its organisation during the test period. From being a department organised on very narrow 'craft' lines, it became based on a 'Home Education' interpretation of the teaching of the subject, and widened its courses to include subjects and staff other than the traditional, specialist ones. This too could well make a differen to student attitudes and consequent interpretation of the results.

The test conditions were maintained at an informal level in the same way as those for the try-out test. The students in each year sample were reminded, before the tests were given, of the need for sincerity of respons and the relevance of the research to their professional education. The nee for responses to the attitude statements on the basis of 'snap' judgement wa also stressed, since these were more likely to reflect the student's uncons attitudes rather than his thought-out position. Finally, it was emphasised that there was no right or wrong answer in these tests. The test items were asking for expressions of opinion over an extremely wide range, and therefor the student's individual attitude position could not be directly interpreted as favourable or unfavourable to the ends of the course. The students were then asked to complete the test schedule at their own pace.

Thus a collection of test scores on this programme was built up during t four years of the experiment. It consisted of the scores of first, second a third year students in each of three successive years, so that three separat

pictures of the overall attitude position in the college were obtained. In addition, a repeated picture of the static attitudinal position of one year group of students in the first, second and third year of the course was also obtained. The number of students in this year who took the tests on each of the three occasions formed a 'straight-through' group, whose results would give a longitudinal picture of what happened to a student's attitudes during the course. This group numbered 65 students, and their results form part of the total results from each administration of the test.

Further Reliability and Validity of the Attitude Scales

Reliability

The reliability coefficient was calculated for each attitude scale, and for the total attitude scales, for a random sample of twenty five students in each of the three issues of the test. This sample was taken from the first year in the first issue, the second year in the second issue and the third year in the third issue of the test. This was done so that there would be a coefficient for one year of students on each year of their course and for each issue of the test programme. Thus, by the time the third coefficient was taken, more than a half of the results for that year-group of students would have been used. At the same time, it was hoped that, by using the same year of students in each year of their course, any change in reliability due to changing composition of the student sample would be minimised, and therefore changes could be more certainly attributed to changes in test consistency over the period of four years.

The coefficients obtained were as follows:-

Attitude	A	B	C	D	E	Total
Try-Out Test	.76	.76	.80	.90	.92	.88
1st Issue 1st Year	.55	.86	.84	.80	.83	.923
2nd Issue 2nd Year	.49	.71	.74	.91	.71	.891
3rd Issue 3rd Year	.69	.55	.74	.73	.57	.764

Table 13. Reliability Coefficients of the Attitude Scales for each issue of the test.

Edwards (1957) quotes reliability coefficients as low as .68 to be reliable, so, clearly, the reliability of the whole test schedule over the period of the research is established. The use of the individual scales A and B separately, as already noted in the Try Out Issue of the test, would not be advisable. However, it is also noticeable from these results that there is a consistent annual drop in reliability when the one year group's results are considered. In fact, two of the five scales in the Third Issue of the test appear to be unreliable and a third is on the borderline of reliability. This would suggest that a further issue of the test in the next year could well have produced overall unreliability. Thus, while reliability can be guaranteed for the 3 year span of a single course, continuing revision of an attitude test appears to be necessary for long term reliability.

A further difficulty which it had been feared might cause loss of reliability was also clarified by these results. This was the difficulty of being uncertain of the level at which the attitude was being sampled. If this level is a deep-seated one, analagous to one of Allports Personality Dispositions, then it is likely to be stable, but if the attitude is sampled

only at the more superficial level of current opinion then changes can be expected. One of the problems in this research was thus to sample attitudes to basic features of the course, without sampling too much the more superficial reactions to temporary features arising from the college's rapid expansion. The consistency of these reliability coefficients supports the belief that attitudes to basic features of the course are being tested here. However, it is only by this repeated testing over a comparatively long time that it can be assumed that the more permanent attitudinal positions are being examined.

From these results, then, two conclusions emerge:-

(i) The test schedule is reliable for the purpose of this investigation.

(ii) The case for repeated testing of the test is strongly supported for two reasons. One is to monitor the continuing reliability of the test; and this is particularly necessary on a selected sample in a closed community. The other is to throw some light on the problem of the permanency (and hence depth) of the attitudes being tested.

Validity

The ongoing validity of the attitude scales was next considered. Of the four criteria used in the original Try-Out Test, the most useful had seemed to be those of tutor ratings and final college scores; mainly because ratings represented a direct and wholistic judgement of the students by persons who knew them, and final college grades represented the official judgement of the college derived from assessments throughout the student's course. Even with these criteria there were difficulties inherent in the methods of arriving at the judgement, which made the criteria suspect (see discussion P.68-72 but they were the best available. These two were therefore used for this

investigation into the validity of further issues of the test.

This fact of criterion weakness brings up the question, noted earlier in the discussion of the try-out test results, of whether this present test could be more valid than the criteria used on it. Both ratings and college grades represent a judgement external to the student's personal situation. On the other hand, a quantification of student attitudes by a method which in effect represents a quantification of peer judgements, is a judgement internal to the situation and therefore likely to be intrinsically more valid. Furthermore, attitudes tested in the Third Year of the course could be truly said to be representative of the end-product of the college, and therefore a 'de-facto' criterion in themselves. The possibility of the Attitude test being better than its criteria therefore had to be borne in mind when considering the results; and itself suggested a further possibility. This was that it might be possible, by repeated refinement of a test with a weak criterion to develop a test which was in actual fact a better instrument of measurement than its original criteria. This had been claimed to be done with the M.T.A.I. (See Gage 1963, p.508 on), and was certainly a possibility to be considered here. At the same time, such a possibility could only really come into effect if an examination of the actual measurement of the Attitude tests were undertaken also, and this was done as a separate part of the experiment. (See pp. 170 on)

For these reasons, as well as for those of straightforward validation of the test, it was decided to make a long-term study of the validity of the test, as the first half of this process of examining the nature of the measurement of the attitude scales. The total attitude test results were therefore correlated with final college grades through all the years tested, for which

final results were available. Random samples were used in the first and second year groups of students, but in the third year the whole year was taken in each case, since the original sample had been a third year one and it was intended that the test should be standardised on third year students. The following table of chi^2 values thus emerged with their respective significances beside them:-

	1st Year		2nd Year		3rd Year	
	X^2	Significance	X^2	Significance	X^2	Significance
Try Out Test					(r=.31)	1%
1st Issue Test	5.61	2%	2.67	(N.S.) 20%	.028	(N.S.) 80%
2nd Issue Test			1.63	(N.S.) 20%	23.18	1%
3rd Issue Test					10.46	1%

Table 14. Chi^2 values for phi correlation of issues of the Attitude Test with Final College Grades.

The most noticeable fact in this table is the insignificance of the First Issue, Third Year results. In fact, if the division point in the Final College grades array had been made the actual pass level, this result would have become .9 and significant at the 30% level in the negative direction. That is, college grades in this year were passing students whose attitudes were negatively oriented to one or more of the basic features of the course they had attended. This was a discovery of major importance which will be examined in detail later (pp.). The fact that three out of the four consecutive third years correlated with the attitude test at the 1% level was judged sufficient confirmation of the ongoing validity of the attitude test, and this single, peculiar result was therefore ignored for the purposes of

validation, especially as its later exploration showed good reason for its occurrence.

One further point about the above table of correlations is of importance. This is the distribution of the significant values of chi^2 in the first and second year samples of students. The first year result with a significance of 2%, the second year at 20% and returning in the third year to 1% implies that the course is one of confirmation of student attitude rather than change, though there is a considerable upheaval of attitude in the second year. However, with only one year of the sample for whom there were complete results throughout their course this can only be a tentative conclusion, but it is confirmatory of other researches such as that of Jacobs, and is confirmed by other parts of this research. There is therefore some evidence of predictive validity occurring in the attitude test results.

Finally, the attitude scales were also subjected to concurrent validation against a criterion of ratings by tutors. Bearing in mind the difficulties encountered in obtaining ratings in the try-out test, it was decided to follow a slightly different procedure. It was established during the try out test that students, who received ratings from tutors who were in discussive contact about them, were rated more effectively than if rated only by tutors who saw them in the different areas of their college work. It was therefore decided to pick a group of students in each of two of the third years of the sample and ask the tutors who taught them in their main subject only to rate them as good or weak students, using a score range of 50 marks with 25 as the dividing line between the two categories. The phi correlations were as in Table 15, and give strong support for the validity of the attitude

test as a whole instrument, though again it is noticeable that, even with this direct measure, the 1st Issue 3rd Year result is less significant than the other one.

Sample	phi	X^2	Significance
1st Issue 3rd Year (N=20)	.455	3.93	5%
2nd Issue 3rd Year (N=29)	.589	10.08	1%

Table 15. Phi correlations between standardised total attitude scores and tutor ratings.

Thus it did seem conclusive that the attitude test as a whole was both reliable and valid during the test period, though there seemed to be some measure of weakness in its predictive validity earlier in the course.

It was therefore decided to see if the test's predictive validity could be strengthened, in order to improve detection of student strength or weakness earlier in the course. Part of the analysis of attitude statements carried out at the same time as the validity investigation (see pp. 170) had shown that only about 70 of the original significant statements retained their full significance throughout the four years of the programme. These statements could form the basis for a further revision of the revised attitude test. The first issue first year sample used in this section was therefore re-marked according to this further revision of the attitude scales. If these re-marked scores were then correlated with Final College Scores, a X^2 value would be obtained which could be directly compared with the previous X^2 value of .561 which had been significant at the 2% level. This was therefore done, and the X^2 value obtained was 12.76, which was significant at well above the 1%

level. It therefore seems possible that further revision of the attitude scales, based on a wider time sample than that of one year, might well improve their predictive validity; but it must be remembered that the confirmation sought above is a self-confirming one, and that only repeated testing with further samples not included in this test programme could give real confirmation of this result.

Conclusions on Reliability and Validity

It would thus seem, from all these results taken together, that a number of conclusions can be safely accepted. The major one is that the attitude scales, as developed in the original try-out test, do constitute a reliable and valid instrument of measurement over the four years of the test programme. Furthermore, this instrument is reasonably predictive of comparative success or failure between the first and third year in the college course, though its predictivity might be improved by further statement analysis and revision.

A conclusion arising out of this fact, of almost equal importance, is that tests of this kind appear to need to be standardised on a wider time base than that afforded by a single third year of students. Alternatively, if a single year base is used, it would appear from the evidence of the slow decline in reliability, that re-checking of the discrimination of the test at periods of no more than 4/5 years are necessary to allow for changes in attitude climate in the college. In fact, it might be found useful to check discrimination with each separate three year course.

However, there remains the problem of the long-term efficacy of measurement of the attitude scales. A final judgement on this must be suspended until

their actual discrimination, and their relation with other crystallised criteria, can be examined. This examination therefore forms the subject of the next section of the investigation, though for the purpose of this test programme the reliability and validity of the attitude test can be said to have been substantiated by these results.

Analysis of the Discrimination of the Attitude Statements

It is important to remember that in this section two tasks are being carried out. One is the process of re-examining the discrimination of the original significant statements in order to carry out the further revision of the attitude test already mentioned, and aimed at securing a longer time base for its validatory sample. The other task is that in this process of re-examination the opportunity will occur for detailed examination of the 'drift', if any, of third year attitudes over the four years of the test programme, which may account for the slow decline in reliability already noted. The second job is more important than the first, since it is this which will show whether or not attitudes among individuals in the student body dynamically develop and change in the community over a period of four years. It is the extent of this dynamism, if any, which will determine the long term usefulness of the attitude test, rather than the marginal improvement brought about by extension of the time base for validation.

It is also important to remember in this analysis that what is being considered here is whether the statements significantly discriminate between students, not whether statement means significantly change or not. It may well be that statements can remain stable in themselves, but gradually fail to discriminate between students. If this happens then it is a very

important fact to take into consideration, since it will be evidence for the belief that the dynamic complex of the college tends to throw up new discriminatory opinions and smooth out opinion differences which were initially discriminatory; and that this process takes place by the discriminatory opinion becoming homogeneous among students rather than by becoming unstable.

Thus the revision of the revised version of the test not only involved exclusion of statements which had shown significant change in their mean value among third year students, but also involved the exclusion of any of the original significant statements which failed to continue to discriminate between high and low third-year scorers on the test throughout the test programme. It was therefory necessary to analyse the responses of the third year group of students at the end of the programme in order to find out which of the original 305 statements were significantly discriminating among them. (See Appendix 5).

The first item examined in this analysis was the actual number of significant statements occurring in each year. The try-out test had had 148 significant statements in it, which had formed the initial revised test with which the rest of the test programme had been carried out. The third year group of the third issue had 83 such statements (see Table 16 below). Inspection showed that some statements were significant in one year, but not in later years. That is, a greater degree of agreement was occurring within the College on some items which previously had produced significant disagreement. This suggests an important characteristic of attitude tests based on the Likert method of construction, which has not previously received sufficient attention. The component items of such tests are selected on the basis of

their discrimination between numbers of the original test sample. But the very difference of opinion, which the discriminating statement reflects, appears bound to lead to attempts in the community to resolve the difference. Attitudes are only relatively permanent, and, when combined with the dynamics of inter-group relationships, are quite likely to be affected in a close-knit community as time passes. New discriminations appear to arise and old ones diminish.

Significant Statements occurring in each year:-	
Try Out Test, 3rd Year	= 148
Third Issue Test, 3rd Year	= 83
Original Significant Statements retaining their significance:-	
Try Out Test, 3rd Year	= 148
Third Issue Test, 3rd Year	= 72

Table 16. Changes in significance of the discriminating statements at the beginning and end of the test period.

Of the original 148 significant statements in the try-out test only 72 continued to discriminate significantly in the third year test issued four years later. A further 10 of the original statements were significant at the 10% level (1.67) in this third year re-test. Of those at the 10% level in the original test, six had come up to the 5% discriminatory level four years later. However, of this total of 88 statements 18 statements had significantly changed their mean value some time during the four-year programme, so only 70 statements could be said to be fully operative for the four years after the initial test. Thus a further revision of the revised test, based on an extended sample of four third year student populations,

would consist of these 70 statements. These figures thus clearly show that attitude tests need prolonged re-scrutiny before they can be assumed to be useful measuring instruments over a long period of time.

In addition to this conclusion, however, the analyses used in arriving at the revised version of the revised test also showed some of the characteristics of general attitude movement in a college over a period of time. First there was the fact that while over one half of the statements (92) lost their significant discrimination during the four years, only one seventh (18) of them suffered significant change in mean value. There is thus proof here of movement of attitudes towards homogeneity in the student body, yet maintenance of the actual attitude level. The sixteen statements noted earlier as moving from 10% to 5% significance during the four years are instances of this kind of process at work. Statements which were subjectively framed by tutors and students at the beginning of the experiment, in the light of the then situation, failed to discriminate nearly so substantially four years later, as they did initially. The attitudinal situation among students is clearly a relatively dynamic one, where discriminatory opinions are becoming non-discriminatory and vice versa.

A second point which adds strength to this statement is the reduction in the overall number of significant statements which the original 305 statements threw up. From the first to the last third year group involved in this programme the number of significant statements reduces from 148 to 83. That is, only 27 new discriminating statements arise in the course of that four years, whereas 92 such statements cease to discriminate. This lends considerable support to the view that the attitude situation inside college is a dynamic

one, and one continually undergoing a 'smoothing-out' influence which may quite possibly be attributable to the general climate of opinion in the college.

Of course, this does not imply that no new discriminatory attitudes are arising in the College. The original 305 statements can be viewed as a crystallised encapsulation of a range of college attitude opinion at the beginning of the experiment. This broad range of opinion thus showed, in the following four years, the rise of a small number of new discriminating opinions (27), the dying away or changing of a large number of old ones (92), and the continuance of a substantial number (56) of old ones unchanged. The paucity in the number of new ones may quite likely be due to the increasing loss of relevance of the original batch of statements to the college situation as it changed over the four years. The possibility of this being the right explanation was supported by the fact that when the significant statements were analysed against other crytallised criteria an even greater drop was noticeable. For example, individual statements significant for final college results in the first third year were compared with similar statements for the second issue third year group two years later, and the statements common to both sets was found to be only a little over one third of the total in each case. A similar comparison, with similar results, was carried out with the encapsulation of staff opinion as tested by the Thurstone Chave test. The situation and the attitudes pertinent to it thus do seem to be in dynamic interrelationship with each other; and crystallisation of one side of the equation without the other is likely to produce its own distortions, especially in a selected sample of the population.

Nevetheless, the 56 statements which retained their significance throughout the four years, as the overall validity and reliability coefficients for the whole test programme show, do represent a core of continuing attitudinal difference in the student population. Out of the 83 statements which were significant in the last third year sample on which the test was used, 70 had been significant at the try-out stage. This thus represents nearly all the attitudinal differences emerging in that year on this test, and a substantial core of continuing difference extending over the whole test period. The distribution of these statements among the attitude scales is as follows:-

Scales					
A	B	C	D	E	Total
11	11	17	24	7	70

Table 17. Distribution of significant statements from beginning to the end of the test period.

Thus, while the core of continuing attitudinal difference ensured that the test remained a useful measuring instrument for the period of the test programme, the accompanying 'drift' in statement discrimination suggests that there are important limitations on its total usefulness. Extending the validation time base of an attitude test on a selected sample would appear likely only to prolong its life for a limited period. A safer measuring device in a closed community would appear to be periodic test revision against ongoing situational criteria rather than acceptance of a crystallised test measurement over a long period of time. Stemming from these consideration it would appear that the college community is one of dynamic rather than

static attitudinal relationships, though these seem to be on a relatively slow time scale, extending over a period of at least a completed student course.

Moreover, there is not only 'drift' in statement discrimination to be taken into account. Analysis of the significant change in statement means between the different years of a single course (Section B, Appendix 5) shows that there are far greater differences in statement opinion between the first, second and third year of a single course than there are between successive third years.

Significant changes in statement means between unrelated 1st, 2nd and 3rd Year Groups = 183
Significant changes in statement means between unrelated 3rd Year Groups = 40.

Table 18. Significant changes in statement means between different year groups of the sample.

Clearly, attitude change does go on during a single course, and it is towards a greater homogeneity of statement opinion in the third year. The drift in homogeneity of third year opinion between successive third years is by comparison slight. There is thus not only evidence of slow loss in statement discrimination over successive third years, but also evidence of maintenance of statement means between them. There does therefore appear to be indications of quite rapid 'smoothing out' of statement opinion during a single college course, as well as evidence for a slower loss in discrimination between third year groups of students over a longer time period. Support therefore for a crystallised measurement for student attitudes over a long period of time appears to be very slight.

CHAPTER SIX

CONSIDERATION OF THE RESULTS OF THE FOUR YEAR TEST PROGRAMME

Introductory Statement

The previous two chapters have reported the programme of validation and reliability testing which took place over the four year test period. This programme had shown the dynamic nature of attitudes, and the pace of this dynamism; but it had also shown that during this test period the results from the attitude tests could be accepted with some confidence as being reliable and valid.

The results from the whole test programme could therefore now be examined to discover (i) what was the extent of attitude and personality change, if any, during the course (ii) what were some of the influences on student attitudes during the course, and how far did these affect course success, and (iii) what was the actual pattern of attitude existing in the college, and how far was it favourable* to the pattern of attitude endorsed by college staff.

Attitude Change During the Course

Significant Differences of Means between the Years

The obvious step to discover attitude and personality change, if any, during the course, was to compare the means of the attitude and personality

* Wherever attitudes are referred to as being positive or favourable throughout the following chapters the reference will be to alignments as being positive when they are in accordance with college staff opinion.

variables in successive years of the course. Since Year A1, B2 and C3 in Table 19 (P.116) are the same year of students in their first, second and third year of the course respectively, and since A2 and B3, and B1 and C2 are similarly related, it could be expected that there would be few significant differences among each of these sets, unless the course or some other common factor influenced them. On the other hand, all the other year groups considered were unrelated, and therefore the significant differences between them need separate interpretation (see Table 20). A general comparison of Table 19 with Table 20 shows the different incidence of significant differences occurring in the two kinds of group. A separate group, composed of the same students in successive years of their course, was also extracted, but this is given separate consideration later (see pp128). There were thus three types of group examined in this section:-

(i) 'Related' groups, composed of the same year group in successive years of the course, but not composed entirely of the same students.

(ii) 'Unrelated' groups, composed of different students in different years.

(iii) 'Straight Through' group, composed of the same students in successive years of their course.

Taking the related groups first*, it was found that out of a possible 20 relationships between means in the four personality variables 11 were significantly different, and out of the possible 25 relationships between attitude means 12 were significantly different. Attitude and personality change is thus certainly going on between successive years of the course (see Table 19). In the personality qualities little or no change occurred in the level of neuroticism (B1N) throughout the course, but self sufficiency (B2S) and social awareness (F2S) tended to decrease, while dominance (B4D) tended to increase. This would seem to agree with the facts of later adolescent development as they are generally known (Evans 1965), and to buttress other results taken at the same time, such as the increasing degree of discrimination shown in the sociometric judgements made in the third year. The student appears to be becoming increasingly self-reliant as the course progresses, while at the same time he is becoming more aware of the need for doubt in his judgements and the need for more than superficial reciprocity in his social contacts.

The attitude results in the related groups showed a similar pattern of positive change. Attitudes towards work (A) and towards children (D) became significantly more positive during the course. Attitudes towards authority (B) and towards one another (C) showed no significant change throughout the course, while the attitude towards life in general (E) tended

* This examination of individual year group relationships between means was preceded by an analysis of variance to ensure that the individual relationships were not in fact spuriously significant.

to become significantly more progressive during the second year of the course, but retrogressed considerably, though not to its starting point, during the third year. Thus, those attitudes such as A and D, which are fairly consciously involved in the main core of the college work would appear to be significantly affected during the college course, but those which form the background to college life (such as B and C), though equally a part of the student's full education, remain relatively unaffected. Attitude E is the exception to this pattern. Starting from a conservative viewpoint it moves to progressivism while the realities of the job are in the future, but returns to conservatism as the teaching job gets nearer. This is closely paralleled by the results of other researches contrasting the idealistic and the realistic modes of training of college and school respectively. Taken in conjunction with the results of the factor analysis later carried out on the variables of the test programme, it suggests that there is a kind of anticipatory socialisation going on which helps to determine the general 'set' of attitudes at particular stages in the course.

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The main point of importance that emerges from an inspection of the results of the unrelated groups, on the other hand, is that a considerable number of them show no real significant difference. Out of a possible 198 significant differences between means (see Table 20) 75 were in actual fact insignificant and the great majority of these insignificant results (54) occurred in the attitude test results. In the personality qualities the significant differences were so frequent that they merely showed that there were accidental differences between the years such as could be expected in a normal range of population. The attitude tests, however, showed a more cohesive pattern. In all the attitudes to some degree, and in some of the attitudes to a considerable degree (e.g. Attitude C - to one another), there is shown no real difference between the years. There is clearly a climate of attitude opinion which frequently exists from year to year over a number of years, and which in the case of Attitude C remains remarkably consistent throughout the nine year groups covered by the test. It is this climate of attitude opinion with which or against which the tutor has got to work, so it is important that he should be aware of its strength, its ubiquity and its constancy. Of course, it is true that not all years are the same. A particular year of students can differ in important respects from all other years in the college. For example, Year A3 differed in its attitude to authority from any other year tested, and Years A1 and A2 were markedly lower in their attitudes towards work (A) than all other years. This is extremely interesting when considered in conjunction with the fact that it is precisely these year groups which received the main brunt of organisational

change from a small to a big college and a protracted transition from old to new buildings, when in effect the college was trying to work in two places at once (see pp.156 for discussion). Thus the overall picture of the unrelated year groups is one of no progressive change in attitude as the course continues, and this is quite in line with many of the 'horizontal' research results that have been made, though in marked contrast to the results of the 'vertical', related groups previously considered.

Table 19. Significant differences between the means of the related year groups in the sample in all the variables.

Personal Qualities

	B2	C3	C2	B3	B2	C3	C2	B3	B2	C3	C2	B3	B2	C3	C2	B3
A1	.035	-.038	-3.601*	-3.483*	-2.459*	-.005	-.017	4.183*	4.886*	2.214*	-.606	2,178*	-8.939*	-8.291*	-2.387*	-.058
B2		-.079	-.4043*	-3.861*		2.655*	-2.657*	7.180*		3.188*	-6.408*	-2.801*		.874	7.456*	8.831*
B1			-8.807*				-11.631*				-.698				-13.07*	
A2				-.035				4.274*				-1.966*				-8.836*

Attitudes

	A - to work				B - to Authority				C - to one another				D to children			
A1	4.539*	4.021*			-1.158	-.631			-.897	-.901			7.665*	2.777*		
B2		-.842				.684				.014				-6.180*		
B1			-1.708				-5.581*				-.388				5.018*	
A2				4.872*				.077				-1.124				-.59*

A1	6.114*	1.745		
B2		-5.902*		
B1			4.679*	
A2				.927

Table 19. (Ctd.)

Sociometric Measures								
	Soc A				Soc B			
	B2	C3	C2	B3	B2	C3	C2	B3
A1	5.152*	4.198			25.659*	15.258*		
B2		-.013				-7.949*		
B1								
A2				2.545*				22.20*

Table 20: Significant differences between the means of the unrelated year groups in the sample in all the variables.

	Personality Qualities														
	B1-N - Neuroticism					B2-S Self Sufficiency					B4-D Dominance				
	A2	A3	F1	C2	B3	A2	A3	B1	C2	B3	A2	A3	B1	C2	B3
A1	3.326*	6.916*	3.775*	-3.601*	-3.483*	.049	4.728*	10.535*	-.017	4.183*	3.951*	3.716*	-.031	-.606	2.178*
A2		-3.418*	7.501*	.049	-.035		4.825*	10.679*	-.071	4.274*		0.0	-4.602*	-5.124*	-1.966*
A3			12.384*	3.996*	3.614*			5.40*	-5.124*	-.788			-4.312*	-4.809*	-1.861
B1				-8.807*	-8.217*				-11.361*	-6.582*				-.698	2.591
C2					.093					-4.573*					-3.169*
C3	3.359*	7.178*	-4.075*	3.789*	3.640*	-.047	-5.057*	-11.219*	.024	-4.506	-2.233*	-2.077*	2.711*	3.340*	-.129

	F2-S Social Adjustment									
	A2	A3	B1	C2	B3	A2	A3	B1	C2	B3
A1	8.820*	-.015*	9.332*	-2.387	.058					
A2		-9.204*	-.031	-12.17*	-8.836*					
A3			9.792*	-2.491*	-.045					
B1				-13.072*	-9.343*					
C2					-2.308*					
C3	-17.81*	-8.668*	-10.05*	-6.715*	-8.183*					

Table 20. (Ctd.)

Attitudes															
	A - to work					B - to authority					C - to one another				
	A2	A3	B1	C2	B3	A2	A3	B1	C2	B3	A2	A3	B1	C2	B3
A1	-.360	3.193*	5.024*	3.766*	4.742*	-.538	3.172*	.390	-4.041*	-.650	.515	.130	.499	.170	-.726
A2		3.382*	5.109*	3.936*	4.872*		3.062*	.839	-2.073*	.077		-.279	-.175	-.423	-1.124
A3			0.0	-.884	.368			-3.194*	-5.924*	-3.625*			.189	-.023	-.668
B1				-1.708	.591				-5.851	-1.179				-.388	-1.295
C2					-1.891					-3.311*					.965
C3	4.18*	-.540	-.978	.580	-1.331	.147	-3.747*	-1.281	4.021*	.098	-1.305	-.761	-1.683	-1.241	-.048

	D - to children					E - to life in general				
	A2	A3	B1	C2	B3	A2	A3	B1	C2	B3
A1	-.321	4.955*	.938	4.394*	3.019*	3.312*	.630	2.365*	5.406*	4.889*
A2		4.287*	.967	3.263*	6.159*		-1.580	-1.965	.675	.927
A3			-4.927*	2.372*	1.219			.556	2.205*	2.310*
B1				5.018*	9.073*				4.678*	3.800*
C2					-5.275*					-.476
C3	2.223*	-3.39*	2.639*	-1.929	-6.56*	2.346*	.268	-.771	-5.016*	-4.169*

Sociometric Measures										
	Soc A					Soc B				
	A2	A3	B1	C2	B3	A2	A3	B1	C2	B3
A1	.083	6.775*	-	-	2.587*	10.348*	14.13*	-	-	32.97*
A2		6.776*	-	-	2.545*		4.187*	-	-	22.24*
A3			-	-	-3.902*			-	-	17.31*
B1				-	-				-	-
C2					-					-
C3	4.171*	-.717	-	-	-15.398*	5.617*	1.492	-	-	-15.398*

Finally, the sociometric results also showed a clear pattern of significant difference emerging between successive year results as a single year of students went through the college. A marked upswing took place in the Second year, and this was followed in the Third year by a further rise in the actual size of the judgements, but a decrease in the range of acquaintance claimed. That is, Third year students were making much more definite and critical decisions about their fellow students than in either of the previous two years. It is in this sociometric section of the test programme that the greatest significant differences emerged, and a consistent pattern of student progress most clearly showed itself. This fact, taken together with the fact of the ubiquitous strength of Attitude C (to one another) in all the year groups, indicates the social side of a residential college's education to be one of its most important facets, and one of the preoccupations with which students are very much concerned.

Thus, consideration of the difference between means of different year groups throughout the college during the test programme does show that students become more positive in some of their attitudes as the course progresses. At the same time, however, this analysis reveals a ubiquity of general attitude opinion which points to the existence of a general attitude climate in the college (see pp. 114 for further discussion). However, this method of analysis by comparison of year group means, though frequently used, suffers from two methodological weaknesses. One is that it is based on relative judgements made by comparing different levels of attitude. The other is that it is based on groups, in which the movement of individuals

in their attitude alignments may well be partially or wholly compensatory between successive years.

Percentage Movement of Students on the Attitude Scales

Thus, by looking at results from whole year groups of students, much of the actual change during the course may be obscured owing to mutually opposite changes in individuals cancelling each other out. It was therefore necessary to find out how many individuals were actually moving up or down in each variable in any one year, and an arbitrary criterion of one standard deviation was adopted for considering such movement significant. The number of people moving at least one SD up or down in the related groups in each variable was therefore calculated and is as in the following table (21):-

Table 21. Percentage movement of the students on the attitude scales

	Personality								Attitudes										Sociometric			
	B1-N		B2S		B4D		F2S		A		B		C		D		E		Soc A		Soc B	
	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up	Dn	Up
1st Issue 1st Year with 2nd Issue 2nd Year %	10	10	16	12	7	8	14	14	12	25	16	23	10	20	5	39	11	34	2	72	0	100
2nd Issue 2nd Year with 3rd Issue 3rd Year %	14	9	8	11	11	15	9	11	15	11	15	15	15	11	12	8	14	21	15	2	29	2
1st Issue 1st Year with 3rd Issue 3rd Year %	8	11	5	13	8	17	9	14	9	23	23	27	11	20	9	31	13	25	0	50	0	94

This table clearly indicates that compensatory movement does take place inside a year group of students, and thus obscures any picture of student change based only on the consideration of whole year groups. The table also shows that individual movement is considerable and goes on right throughout the course. The total percentage of movement both up and down in each of the variables from the first to the second year ranged from 14% to 45%, excluding the sociometric measures. These were excluded since their obviously situational nature would be bound to result in sharp rises in the early stages of the course. In each of the attitude variables at least 1 in every 3 students changed their attitude significantly during the first half of the course. Of course, it cannot be determined whether this is a significant percentage or not, because there is no reference point with which to compare it, but it is suggestive, and, taken in conjunction with the results tabulated in Table 22 below, is strong inferential evidence that the period of the college course has positive effect on those student attitudes measured by the tests.

Table 22 lists the critical ratios obtained between the percentage of students moving up and the percentage moving down in each variable. It can be ascertained whether the 'upward' group is significantly bigger than that moving downwards. From these figures the personality traits appear not to have been significantly affected during the first half of the course, but in all the attitudes the balance of movement was significant in the positive direction. The latter half of the course saw continued change, but, on the whole, this was in a reverse direction in the attitudes and even significantly so in the sociometric variables. Student attitudes, and

particularly their sociometric evaluation of one another, appear to become more realistic in the latter half of the course. However, comparing the first with the third year, it would appear that there is considerable significant movement occurring during the course as a whole. There is a tendency for students to become more dominant and self-sufficient, and among the attitudes measured it seems that only in the attitude to authority does significant positive movement fail to take place over the course as a whole.

	Personality				Attitudes					Sociometric	
	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
1st to 2nd Year	-	1.11	.36	-	3.81*	6.47*	3.25*	16.98*	7.66*	53.69*	102.08*
2nd to 3rd Year	1.16	.91	1.05	.57	down .91	-	.91	1.00	1.63	down 2.95*	down 4.82*
1st to 3rd Year	.88	2.96	2.65	1.39	3.89*	.75	2.31	6.11*	2.86*	40.83	77.5*

Table 22. Critical ratios for percentage individual movement up or down of students between years of their course. (x=significant, CR=1.96) (All movement upwards unless otherwise stated.)

Of course, these significant movements of individual students statements do not give any indication of the general favourability or otherwise of particular attitudes in the college population, though they do prove the balance of movement to be favourable to the views generally held by the college staff. The difficulty, when concerned with the actual general level of favourability of a particular attitude among students, was the lack of a basal point of reference. If some constant criterion with which to compare student attitudes

could be found, then it would be possible to discover something about this general level of favourability and what was the balance of its movement through the years of the course. The use of a normal population, which was the only apparent criterion of this kind, was not really possible because this was a test of attitudes to basic features of the training course, and therefore the responses of a normal population would have been qualitatively irrelevant to what was being measured here.

The only alternative criterion that seemed possible was to postulate a test sample, of a similar size to the college sample, but which responded to the test purely on the basis of chance. On this basis, the five response columns after each statement in the test would produce a flat curve. Since the columns were were given scores from 1 to 5, the chance mean would be 3N (where N= the number of statements in the scale), and the range would be from 1N to 5N. Assuming the curve to cover the number of standard deviations of a nomral curve, the standard deviation of this curve would therefore be $\frac{5N-3N}{3}$, since for all practical purposes six deviations cover the normal curve. This would indicate whether the student attitudes measured were significantly on the favourable or unfavourable side of the chance mean, would certainly indicate whether the students were making an intentional response or not, and would give a constant measure against which to make comparisons of attitude gains between successive years.

The significance of difference between attitude and chance means was therefore calculated and the critical ratios abstracted into Table 23. They clearly show constant significant favourability as against chance, throughout all years, towards basic features of the course. They also show

that this favourability increases in the first half of the course and then either stays on a plateau in the second half of the course, or in the case of Attitude to Children (D) and Progressive Outlook (E) regresses in the third year (Table A below). Table B shows a horizontal classification through the college instead of the progression of a single year through the course, and again shows constant favourability. These ratios also show some regression in the third year, and, in the case of Attitude E (Year 3, Table B) show that sometimes a particular year can be markedly different from other years. However, with this exception, this comparison with an arbitrary constant distribution shows that student attitudes to basic features of the course are initially favourable and become more so as the course progresses. Thus the overall change appears to be one of confirmation of attitude rather than change in direction, but it is a significant and constant change reflected by all the three year groups of students used in Table 23. One further fact needs emphasising from this table. This is the large initial rise in the critical ratios of Attitude to Children (D) in the first half of the course followed by some regression in the latter half and accompanied by regression in Attitude E (Conservative/Progressive outlook). This confirms the increasing conservation/realism in the students' professional outlook as the course progresses, already noted previously in this experiment. This would suggest that the change between idealistic college and realistic school already noted by previous research, has already begun by the third year of the course. It seems possible therefore that the emphasis placed by research on the situational influence of college and school respectively may have been misplaced, and the more likely explanation

be the influence of anticipatory socialisation on the student as his professional role comes closer.

	A	B	C	D	E
Table A. Year 1	6.4	3.02	8.83	9.80	10.00
2	11.12	5.12	10.36	17.49	19.01
3	10.38	5.78	10.04	14.17	14.52
CR	ratio at 5%	level = 1.96			
Table B. Year 1	6.4	3.02	8.83	9.80	10.00
2.	6.24	4.00	8.95	8.33	12.23
3	7.28	6.31	7.21	11.56	3.98
All	ratios are	significant	above	the 5%	level

Table 23. Significance of Favourability of Attitude Responses as Against Chance. Table A:- In consecutive years of the course.
Table B:- In all three years of one issue of the test.

Thus the main point of this section of the investigation appears to be proven. A substantial number of students change their attitudes during the course; and among these the balance of movement is significantly favourable towards views endorsed by the college. When the effect of the relativity of these judgements can be reduced by the use of a constant criterion expressing neutrality of attitude judgement then it is found that all the year groups show significant favourability and that this favourability increases during the course. On the nature of attitudes held by students, it is found that the attitude to authority (B) is initially the lowest attitude tested and improves least during the course, while attitudes

D (to children) and E (conservation/progressivism) start as the highest of the attitudes tested, improve most in the first half of the course and then regress towards the end of the course. There is thus some evidence of anticipatory socialisation at work on the student in those attitudes closest to his future professional role, which will be further examined when we come to factor analyse the results. Finally, it would appear that despite attitude change taking place in a considerable number of students during the course, compensatory movement ensures that at any one time the attitudinal climate appears to be both stable and homogeneous in the college as a whole.

Attitude Change : 'Straight Through' Group

The difficulty with the two methods of analysis so far used to discover attitude change is that neither of them actually deal entirely with the same students in successive years, and therefore variations of result due to different people partially obscured any change that was going on Therefore, to examine this process of individual attitude change during the course as closely as possible, the results of those students who had attended all of the three annual test sessions, and had a complete test record throughout their course, were abstracted from the final test results. The problem with this group, however, was that it formed a selected sample inside the test sample. Clearly these were the most co-operative students in that year group, and therefore attitude change among them during the course was not necessarily reflective of the change going on among the whole college population. However, if there was to be any possibility of examining how attitudes favourably changed in individual students during the course, and, more especially,

whether this was linked with course success or not, then this sample had to be used. The students in it numbered 65, and formed approximately one third of the students passing out in that particular colleg course.

The first thing to find out, therefore, was how far these students formed a distinctive group inside their year group. The means for their test variables were therefore contrasted with those for the whole year and appear in Table 24 below. Clearly, even by half way through the first year, the mean for the Straight Through group in sociometric status (Soc B) was significantly higher than that for the whole year, and this significant difference was maintained throughout the course. For the first two years this group also accorded more social recognition (Soc A) to their fellow students than the average student in that year. Differences in attitude were not sufficient to be significant between the two groups, though the balance of difference was consistently in favour of the Straight Through group. The biggest difference between the two groups occurs in the personality variables. Here the Straight Through Group is revealed as being consistently and significantly lower on the neuroticism scale throughout the course, initially less socially adjusted than their fellows, but significantly reversing this in the last two years of the course, and, overall, significantly more dominant and self sufficient than their fellows for the greater part of their course.

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
1st Year											
S.T.	-25.4*	-1.4*	22.1*	-27.6*	95	75.4	147.5	132.8	68.5	143.2*	74.6*
W.Y.	-15.18	-14.7	15.3	-15.2	92.2	76.5	146.7	131.7	66.9	125.2	64.2
(S.T. = Straight Through Group. W.Y. Whole Year. * indicates significant differences.											
2nd Year											
S.T.	-27.4*	-8.6*	38.1*	-12.1*	97.8	76.4	150	140.7	70.8	251.4*	184.3*
W.Y.	-14.97	-29.2	32.8	-73.6	96.6	75.4	145.3	144.5	72.0	176	174
3rd Year											
S.T.	-27.4*	3.4*	39.5*	-24.8*	97.7	76.2	148.4	138.8	71.0	175.7	149.9*
W.Y.	-15.3	-14.6	29.9	-68.3	75.9	75.9	145.3	135.5	68.5	175.8	133.5

Table 24. Means for Straight Through Group and Whole Year for comparison of their significant differences.

The picture thus given is one of a 'spearhead' group in the social esteem of their peers and in the dominance of their personalities. It would appear that these are students who are more aware of their interdependence with others and more active in trying to establish effective social contact with their fellow students. The lack of disparity in attitude between the two groups tends to confirm the presence of a climate of opinion shared by the great majority of students which has already been noted, and which will be considered in detail later in the analysis of the attitude statements.

Now, how did this straight-through group change during the course? The significant differences between the means for all years of the group were calculated, and appear in the following table:-

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
1st to 2nd Year	.177	.638	2.08*	1.52	1.99*	.76	1.05	2.77*	1.77	7.11*	14.8*
2nd to 3rd Year	.012	.212	.73	1.23	.002	.18	.717	.63	.15	4.22*	5.05*
1st to 3rd Year	.168	.53	1.986*	.30	1.73	.23	.41	2.82*	2.00*	2.37*	12.67*

Table 25. Significance of the differences between year means of all the variables in the Straight Through group of students. (CR = 1.99 = 5% significance)

In the personality qualities only Dominance is seen to increase significantly but in the attitude scales significant upward movement occurs in three out of the five scales. Students' attitudes to work (A), to children (D) and the progressiveness of their outlook on life (E) all improve significantly. The overwhelming change, of course, occurs in the sociometric scores and reinforces the impression of this as a 'spearhead' group. However, to make certain of this overall picture, percentage movement in this group was also considered, since individual compensatory movements in attitude would tend to reduce movement in the means.

Percentage movement in this group naturally reflected the picture produced by the whole year, though in a much more marked fashion (see Table 26). In all the attitude variables except Attitude to Authority (B), not only was the percentage moving up significantly greater than that

moving down, but it was also greater than the corresponding movement in the whole year. In the latter half of the course movement was slowed down, though no indication of actual regression occurred.

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
1st to 2nd Year	.75	.75	1.03	.789	6.96*	1.63	4.63*	2.37*	2.79*	56.6*	81.6*
2nd to 3rd Year	1.16	.91	1.05	.57	.91	0.0	.91	1.00	1.63	4.82*	2.95*

Table 26. Significance of difference between percentages moving up and down in Straight Through group in consecutive years of the course. (CR = 1.99)

Clearly, attitudes in this group to the basic underlying features of the course tested change favourably during the period of the course, with the one exception of Attitude to Authority (B) which at this time in Higher Education generally was in a state of change and uncertainty. However, it must be emphasised that this is a relative judgement on the point of favourability, though, of course, the significance of the balance of change is an actual fact. It must also be noted that this is a change in the direction of confirmation of existing attitudes rather than a change in actual direction of attitudes.

Finally, it must be noted that, while there is considerable unanimity of attitude in the straight-through group, uniformly more favourable than in the whole year group, there is a dichotomy in the final college results of the straight-through group. Final college results for these students split into two almost equal groups of high and low performers, despite their similarity of attitude and apparent degree of co-operation. What may be

the explanation for this dichotomy could lie in the significant increase of self-sufficiency and dominance noted earlier in the test results for this group. College reaction to this kind of growth will later be shown in the relationship between final college results and student attitudes to authority, and it likewise seems possible here that the low performers of this group on final college results failed to accord sufficiently with college norms in the expression of their dominance and self-sufficiency. This, therefore, seems to indicate two possible explanations. One is the possibility of over-reaction by staff, as reflected in final results, to particular levels of students' traits and attitudes. The other is the possibility that it is the combination of student attributes, rather than a single one, which helps to determine success on the course.

Conclusions on Attitude Change during the Course

This section on the possibility of attitude change during the course has thus investigated the total sample from three angles: one is the comparison of undifferentiated and related year groups; the second is that of percentage movement of student attitudes in year groups; and the third is that of attitude movement in a wholly related group composed of the same students throughout their course. Allowing for obscurities introduced by comparison of different individuals in the undifferentiated year groups, positive attitude change has been demonstrated to take place at least in a substantial minority of students, together with an increase in dominance among many of them. The conspicuous failure in attitude movement is the attitude to authority (B) which failed to change substantially throughout the course except when compared with a constant criterion. This, coupled with

the amount of personality and attitude change in an adverse direction, would suggest the need for more direct attention on the part of the college to the affective alignment of individual students. Furthermore, the nature of this attitude change would appear to favour those attitudes which can be related more directly to the teaching situation than to the college situation. It thus would appear that some sort of underlying influence, such as that of anticipatory socialisation, is at work in promoting this change.

Two methodological considerations also showed themselves as important during this analysis. One is the factor of individual compensatory movement in the group masking the real extent of individual attitude change from year to year during the course. The horizontal comparison of year groups in the course thus frequently fails to reveal any change in attitude as the course progresses, when in actual fact considerable change has taken place. The other factor, which also contributes to a similar masking of individual attitude change, arises from the fact that measurement all the time is carried out by comparison of relative levels of attitude rather than against a basal point of reference. When a constant criterion, such as chance, is used as the reference point then attitude change can be seen to occur even where (as in Attitude B) it was previously seen to be most lacking. The actual quantitative amount of attitude change going on can therefore be quite considerable and yet be almost wholly masked by the methods used.

Finally, two other points have emerged which also need emphasis at this stage. One is the regression in attitude movement occurring in the related year group mean differences as compared with the lack of such regression shown by the straight through group. The only significant difference between these two samples lies in the possession of more dominance and more positive attitudes by the straight through group than by the whole year. It would thus appear that revision of one's anticipated social role by students occurs in accordance with strength of personality and the certainty with which attitudes are held as well as through anticipation of the actual situation. The contrast of 'idealistic' college and 'realistic' school has already been noted as too simple an explanation for attitude change between the two institutions, but it now seems possible that anticipatory socialisation without a consideration of personality and attitude strength is also too simple to to be adequate by itself. This contention is further reinforced by the second point which arose from consideration of the straight through group's results. This is the dichotomy which existed in the final college results of the straight through group, who all had very similar, positive attitudes. This showed that attitudes by themselves cannot be taken as a univariate indication of course success. It appeared possible that what affected course success more than attitudes alone was the balance between attitudes and personality in the student and the consequent expression of the attitude in the situation. socialisation, personality pattern and situation It thus appears that anticipatory influence all need to be further examined to see if their existence or possible influence on attitudes or course success can be substantiated. This therefore forms the subject of

the next section of the analysis of the results.

Influences on Attitudes : What Makes for Success in the Course?

There seemed to be four possible lines of investigation in this direction. One was to see if any of the personality sets tested linked strongly with particular attitudes, and to see if any such relation had its effect on course success. Another was to see if any of the organisational groupings within the college had an effect on attitudinal alignments. A third possibility was to see if staff/student relationships were a significant influence on student attitudes. And the fourth line of investigation was to see if there were any significant relationships between the experimental variables themselves, and if there were any common factors among them. This last was the one which it was decided to look at first.

Inter-Correlations between the Experimental Variables

Correlations were therefore calculated between each and every other variable in each year of each issue of the test, and appear in Appendix 6. Both the personality and the attitude tests produced sets of internal correlations which made a stable and significant pattern in each year of the nine year groups of students tested. On the large samples tested, the stability of these correlations in themselves afforded some evidence of the internal consistency and reliability of these tests. Some of the internal correlations also afforded further evidence of validity. For example, Attitude A (towards work) correlated regularly and positively with College Achievement, and Attitude C (to one another) showed frequent affinities with the Sociometric scores. Since both of these correlations

are with real-life, behavioural criteria they constitute important, on-going validation for at least two of the component scales of the test. Apart from this further evidence of validation, however, the general pattern of these two tests also suggested that there were likely to be some common factors at work in them. The general pattern of the Bernreuter qualities seemed to suggest a bipolar axis, with Neuroticism and Social Adjustment at one end of the scale and Dominance and Self-Sufficiency at the other. The attitude test correlations also all correlated positively together and though the size of the correlations is not such as to imply that this communality swamps each of the component scales, there is a suggestion of a common factor among the scales. There is thus sufficient evidence of communality in both sets of results to justify the later application of factor analysis to the whole matrix of correlations between the variables to see what common factors emerge.

Some of the individual relationships between the variables were also worth examining, at least where they significantly recurred more than twice, since they could be assumed to throw some light on the psychological nature of the variables being tested as well as some insights into the nature of the test population. For example, there seemed to be good evidence for believing that high neuroticism tended to produce a negative attitude to others (C), since six out of the nine correlations were negatively significant at the 1% level. However, the sociometric scores showed at least three significant positive correlations with Neuroticism, so the actual sociometric status of the more neurotic student was clearly not always affected by his potentially critical attitude to others (C).

This apparent contradiction can be accounted for by the fact that this is a selected sample with a high level of social orientation and motivation, so that low scorers on the Neuroticism scale were still likely to be fully capable of acceptance by other students. However, it does clearly show the uncertainties of relationship between personality quality or attitude and the actual action situation, and this needs further consideration.

The individual correlations between Attitude C and the sociometric scores were therefore examined for the light they might throw on the relationship between an attitude and consequent action in a real-life situation. Attitude C (to one another) produced a consistent significant relationship with the Sociometric A measure throughout the test period. This Sociometric A recorded the total marks a student awarded in outgoing recognition to his fellows, so in a sense it was a measure of his own claim to acquaintance among his fellows, as distinct from the actual recognition he received from them. Attitude C also frequently produced a significant relationship with Sociometric B, which was the total recognition actually given to a student by his peers. Thus Attitude C had a consistently significant relationship with Sociometric A, but not so regularly with the measure of actual acceptance, Sociometric B. This seems to constitute effective validation of Attitude C as an affective alignment, and, at the same time, a clear indication that attitudes do not always sufficiently determine action to guarantee behavioural prediction, even in an area, like this, where the students' willingness to intitiate action clearly exists and is not apparently subject to adverse situational canalisation. Individual action in a situation appears to be the resultant of all the forces in the

situation reacting with the personality forces in the individual, and the particular attitude is only one, though perhaps the most pertinent, of these forces. Hence, lack of agreement between attitude and action doesn't necessarily constitute condemnation of the concept of attitudes. The attitude may exist and the person wish to be active in promoting it, as in this case, but the behavioural result may still be inhibited by other personality factors or factors in the situation. The relationship of these three measures (Attitude C, Sociometric A & B) thus clearly indicates the difficulty of looking only at the initiatory, attitudinal end of behavioural acts without taking into account the situational reception of such acts.

In the other significant, recurring relationships, those of Dominance (B4D) and Social Adjustment (F2S) with some of the other variables were the most revealing. In eight out of the nine possible correlations the Dominance Scale had significant, positive correlations with Attitude to One Another (C) It also had a consistent positive correlation with both of the Sociometric scores. The Social Adjustment scale, on the other hand, correlated regularly and negatively with Attitude C, and to a less extent with Attitude to Life in General (E). The constant recurrence of these relationships in separate year groups of students, coupled with their level of significance, was sufficient to regard them as established facts. The explanation for these two sets of facts, supported by inspection of the actual scales, seems to lie in the interpretation of the concepts involved. The American social adjustment ideal seems to lie in the direction of conformity and a positive need for acceptance, whereas the British idea of the 'social'

personality, as shown in this College by Attitude C, seems to lie more in the direction of the dominant and outgoing person. Thus the Bernreuter dominance scale agrees positively with Attitude C, which is itself validated by the Sociometric scale, which, in turn, consistently agrees with the Dominance scale. Social Adjustment (F2S), on the other hand, which one might superficially expect to agree with Attitude C, actually agrees negatively with it, has no correlation with the sociometric scores, and frequently agrees with the conservative, conforming end of the E scale, which itself also consistently and negatively agrees with the Self Sufficiency (B2S) scale. This pattern clearly suggests that in this Colleg the preferred concept of the 'social' student is that of the 'outgoing', dominant person rather than that of the acceptant, conforming person characterised by the Social Adjustment scale of F2S. The more dominant student is therefore likely to find the problem of adjustment to his peers on the course easier than other students, and his general position of esteem in the College higher. This is a very important conclusion when it is realised that one of the major results of American research on teache characteristics (Handbook of Educational Research 1969) suggests that Dominance is a key characteristic in successful teachers, and this would certainly seem to be the preferred attitude and personality cluster in this college population, (see p 148 for further discussion).

Thus the patterns of recurring significant relationship between individual variables in this matrix covering nine year groups of students yield two important pieces of evidence. One is that on the relationship of attitude and action, and the other is on the nature of the preferred

personality in the student population. A third piece of evidence, suggested by the initial inspection of the overall pattern of correlations, which indicated the existence of some correlation clusters among these variables, needs now to be investigated.

The raw scores of 50 students randomly selected from one third year of the test programme were therefore now abstracted and factor analysed. A computer factor analysis (Principal Components) programme was used from the I.C.L. Suite of Programmes, and the following criteria applied to the resultant loadings:-

(a) for extraction of the factors, Kaisers criterion was used.

(b) for significance of the loadings in each factor, the Burt-Banks criterion was used.

Since the number in the sample had been kept small in order to reduce the work required of the computer punch operator, interpretation of the loadings was confined to the 1% level of significance. Finally, inspection of the loadings seemed to confirm that there was little or nothing to be gained in clarity of interpretation by rotation of the factors, so this operation was omitted. The following loadings were thus obtained:-

% of the Variance	21	16	14	10	8	7
1% Significance	.346	.364	.386	.413	.446	.489
Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1 Reasoning	.1003	.0568	.4142	.2683	.4659	.1514
2 B1N	-.3949	.2481	-.0218	.2747	-.1918	-.3009
3 B2S	.4962	-.0979	.0297	.0912	-.0619	-.0905
4 B4D	.4847	-.1528	-.0599	-.2189	.1839	.1212
5 F2S	.3726	-.0104	.0488	.2763	.2414	-.4100
6 A	.2382	.3695	-.2422	.3213	-.0746	-.3725
7 B	-.0198	.4699	-.0801	.1190	.1509	.3318
8 C	.1168	.3877	.3876	-.3074	.1372	.1624
9 D	.3376	.1788	-.1821	-.1300	-.5318	-.0483
10 E	-.0606	.3149	-.3348	.0020	.4437	.0518
11 Soc A	.0450	.2938	.4235	-.4136	-.0023	-.2410
12 Soc B	-.0355	.3081	.4432	-.3525	.0433	-.2510
13 SA	.1628	.1852	.2711	.0532	-.3265	.5280
14 CA	-.1228	.2348	.2329	.5054	-.1794	.1241

Table 27. Principal Components loadings on the 14 experimental variables.

Six factors were extracted before the eigenvalues fell below unity (Kaiser's criterion), and these accounted for just over 75% of the variance. The first major component clearly involved all the Bernreuter scores, and suggests that this test is really measuring one major bipolar factor of Dominance/Neurtocism. This is a useful confirmation of the function of this test, and its relevance to the measurement of the affective objectives

of this course. It is interesting to note here that Attitude D (to children) is the only other variable which appears to contribute to this factor (though not quite at the 1% level), and this attitude has already been noted as having a significant relationship with the teaching practice grade, so this is a very useful validation of the nature of this measurement and its relevance to teaching.

Factor 2 involves the Attitude to Authority (B), Attitude to One Another (C) and Attitude to Work (A) in that order. This factor seems to be concerned with one's general outlook on others as potential judges of one's behaviour and work, and presents another very strong socially orineted factor. The third factor is one involving Intelligence, the two sociometric scores and Attitude C. The involvement of intelligence (as measured by appreciation of logical relationships) in a factor otherwise wholly concerned with direct social acceptance confirms a fact emerging from the inter-correlations between variables which has not been previously mentioned. This is that from an initial first-year position of sociometric unpopularity the higher intelligences in the college population usually achieve high sociometric status as the course progresses. The fourth major component is also bipolar, and is made up of final college grades (variable 14) on the positive side, and the Sociometric A scores on the negative side. It is very interesting that the obverse of a factor directed towards college achievement should be this one (Soc A) of the student's own claim to social recognition by others. It is also interesting that the next nearest positive contributor to this factor should be the Attitude towards work (A), though it falls outside the 1% level of significance and is only significant

at the 5% level. This therefore seems to be a factor very much concerned with student orientation and goals. The fifth factor (also bipolar) is negatively contributed to by Attitude D (to children) and positively by Intelligence and Attitude to Life in General (E). This is clearly a factor involving the outgoing attitude of a person in his thinking about hypothetical issues rather than the immediate situation, and it is interesting to see that its negative end should be so strongly contributed to by the student's attitude to children (D), with whom, of course, he is not in continuous contact during the college course.

Finally, the sixth factor is concerned with school achievement, which appears to have no significant relationship with any of the other variables tested. Since school achievement is the only variable which embodies a measurement taken at least three years earlier than the other measures, it is likely that this isolation is simply a commentary on student change within the three years, and is therefore fairly irrelevant in this matrix. However, when considered in conjunction with the relationships shown by final college scores in this matrix, and the relationship between school and college achievement in another college*, this factor would seem to show that this college course is following objectives not previously pursued in school, and apparently more related to the student as a person.

* In an independent experiment in another examination-based, college this relationship was significant at the 1% level.

Thus, to sum up, it would seem that the first three factors (accounting for over half the variance) are all socially oriented and concerned with various aspects of human relationships. The remaining two which are important (i.e. Factors 4 and 5) are concerned with the immediate and the hypothetical situation surrounding the student, though both have a strong social loading on the negative side of their bipolar axes. The sixth component has no apparent connection with any other variable, and therefore for the purpose of this analysis can be ignored. Of course, it must be noted that this strong social orientation is valid only within the limitations of this matrix, and could quite possibly be altered by extending the scope of the matrix.

The six factors could well be listed as:-

Factor 1 (Bipolar) : Dominance/Neuroticism.

Factor 2 : Attitude to others as potential judges.

Factor 3 : Attitude to one's peers with whom one has an immediate relationship.

Factor 4 (Bipolar) : Achievement orientiation in the immediate situation.

Factor 5 (Bipolar) : Attitude to issues with which the student is not in immediate contact.

Factor 6 : School achievement.

This would thus seem to be a set of factors reflecting aspects of a central theme during the college course development of the student. This theme of social orientation, on the part of the student, appears to have three main facets. One is the student's position on the basic personality axis of dominance/neuroticism, represented by Factor 1. The

second is the student's attitude to others as potential judges, and his actual attitude in his immediate relationships with others, represented by Factors 2 and 3 respectively. And finally, the third facet is the student's orientation in the immediate and the hypothetical situation, represented by Factors 4 and 5, both of which have strong social loadings on the negative side of their bipolar axes. Thus as far as an analysis of results taken at one point in time can do, this would appear to confirm the fact that the student is affectively as well as cognitively oriented during the course, and that this orientation is concerned with factors likely to be present in the process of anticipatory socialisation of a professional role.

Thus to sum up this section on the relationships between variables in the test programme, it would seem that some influences on attitudes in the college course can be traced. One is that a student's position on the personality continuum of Dominance/Neuroticism can considerably affect the nature of his attitudes, and the measure of social acceptance achieved by him. Another is that anticipatory socialisation appears to be an influential theme underlying attitudinal development during the whole course as tested in this programme. And finally, attitudes, while having been shown as more than mere cognitive alignments, have been demonstrated to be insufficient by themselves as explanations or predictions of actual action in a human situation; though in an academic situation such prediction may be more possible, as the correlation between Attitude to Work (A) and Final College scores shows. It is therefore necessary to go on to analyse personality groupings in the College population to see if a consideration of Personality and Attitude combined actually can improve prediction of success on the course.

Personality Groupings

It had already been noticed from the inter-correlations between the variables that a consistent personality pattern emerged on the Bernreuter test. This was stable over the four years of the test programme and showed a typical picture of low neuroticism and relatively high dominance and self sufficiency among students. This overall pattern was too consistent to be an accident, but, as it was a general picture, it needed supplementing with proof derived from an examination of its separate groups before any conclusions from it could be drawn.

The significant differences between the means of the component groups of the sample were therefore calculated in all the variables, to see if particular groupings of personality traits produced a consistent pattern of attitudes, or a consistent effect on any of the other variables. The table of values between the high and low groups on the personality variables, taken from one year group at random is as follows:-

	Coll Ach.	IQ	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc
B1N	.40	.34	10.09**	5.09	10.69**	2.05	1.24	.79	1.41	1.51	1.44	1.64	.39
B2S	1.45	1.65	3.06*	37.53**	3.82*	6.81*	.85	2.42*	.62	1.32	45	2.56*	.66
B4D	2.77*	.43	8.13**	4.86*	15.46**	2.21	.25	1.52	3.02*	.76	1.26	1.46	1.25
F2S	.46	.76	2.16	6.32*	.62	2.23*	.79	.89	.94	1.57	.23	.39	.48
High/ Low in B2S* B4D	1.95	2.14	.03	5.81*	2.49*	6.09*	2.93	1.91	2.15*	2.45*	1.89	1.68	2.64

* = 5% significance ** = 1% significance

Table 28. Significance of the differences between the means of all the variables for high and low scoring groups in each Bernreuter quality.

Possession to a marked degree of any one of the personality qualities thus seemed, at first sight to make little difference to the other variables in the course tested by the programme. High neuroticism failed to make a difference in any one of the attitudes tested, or in either of the sociometric scores. Students with high Self Sufficiency (B2S), on the other hand, did show a marked difference to the low scorers on that scale in making far greater claims to the sociometric recognition of their fellow students (Soc A). The high scorers on this scale were also significantly different to the low group in their attitude to authority, which was markedly poorer than that of the low scorers. The high dominance group (B4D) also scored significantly more highly on Attitude C and on Final College Grades than the low dominance group. Thus there were occasional differences attributable to single personality variance, but these were few and only in the case of high dominance appeared likely to have an important bearing on success in the course. No one personal quality among those tested could thus really be considered to be a certain handicap to a student starting the course, though more than average dominance might well prove an advantage.

However, it seemed likely that combinations of personality variables might produce a greater effect on attitudes and success in the course than single qualities. The possibility of this point being true had emerged in the consideration of the final college results of the Straight Through group, where the final grade seemed to depend more on the possession of Dominance and Self Sufficiency than of positive attitudes. It was also supported by the figures in Table 28 where Dominance showed a significant relation with final college grades and Self Sufficiency was also significant at the 10% level.

A fresh pair of high and low groups was therefore abstracted, consisting of students who were high or low in both Self Sufficiency and Dominance (see Table 28). It was found that this combination produced far more significant differences between the high and low groups than had been the case with any of the single personality variables. The high group had a higher mean score in final college grades (though not significant at more than the 10% level), a significantly higher attitude to work (A), attitude to one another (C) and attitude to children (D). Their sociometric status (Soc B) among the student population was also significantly higher than that for the low group. This clearly suggests that it is the combination of personal qualities rather than the possession of a particular one on this test, which is critical for student adjustment to the course and success in it.

It thus appears that a student combining relatively high scores in the Dominance and Self Sufficiency scales of this test is likely to achieve course success and possess positive attitudes; and this combination is characteristic not only of the personality development of students during the course, but also of the general personality pattern of the student population at any one time. Of course, this personality development towards Dominance may be a maturational one taking place during the course rather than as a result of it, but it nevertheless appears as an important correlate of positive attitudes. However, in view of the fact that the Bernreuter test appears really to be measuring only one general factor of Dominance/Submission, this conclusion must not be extrapolated further. Thus what appears to be reasonably certain from these results is that it is the balance of personality towards Dominance and Self Sufficiency combined with positive attitudes,

that gives the best chance of student success on the course.

Organisational Groupings

Finally, the separate organisational groups making up the sample were examined in order to see whether different organisational features were likely to be significant in affecting student attitudes, personality or sociometric status. Four kinds of organisational feature were considered. First, those groups arising out of chance administrative necessity, such as division into Education groups, were examined in order to see what change in attitudinal differences might occur among them during the course. Second, those groups based on some common feature, such as subject choice, were examined to see if departmental organisation or subject matter made a difference to student attitudes. Third, the effect of organisational change going on during the test period in the College, such as the rapid college expansion and movement to new buildings, was examined to see if any effect due to a particular event could be observed. And finally, organisational features arising from the nature of the sample, such as sex or previous education, were examined to see if these might have some particular influence.

A number of Education groups, taken at random from each year of the First Issue of the test, were taken first as being representative of chance administrative divisions in the college. Significant differences in all the variables occurred between many of the first years groups (see Appendix 7 Section A), but were much less common in the second and third years of this sample. It would seem that this first year was either more diverse in its qualities than the second or third year, or significant differences between groups tended to become smoothed as the college population grew progressively

more homogeneous in the second and third years of the course. In order to find out which was the more likely explanation, the significant differences between education groups in the second issue of the test were calculated to determine whether the number of significant differences was reduced or not. An example from the table of the significant differences emerging between these groups was as follows:-

Groups	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
A with C	.385	1.30	.451	.361	.495	.445	.501	.97	.439	.05	3.74*
A with D	1.89	2.89*	1.34	.91	.45	1.76	1.09	1.00	1.935	2.14*	2.17*
C with D	1.09	1.27	.91	.72	0.0	1.31	.62	.43	1.21	1.73	1.92

·5% level = 2.0

Table 29. Significant Differences between Means of Education Groups in the Second Year of the Second Issue of the Test.

Clearly, the significant differences existing between these groups in the first year tend to become less in the second year, so that the second explanation appears to be the more likely one. It would thus seem that there is a tendency towards greater homogeneity taking place among the groups as the course progresses, and that the effect of a general situational influence thus appears to be likely.

Otherwise, the significant differences between these groups seemed to emerge in a fairly random pattern that had no obviously causative explanation other than the personality composition of the individual groups. What was noticeable, however, was the fact that some groups continued to be significantly inferior to other groups, both attitudinally and sociometrically, throughout the three years of the course. This is clear evidence of the fact that

attitudinally separate groups can exist within the general college climate of attitude.

It therefore seemed possible that there might be 'foci' of attitudinal differences within the general college structure. Hence, the subject departments were examined as possible sources of such foci. These groups, existing through the basic unity of subject choice and occupying the major portion of the student's academic time and interest, were found to be very revealing in their broad differences in attitude and personality. With the exception of the English department, only slight differences emerged between students in different academic subjects. The differences emerging between the 'Wing' subjects (D.S. and P.E.) and the academic subjects students, however, were much more significant, though these differences were mainly in attitude rather than in more deep-seated personality qualities. The Domestic Science students had a significantly better attitude to work (A) than either of the other two groups, and their attitude to one another (C), towards children (D) and to life in general (E) were all superior to those of the general students, though not significantly different from those of the P.E. students. Thus, allowing for differences due to sex, these two departments showed considerable agreement with each other, and in their disagreements with academic subjects students. Both the D/S and the P.E. deaprtments were homogeneous departments with a strong esprit de corps, mainly taught by a small group of specialist tutors in constant discussive contact with one another and with the students, who tended to come under no other tutorial influence except that of their own department. It would seem that this homogeneity does help in promoting 'good' attitudes among students, though,

of course, the sex of the P.E. students tended to reduce the effect of this influence with the result that their mean scores on the attitude scales were lower than those of the D.S. students. Of course, this may not be the explanation. These significant differences between students may alternatively be due to the differences in the selection situation for practical and academic subjects students respectively, or they may be due to the nature of the subject choice by students.

A comparison was therefore made between the significant differences emerging from this part of the investigation and those emerging from the try-out test to see how far differences in attitude apparently due to organisational features within the college could be isolated. The analysis of the Try Out test into groups (Appendix 7 Section B) shows that the general picture of the significant differences outlined above, remained a very stable one over the four years of the test programme. The practical subjects students consistently show higher self sufficiency and lower neuroticism than academic subjects students. This was particularly true of the Physical Education and Domestic Science departments, and, to a less extent, of the ARt and Craft department, which tended to be dominated at this time by a practical bias towards pottery, and craft work. The Domestic Science department, however, showed two interesting reversals between the try-out test and later issues. Where, in the try-out test, domestic science students had shown a significantly poorer attitude to work (A) and lower Sociometric (B) status than P.E. students, this was reversed in later issues of the test. This reversal coincided with a change in the orientation of the department from traditional Domestic Science (taught as a craft skill) to Home Economics, which favoured a much wider

educational experience for the student. A similar though much less marked change occurred in the Art and Craft department, which also changed its orientation and staff during this period. Since no other causative influence could be determined, it thus seemed likely that strong departmental organisation and direction of teaching does affect student attitudes and student impact on the rest of the college population. This was further confirmed by the results from the English department, which was organised on very democratic almost laissez faire, lines, very different in direction to those of the practical departments. Students in this department had a significantly lower attitude to work and to authority than had the other academic and practical subject departments. Attitudes thus seem to be quite clearly affected by strong departmental organisation rather more than by the choice of discipline, though this too, in its broader divisions, may have some effect on personality.

This thus seemed fairly conclusive evidence of organisational and staff influence on student attitudes, but if specific proof of organisational effect alone could be found, then it would considerably strenghthen the argument for organisational influence on student attitudes. Further independent substantiation of this effect was therefore now sought. A unique opportunity for discovering this existed in the fact that the college had suffered a considerable and rapid expansion in numbers during the test period. This had involved a change to new buildings ten miles away from the old site, with a shuttle 'bus service between so that both sets of buildings could be used simultaneously. An influx of new staff necessarily occurred at the same time, and all these things involved a great deal of organisational upset for students for a period of about two years immediately after the test period had begun.

The test results for this period were therefore scrutinised closely to see if any evidence of student reaction to these changes could be detected in the reflection of student attitudes and personality dispositions.

The first issue of the tests were obviously the ones most likely to be affected by this period of upheaval. It had already been noted in the results connected with the further validation of the Attitude test that one Third Year had returned unusual results. This was the First Issue Third Year and its total attitude scores correlated with Final College Scores in a way different to that of all other Third Years tested. In fact, if the division point in the final results array for this year had been made at the actual pass level then this correlation would have been significant at the 30% level in the negative direction. That is, college grades in this year were passing students whose attitudes were negatively oriented to one or more of the basic features of the course they had attended. This year was the only one of the four third years tested to produce this kind of result, so clearly some particular reason lay behind it. Moreover, the first and second year tested in that same issue of the test also returned significantly lower attitudes to work (A) than any other year in any of the three issues of the test. Each year of this first issue of the test thus had some test result relating to actual college work, which suggested an adverse effect which other year groups in the extended sample did not share, and which thus appeared to be transitory. As this issue of the tests came at the end of the two year period when change in college location and size had been at its most rapid, there seemed good reason to suspect a connection between the two.

It was therefore decided to examine this particular third year more closely. The first thing to find out was whether the final college results for this year were markedly different to those of other third years. The significance of the differences between the means of final college grades for the three third years after the try-out test were therefore calculated and are as follows:-

Years Compared	C.R.	Significance
1st Issue 3rd Year with 2nd Issue 3rd Year	5.51	1%
1st Issue 3rd Year with 3rd Issue 3rd Year	3.57	1%
2nd Issue 3rd Year with 3rd Issue 3rd Year	1.05	30%

Table 30. Significant differences between the means of Final College scores for three third years in the sample.

It therefore appears from this table that in the college's final grading this third year is significantly different from other third years; and these in turn do not significantly differ from each other. In view of the fact that this is a continuous assessment college, where tutors' views of students are directly reflected in their final assessments of them, it thus appears that there is a difference in tutorial estimation of this year compared to any other third year.

What was the possible cause of this difference therefore had to be investigated. Consequently, this third year was compared with one of the other third years in all the variables tested to see if any difference could be detected. The significance of the differences between means for all variables of these two years was calculated, and is as follows:-

	Personality				Attitudes				
	B1N	B2S	B4D	F2S	A	B	C	D	E
Mean for A3	-74	14	45	-15	97	81	147	142	68
Mean for B3	-45	10	31	-16	97	76	145	144	72
Significant Difference	3.644	-.788	-1.84	-.045	.368	-3.625	-.668	1.219	2.310

	Sociometric		Achievement	
	A	B	School	College
Mean for A3	185	126	7.6	34.9
Mean for B3	147	218	8.2	29.6
Significant Difference	-3.902	-17.309	1.042	5.395

Critical ratio for 5% significance = 1.97

Table 31. Significance of difference between the means of two Third Year Groups.

Despite no significant difference between their school achievement on entry there was a very significant difference in their respective final results three years later. The significant differences on the measured variables between these two years consist of neuroticism, attitude towards authority (B), attitude towards life (E), and the two sociometric measures A and B. Out of these the students in B3 were significantly better than those in A3 in their sociometric (B) status, the progressiveness of their outlook on life, and the level of their neuroticism. B3 was worse only in their attitude to authority and the generosity of their collective judgement towards other students (Soc A). In all other measured respects the two years were not significantly different from each other. This year A3 is therefore different in its personality (B1N) the conservativeness of its outlook (E) and its social acceptance (Soc B)

in the college generally. It would thus seem that Final Results in this college, despite their obvious and necessary concentration on academic performance, are also quite sensitive to student attitudes and personality. It appears to be possible that continuous assessment, even where it is ostensibly limited to academic work may be biased by staff/student relationships in this way, and correctly reflect the comparative poverty of this year group in personality and social acceptance compared to those of other final year groups.

If now we could establish that these differences were in part due to the exigencies of college expansion and movement in the college base there would be some evidence in favour of the effect of organisational influence. Individual education groups which had undergone organisational change were therefore now taken and compared to a control group which had not suffered change in that year. One group (W) was chosen as representative of groups which had suffered a change to a new tutor during their course, and two groups (V1 and V2) were chosen as having undergone the most rapid expansion in numbers while Y1 was chosen as the control group since it had suffered only slight change. The significance of the correlations between total attitude scores and final college grades for these groups was as follows:-

Groups	V1	V2	W	Y1
Chi^2	.004	.11	.096	3.86
Significance	nil	nil	nil	5%

Table 32. Chi^2 values for correlation between total attitude scores and final college grades of constituent groups of the First Issue Third Year sample.

Clearly, only in the control group is there evidence of correlation. It is thus at least possible that tutor judgement, as reflected in final college grades, is impaired by changes in their groups. Furthermore, the students themselves seem to be adversely affected in their reaching out towards greater dominance (B4D) (which has been shown to be a feature of personality growth during the course), in the progressiveness of their outlook (Attitude E) and in the amount of acceptance accorded them by their fellow students (Soc B).

The final set of organisational groupings investigated here, as likely to have some influence on attitudinal orientations, concerned itself with variables such as sex, age, previous education, type of residence in the college and age level of children for whom the student was being prepared as a teacher. Differences due to sex occurred in a number of variables. Women showed themselves more self sufficient and more socially adjusted than men, and their attitude towards one another (C), towards children(D) and to life in general (E) were significantly more positive than those of the men. In general, they were also sociometrically much higher than men in acceptance by their fellow students. There were thus very clear differences here, but much of them could quite possibly be attributed to the different nature of the selection situation for men and women respectively in this college of education. The other variables investigated, such as the influence of Secondary Modern schooling or self-reported social class, were found to produce negligible differences in attitudes, personality or social acceptance. The older student tended to have more positive attitudes to authority (B) and to work (A), and students who had opted

for Approved Lodgings rather than College Residence tended to have higher scores on intelligence, but otherwise there were no important differences. Surprisingly, membership of Infant, Junior or Secondary teaching groups also failed to make significant differences in the attitude and personality variables tested here. However, when examined, this fact really supported the previous contention that the 'Wing' departments, and to a less extent the subject departments, constituted the major influence on student attitudes. The Education Department had three Heads of department during the four years of the experiment, so it suffered much organisational change. Furthermore, education groups generally tended to have a mixture of students from different subject departments who would only meet as a group on one day a week. Thus lack of significant attitudinal difference between education groups was not really surprising, and in a negative way supported the subject departments' claim to be the attitudinal foci of the college.

Staff/Student Groupings

In all these attempts to establish the existence of attitude change and of influences on attitudes, we have been using the criterion of staff judgement. This staff judgement was embodied in the initial decisions of the tutorial committee on which were the favourable responses to the test statements; and from these decisions was made up the original marking schedule. Therefore, in one sense, we have already seen that student opinion was more favourable towards staff opinion than that of a neutral or chance population, and that student opinion moved towards staff opinion in all the attitude scales as the course progressed. However, staff judgements, as reflected by the marking

schedule, may well not be their truly personal opinions so much as their personal opinions refined by their professional judgements, and by considerations of what ought to be rather than what is the case with students. Hence, what has been proved so far, with respect to staff influence on student attitudes, is that a substantial minority of students move towards the professional, attitudinal alignments of tutors during the course; and to that extent students are influenced by staff.

However, the personal attitudes of individual tutors may be very different to their professional attitudes. It was therefore necessary to try to investigate this more personal staff orientation, and see what might be the relationship of student attitudes to this, before trying to arrive at a final conclusion. To do this, the Thurstone Chave version of the attitude test, developed on a staff sample, was used. This test, (already reported in the chapter on inicial validation) had three advantages for this purpose. One was that it asked for the personal judgement of the tutor on a student's response to the test statements. The second was that, because it could be represented as an attempt at independent validation of the existent test, the tutors did not feel themselves to be tested and therefore were more likely to respond personally. And the third advantage was that it called for a response to exactly the same schedule of statements as that to which the students had already responded, though in a very different form. Thus, these two areas of staff judgement, reflected by the Likert mark scale and by the Thurstone/Chave judgements, could well be assumed to represent respectively the professional norms of tutors and their more personal, though still professional, standards. Whether there was likely to be any difference between these two areas, of course, had yet to emerge.

The responses of the tutors to the Thurstone Chave test were therefore now analysed (See Appendix 8). The number of statements which emerged as significant for the staff judges in each of the attitude scales followed almost exactly the same pattern as that which emerged from the Likert treatment of the statements, and was as follows:-

A scale		B scale		C scale		D scale		E scale	
T.C.	Likert	T.C.	Likert	T.C.	Likert	T.C.	Likert	T.C.	Likert
46	25	27	23	52	42	44	35	36	22

Table 32. Comparison of significant statements obtained by the Thurstone Chave (T.C.) and Likert methods.

The staff judges clearly produced more significant statements than the students, but the relative numbers of statements in the scales were comparable between the two samples. The main reason for the discrepancy in gross size between the two totals in each scale can be accounted for by the difference in the two methods of scale construction. The majority of the statements selected by the Thurstone Chave method, but not by the Likert mehtod, were ones which fell into the 'unanimous opinion' category in the analysis of student statement returns (see Pilsen.). That is, these statements, while producing a coherent scale value among the judges, were such as were not likely to be discriminatory between students. Allowing for this difference, however, the broad outlines of the two patterns were completely comparable.

An overwhelming number of the significant statements produced by the student sample were also returned as significant by the staff judges. Out of the 148 significant Likert statements, 108 were returned as significant by the tutors, so, clearly, there is substantial agreement between the two groups.

An item analysis of the disparity between the two samples in statement means showed the following results:-

Percentages	A Scale			B Scale			C Scale			D Scale			E Scale		
	S	T	Total	S	T	Total	S	T	Total	S	T	Total	S	T	Total
A	4	8	12	8.6	4.3	13	4.8	7.2	12	0	0	0	10	0	10
B	6.2	7.7	14	11.0	3.7	15	8.6	6.9	15.5	0	1.8	2.0	2.1	2.1	4.0
C			24			47			14			20			22
	S = Students				T = Tutors										

A = Percentage of significant (Likert) statements disagreeing

B = Percentage of all statements disagreeing.

C = Percentage of significant Likert statements not significant on Thurstone Chave.

Table 33. Percentage analysis of disparity between significant statements obtained by Thurstone and Likert methods.

As the above breakdown shows, there was never much more than about 10% disagreement between tutors and students on the significant statements (Row A) used for measurement in the test. There was no consistent pattern in favour of one group or the other in this disagreement, except in Attitude E, where the students, though very conservative, seem somewhat less so than the tutors. The most striking result, of course, is Attitude D (to children) where there is complete lack of disagreement in significant statement opinion between students and staff. In Row B, where all the statements of the test schedule are taken into account, the percentage disagreement is slightly increased, but only slightly. Thus in over 300 statements of opinion there is shown very substantial agreement between the two groups. Row C, however, reveals the

real differences between them. This row records the percentage of Likert statements which are significant for students, but not for tutors. This shows the two facts that student opinion generally is crystallised much more sharply than that of tutors on many of the statements embodied in the test; and that this is particularly noticeable in the area of the 'authority' (B) scale, where the differences between the two samples are quite marked. However, this B scale (towards authority) has already been noted in the initial analysis of the test as the one where students showed most uncertainty of opinion, so this result would seem to be recording differing degrees of emphasis in the two samples, rather than differing directions. Of the five attitude scales, as a whole, the two most in agreement are those of attitude to one another (C) and to children (D), and the two in most disagreement are the attitudes to authority (B) and to work (A). There thus seems to be little evidence from this table of a marked degree of attitudinal difference between staff and students.

Clearly, what produces what disagreement there is are those areas which are part of the immediate functional situation between tutor and student, but those areas (such as C and D,) which are more applicable to the classroom situation, show little or no disagreement. Furthermore, there has been shown to be a difference between the professional judgement of tutors, as shown in the mark scales, and their personal judgement as shown in this version of the test. The tutors reveal themselves to be personally more conservative than the students, yet the mark scale of Attitude E records progressivism as the more favoured end of the scale, and favoured movement of students during the course is towards a more progressive attitude. Finally, authority has

shown itself to be the most sensitive area of difference between the two groups, but even here the difference seems to be one of more marked uncertainty among tutors rather than an actual difference in direction. There is thus no evidence of a 'them' and 'us' situation between the two populations, though there is evidence of less marked polarisation of attitudinal alignment in the more adult population and a considerable area of divergence of emphasis in the sphere of authority.

Conclusions

It would thus seem that the possible influences considered in this section all have an effect on student attitudes. The personality traits of Dominance (B4D) and Self Sufficiency (B2S) appear to be very important in the development of positive attitudes during the course. The way in which the student conceives his future role as a teacher, and the distance he is away from this reality, likewise seems to affect his attitudes considerably. The more socially oriented he is, the more empathetic he is to judgements by others, and the more outgoing he is in his efforts to secure contact with others, the more he is likely to have positive attitudes and success in the course.

The unity of departmental organisation within the college, and the relation of student work to a single practical theme (related in this instance of the P.E. and D.S. departments to work in the classroom) also seems to have a marked effect on student attitudes. Thus, staff influence, given an effective organisational channel, can be very considerable. In addition to this, however, it was found that the general staff influence can be quite effective in any case on a substantial minority of students. In fact, there

is good evidence of a shared general attitude climate among staff and students, particularly in relation to future work goals. Finally, it was found that students seem to be possessed of much more clear-cut and defined attitudes than do the staff. This may well be a difference due to age rather than function. This view is reinforced by the fact that the few 'mature' students in the college have attitudes closer to the staff position than that of students wherever the two appear to differ, as in the attitude to authority. There is therefore the possibility that at least part of the attitude change going on during the course is due to maturation rather than to any particular influence. The fact that attitude change went on in the same direction throughout the Straight Through group in relation to individual personality organisation, and regardless of whether the individual students were finding success on the course or not, lends considerable further support to this possibility.

The general conclusion therefore appears to be that staff influence, given appropriate organisational channels, can influence student attitudes very considerably. However, maturation, in conjunction with personality organisation would appear also to be an important force in the formation of attitudes. And, finally, anticipatory socialisation would further seem to be an influential underlying frame of reference, which helps to shape the student's attitudes as he progresses through the course. It would be difficult to decide whether one of these influences is more important than another, since they are a congeries of ongoing, interactive forces acting on the student and on the situation in which he seeks expression. This situation is further complicated by the fact that there is some evidence of a difference between the 'personal'

and 'public' attitudes of staff, and to a less extent students, for example in the public expression of attitude E. There is thus evidence that students and staff may respond in a situation in accordance with what they think is socially or professionally expected of them rather than in accordance with their personally expressed attitudes. Thus, while the factors investigated in this section have been shown to have influence on attitude change, there is no guarantee that influences producing change in attitude inevitably result in change in behaviour.

The Pattern of Responses to the Attitude Scales

Distribution of the Standardised Scores

The final step in considering the Results of the four year Test Programme was to examine the pattern of statement responses to see how they changed over the four years and how they changed through the course.

The first step in analysing these responses to the attitude scales was to compare the distributions of each attitude scale in the different years of the total sample to see how far the pattern for each variable was a stable one. The raw scores were therefore cast into standardised marks in order to make direct comparison possible.

This overall picture of the attitude scores showed a broadly normal distribution in each attitude scale, which tended to be repeated through all the years of the test programme. Attitudes A (to work) and E (progressive/ conservative outlook) in all three issues of the test tend to show a uniform picture of slight skew towards the more favourable end of the range in the first year, which is reversed in the second year, but returns more

markedly in the third year. There seems to be some evidence here, therefore, of course effect. Attitudes C (to one another) and D (to children) likewise present a stable picture of an initially homogeneous attitude growing slightly more so as the course progresses. Attitude B (to authority) on the other hand, is the one which shows least favourable progress and some evidence of negative skew. Each year of each issue tends to produce a largely homogeneous pattern in this attitude, but there are differences between issues, which suggest the transitory influences affecting the whole college which have already been examined. However, even in this scale the overall picture is one of a stable attitude pattern affecting the whole college, with some light evidence of improvement as the course progresses. The homogeneity and stability of all these attitude patterns thus remain as the outstanding characteristics of these distributions. When this homogeneity is contrasted with the wide range existing in the personality variables, it suggests that there is an agreed attitude climate to which students tend to subscribe, almost regardless of personality distribution, though this, of course, must await further proof before being regarded as fact.

Percentage Frequencies of Response to Statements

This further proof was therefore sought by analysing the percentage frequency of the responses to all the 305 statements in the original attitude test schedule, since these represented a much wider range of student opinion than those represented by the significant statements only. The percentage frequencies of response in each of the five answer columns for each statement were therefore calculated, and the individual statement responses submitted

to the chi- square test to ensure validity of statement opinion. The tables of percentage response and resultant statement means (Appendix 5 Section B) were calculated for the try-out test, one whole issue of the test covering the first, second and third years in the college at one time, and, additionally, one third year in the final issue of the test. Thus a comparison could be made between three third year samples of students covering a period of four years, and a first and a second year sample to contrast with the third years.

On inspection of the third year responses, the crude percentage responses of later tests were found not to differ substantially from those obtained from the original try-out sample. Using the arbitrary criteria used in the try out test to divide the statements into categories of 'unanimous opinion', 'majority/minority opinion' and 'uncertain opinion', it was found that no statement moved into a different category. Thus the broad attitudinal picture shown by the try-out test was confirmed. It had been found there that over two thirds (221) of the 305 statements showed almost unanimous agreement of opinion among the students, and, furthermore, only ten statements showed marked disagreement with the original subjective grading given to the statement by the initial tutor committee. There thus seemed to be marked agreement among students in their broad opinions about the course as expressed in these scales, and this was broadly in agreement with staff judgements. This was further confirmation of a homogeneous attitude climate among third year students and, furthermore, not just from those which were significant for the attitude scales. The fact that subsequent third year groups of students continued to produce the same broad attitudinal picture was even further evidence of the

stability of this attitudinal situation within the coarse categories initially decided upon.

Statement Significances

However, there was a need for more exact determination of change in statement response, since the previous investigation into validity had shown some drift in third year attitudes and this seemed contrary to this picture of general statement stability. The mean response of each attitude statement was therefore calculated for each of these year samples, and the range in difference in means was then found between all the years. The figure for the third year groups was extracted in full in order to obtain a true comparison with the original try-out test, which was based on third year students; and also in order to have more certain evidence of the attitudes with which students were leaving the college. The significance of this range of mean difference was then calculated for all the original significant statements which had made up the revised test. It was found that 44 of the original 148 significant statements had significantly altered in their mean values, as expressed by third year students during the four years in which the tests were being used, but that this was almost wholly accounted for by differences emerging in the First Issue, Third Year, which, as already noted, had had a significantly different attitude to authority to any other third year tested. The table of differences (Table 34) below indicates how the significant changes in individual statements were distributed between

the three third year groups, and shows clearly the imbalance due to the one particular year.

Separate Third Year Samples Compared	Number of Statements significantly changing their mean value
Between Try Out Test and 1st Issue 3rd Year	32
Between 1st Issue 3rd Year and 3rd Issue 3rd Year	8
Between Try Out Test and 3rd Issue 3rd Year	4

Table 34. Number of significant statements changing value between different 3rd Year issues of the test.

The responses of the first and second year groups, however, differed considerably from those of the third year, when submitted to this analysis. Owing to the number of calculations involved, it was decided, when looking at these differences, to accept an arbitrary criterion of a difference of 1/3* of a column as being significant. Taking this criterion, the number of the original significant statements which significantly changed their value when responded to by first or second year students was 84 out of a total of 305 statements. Moreover, in almost all of the 305 attitude statements there was a considerable reduction in the range of difference between the statement means of third year groups of students as compared to the range existing among all years of students. In only 48 statements was the range the same for the two groups. Clearly, when examined in detail, there was substantial difference in statement opinion between the final year of the course and preceding years.

* This amount could roughly be said to be half a S.D. over the five response columns, and is therefore very likely to be significant when considered together with an inspection of the distribution.

Equally clearly, there was marked agreement between the various third years tested. This indicates some homogenising effect at work on attitude alignments as the course progresses, and this fact is further strengthened by the fact that there is a reduction in the range of attitude expressed as the course progresses. One further fact needs to be mentioned here. This is that out of all the 305 statments, only 16 changed their mean response by more than one response column over all the third years tested, a among the original 148 significant statements this number was reduced to 4. A substantially similar attitude climate therefore existed among third year students despite some change going on in specific individual responses. Thi seems to substantiate quite effectively the claim that students leave the course with a fairly well agreed set of attitudes to the basic features of the course tested here, and this is the result of a 'bunching' in attitude which take place as the course progresses, and which may well be due to the effect of the general attitude climate on individual students. This thus seems to support the view previously advanced that some degree of anticipato socialisation is taking place during the course.

It remained now to analyse what was the nature of the difference in the attitude statements which existed between the three years of the course at any one time. In order to do this, the mean values of the original significant statements (Third Year) were compared with those of later first and second year students, and their variations tabulated as follows:-

Statements with same value	A Scale		B Scale		C Scal		D Scale	
	2nd Yr Up	2nd Yr. Down	2nd Yr. Up	2nd Yr. Down	2nd Yr. Up	2nd Yr. Down	2nd Yr. Up	2nd Yr. Down
A: 44,83,247, 264,285 B: 127,280 C: 32,151, 169,224 D: 12,31 E: 110,148, 304	1,25, 39,49, 68,101 162,191 196, 201	134,154 157,172 174,179 184,216 232,237 268,300	28,52, 182,255 293,303	33,57, 61,71, 76,94, 152,177 209,230 245,267 288	18,37, 46,51, 56,60, 70,90, 93,113 118,123 126,136 141,156 164,173 176,193 203,220 244,249 275,279 302	98,108 146,159 186,208 213,217 234,254	2,7, 64,66, 69,79, 89,125 135,155 168,197 243,259 269,273 278	40,50, 59,84, 122,185 202,207 223,238 258,265 274,283 286,287 289,292 297
	10	12	6	13	27	10	17	19

E Scale	
2nd Yr. Up	2nd Yr. Down
34,72, 95,100 143,153 200,251	87,105 120,161 171,178 210,305
8	8

Table 35. Analysis of the change in mean value of the original 3rd Year significant statements when compared to later 1st Year student responses.

Statements with Same Value	A Scale		B Scale		C Scale		D Scale	
	2nd Yr. Up	2nd Yr. Down	2nd Yr. Up	2nd Yr. Down	2nd Yr. Up	2nd Yr. Down	2nd Yr. Up	2nd Yr. Down
A: 0 B: 127,182,293. C: 151,224,249. D: 0 E: 204	1,25, 49,68, 83,134 162,172 179,191 196,201 237,247 264,285	39,33, 101,154 157,174 184,216 232,268 300	28,52, 177,255 280,288 303	33,57, 61,71, 76,94, 152,209 230,245 267	18,37, 46,51, 56,60, 94,118 123,126 141,146 156,159 164,173 176,186 203,213 217,234 244,279	32,70, 90,98, 108,136 169,198 208,220 254,275 302	50,66, 113,135 155,168 197,207 223,243 258,265 274,286 289,297	2,7, 12,31, 40,59, 64,69, 79,84, 89,122 125,185 202,238 259,269 273,278
	16	11	7	11	24	13	16	20

E Scale	
2nd Yr. Up	2nd Yr. Down
34,72, 100,110 120,143 148,161 200,283 287,292 305	87,95, 105,153 171,178 210,251
13	8

Table 36. Analysis of the change in mean value of the original third year significant statements when compared to later second year student responses.

Looking at the attitudes in turn in these tables it would appear that there are characteristic differences between the three year positions. Attitude A (to work) shows no significant balance of difference in the statements between the first and third year, but there is a marked upward difference in the second year. In attitude B (to authority) both the first and second year are markedly more negative in their balance of statements as compared to the third year. Attitude C (to one another), however, shows them both markedly more enthusiastic than the third year. Attitude D (to children) seems also to favour the third year position, though by a much narrower margin than in the case of Attitude B. Attitude E (progressive/conservative outlook) seems to suffer a radical twist in the second year, but otherwise there is not much difference between the first and the third year position. Thus the general pattern seems to be that during the second year of the course students seem to be oriented towards work (A), towards progressivism (E) and to maintain the first year's extremely pro-social and anti-authority position when compared to the third year. The nature of the attitudinal swing over the three years as a whole thus mirrors the general pattern, found previously, of a role initially conceptualised on that of a teacher, changing in the middle of the course to a college-oriented role and then reverting in the third year more strongly towards that of a teacher. In the individual attitudes there is a steady upward shift in the attitude to authority between the years of the course, and evidence of a transitory revision towards radicalism in general outlook and towards academic work in the middle of the course. The attitudes towards one another (C), and towards children (D), however, are those which seem to suffer most constant inspection and revision,

with generally a move towards greater realism in human relationships, and a slightly increased enthusiasm for children, at the end of the crouse.

Thus, to sum up, it seems that statement stability and homogeneity of opinion among third year students has been proved to exist. A general homogeneity of attitude climate and statement stability provided it is expressed in broad categories, has also been shown to exist in the college population at large. At the same time, the more exactly measured qualitative attitudinal differences between the three years of the course shows the direction of attitudinal movement during the course, and the fact that there are different attitudinal 'sets' of a college year population at different times in the course. There is a marked homogeneity of attitude position between different third year populations, and an homogenising effect in attitude movement going on during the course, not only in statement discrimination (as noted in Chapter 5) but also in actual attitude opinion. There is thus a movement going on, inside a generally accepted attitude climate, towards a characteristic third year attitude position; and this 'climate', by virtue of its unanimity of expression among students, could well be one of the most potent influences in shaping this third year position.

CHAPTER SEVEN

CONCLUSIONS AND IMPLICATIONS

Attitudes in the College

Attitudes and their 'favourability'

Attitudes, which, in the opinion of experienced students and tutors are relevant to basic features of the course and to the teaching situation, have been found to exist and to be considered relevant among all the students tested on the course. In each attitude scale the distribution in every year group tested was a normal one with slight positive skew except in the case of the Authority scale where there was slight negative skew. The balance of each population tested thus inclines towards the favourable end of the majority of the scales. Furthermore, when compared to a neutral viewpoint the whole population is significantly on the positive side of this point in each year group tested. And finally, when the percentage response to the original, unrevised statements was analysed, there was overwhelming agreement in many of the statements; in fact, this was what caused them to be rejected in the revised test as non-discriminatory. Thus there seems to be constant favourability in the balance of viewpoint, balance of population and balance of opinion to the professional viewpoints held by staff on these basic features of the course. Only in the area of authority is there evidence of the existence of some negative attitudes between students and staff, and even here there is much agreement shown in their mutual uncertainties about many 'authority' statements.

Of course, in making these statements no reference is made to the existence of norms of attitude opinion among the college student population and staff. This is a complicated question, to which there are a number of aspects. One very important one, in this context, is that in any given population what is regarded as a favourable attitudinal position in an individual is likely to be above the norm for that population, but the norm itself may be higher or lower in that population than in others. Favourability therefore cannot be judged by reference to norms internal to that population. Another aspect is that judgements on favourability are likely to be decided by the test judges' own professional standards of what should be regarded as favourable rather than by any universal criterion; and this is further complicated by the fact that the judgement may be made within a particular situational frame of reference. This kind of difference actually showed itself in staff judgements in this investigation, both in respect of Final college scores matching the students' but not tutors' attitudes to work, and in the differences emerging between the Thurstone Chave test results and the mark scale of the Likert statements. These both showed that it is the frame of reference of the judgement as well as the judge's attitudes that determine the actual judgement. Thus 'favourability' is a very relative term. All that can be said here is that all the year groups tested were significantly above the neutral point in all five of these attitude scales, and to that extent were favourable to the objectives embodied in them. Since these objectives had been determined according to the professional judgements of representative tutors, then the general attitude position of students can be said to be favourably in agreement with that of the staff towards the affective objectives of the course tested here.

There is, moreover, a general attitude climate to which all students seem to subscribe, and in which staff also seem to share in at least three of the scales. In the original percentage analysis of student responses over 150 statements recorded more than 50% of the sample in each year checking a single response column. Consequently, these 'unanimous' opinion statements had to be omitted from consideration in later versions of the test because they didn't discriminate between students, but they did serve to show the size of the measure of agreement among students on at least half of the opinions called for in the unrevised test. Staff agreement with student opinion was also considerable. The chief areas of disagreement showed themselves in the two scales (A to work, B to authority) most closely related to the actual college situation, but even here there would appear to be working norms of agreement. This is strikingly demonstrated, not only in the agreement of final college scores with student but not staff attitudes to work, but also in the apparent over-reaction of staff when disagreement arises, as in the third year, A3's adverse attitude to authority and the consequent decline in final college scores for that year. There is thus substantial agreement, both among students and between students and staff, on professional attitudes relating to the teaching situation, and a good measure of working agreement between the two groups on the norms to be expected of student attitudes relating to the contemporary college situation.

Attitude Change

The evaluation of change in attitude suffers from the same difficulties as those concerned with the measurement of favourability. There is clear evidence of both positive and negative change during the course, but this can

only be demonstrated by testing the same people annually. Horizontal comparisons of successive year groups in the course are not enough, since not only does the reference point change (i.e. the qualitative attitude level of the average student in the sample, already noted), but in addition the composition of the sample in relation to the average student changes, and the qualitative composition of the responses also changes. In the circumstances of voluntary attendance necessitated by this research design, the evidence for attitude change therefore suffers from the fact that it rests on the very co-operative part of the student sample (just over one third of the year group) who attended all the tests. Evidence for positive change, based on this part of the sample, is thus quite conclusive, but needs to be qualified by comparing it with analyses derived from the whole sample.

For this reason the test sample was analysed in two other ways. One was to compare the same successive year groups of the course as those of the straight through group, but which were not composed wholly of the same students in each year. The other was to compare wholly different first, second and third year groups in the course. With the first method of analysis the pattern of attitude movement is one of significant positive change for the first two years and then some conservative regression in the third year. The difference between this pattern and that of the 'straight through' group can only be accounted for in the greater possession by the straight through group of the personality quality of Dominance. Dominant students appear to hold on to progressive attitude positions longer in the course than do less dominant students. In the second method of analysis, using completely dissociated first, second and third year groups of students, no positive gain between the years is apparent. However, if the responses are examined qualitatively by comparing

the significance of the difference between actual statements endorsed by the different years (i.e. by measuring relative group mean distances between statements endorsed rather than comparison of group scores) some qualitative difference between the years emerges. The third year becomes more positive in attitude than other years, but also more temperate in using the whole range of repsonse columns, so that the decline in numerical score compensates for the increase in qualitative endorsement. Thus there is some attitude change observable between the year groups even where they are not the same year in successive stages of the course. What is happening is that attitude movement is obscured not only by individual compensatory student changes when groups are compared, but also by similar compensatory change in individual statement endorsement when groups of statements are compared. The effect of this kind of compensation on the pattern of attitude movement is only shown when the three different levels of sampling (ranging from the wholly same to wholly different samples) are compared. Thus demonstration of attitude change through the course is made difficult not only by the intervention of personality factors but also by these methodological factors involved in comparing groups. Nevertheless, allowing for these factors, it would appear that attitudes are both quantitatively and qualitatively different for different years of the course, and that positive outweighs negative change, especially when the same sample is considered throughout the successive years of its course. However, it must be noted that the bulk of this change is confirmatory rather than redirectional for the students concerned. Thus change towards an homogeneous third year position does seem to take place, and while some students do become more negative in their

attitude positions the balance of the change is positive, though certain observance of it is inhibited by the intervention of the factors just considered. However, the homogeneity of this third year position, and its invariance from year to year, does suggest that the course has some shaping influence on the student.

Attitudinal Influences and their Relation to Action

However, it has been clearly shown how numerous the influences on attitude expression and action can be. Attitudes and their relevant behaviour are not a simple case of a univariate situation. The frame of reference in which an attitude is cognitively perceived by the subject clearly makes a difference to attitudinal expression. This is affected by the alignment of individual personality, which affects the tenacity with which particular attitudes are held, by the internal teaching arrangements of the college, which may help attitudinal foci to develop, and by the influence of the student's own perception of his future teaching role, which appears to make a difference to the 'set' of his attitudes at different stages of the course.

The relative importance of individual influences in this frame of reference is outside the scope of this inquiry, but the fact that all those examined here have a significant relationship with attitude expression has been proved. It has also been shown that one cannot consider an attitude's predictivity for action without reference to the effect of its frame of reference in the actual action situation. Furthermore, the interaction of these individual influences has been shown to have a most important effect on the attitudes of individuals. It is the peculiar blend of these influences (including the blend of his personality composition) which seems to determine

the student's particular attitude at any one time. In view of the fact that every formative influence examined had a positive relationship with student attitudes, it would appear that attitudes cannot be regarded separately as determinants of action, but only as part of a whole congeries of causal factors influencing both attitudes and action.

Determination of Success on the Course

The possession of positive attitudes on the part of the student tends to accompany success on the course as measured by final college results. In fact, there is a significant relationship at the 1% level and a 2% level of predictivity from the first to the third year. However, positive attitudes alone cannot stand as a sure guarantee of success. The dichotomy in final college scores in the straight through group, the members of which almost all had positive attitudes, and evidence from the significant differences between high and low groups generally in the sample, showed that it is the possession of a dominant personality as well as positive attitudes which makes course success most certain. This not only applies to success as measured by final results, but also as measured by peer acceptance. The preferred personality both by staff and students, was repeatedly shown to be one of dominance and self-sufficiency in personality together with the possession of positive attitudes.

No other single measure among the variables tested had a significant relationship with Final College Scores except the Sociometric A measure, which showed the student's own estimate of his claim to acquaintance with other students. This suggests that a student's effort to impress himself upon his peers does have an adverse effect on assessed performance in a

college dependent on continuous subjective assessment. However, since this relationship accounts for only a small though significant part of the variance it would be unwise to place too much dependence on it.

Finally, it is clear that student attitudes to authority in general can adversely affect success in the course. The third year which was significantly lower than other third years in final college results was chiefly different to them in its attitude to authority. However, no significant connection could be established between individual students' attitudes to authority and success on the course, so it would appear that it is not until an adverse attitude become fairly general in a particular group that it actually has an observable impact on staff reactions. This may well be due to the previously noted factors concerning attitude expression, and to the fact that no one member of staff is responsible for all of a particular student's final results, so that staff reaction has to be fairly general before it can become measurable. In fact, the only attitude to have a significant relationship by itself with final college scores was Attitude A (to work), but it lacked predictivity compared to the combination of favourable attitudes and personality factors noted earlier.

Attitudes and Measurement

There remains the question of how far one can use attitude scales as a measuring device in a college of education. As a device for monitoring student reactions over a period, such as the one covered by this research, they have been shown to be reasonably adequate, but for a less limited purpose they have have also been shown to have serious short-comings. If the

measurement involved was considered important by the student then the problem of conscious faking would assume much greater importance than it has received here. However, this is a relatively hypothetical problem compared to the difficulties of measurement shown to exist in this investigaiton, where personal stress factors were at their minimum. One such difficulty is that attitude expression has been shown to be clearly affected by differences in the perceived frame of reference, so that measurement without consideration of the engendering situation could easily be very biased. However, the greatest difficulty emanates from the fact that attitudes to basic features of the course in this investigation have been shown to be dynamic over a long term period. The very differences forming the basis for test discrimination between students are subjected to a 'smoothing-out' influence over a period of four to five years. Thus any crystallised measurement of this nature quite rapidly gets further and further away from the contemporary situation, and therefore less valid. This effect could clearly be seen in the analysis of the long-term discrimination of the attitude statements; it was not because the statement means significantly changed, nor that the statements became irrelevant, it was just that they became commonly agreed and therefore un discriminating. Moreover, as old opinions ceased to discriminate new ones began to arise, so that gradually over a long enough period, the emergence of statement irrelevance could be envisaged. Clearly, in a relatively closed community such as this, and on attitude areas of limited application such as these, it is essential not to separate attitude measurement from its ongoing situation too far.

The use of attitude scales as measurement for this type of situation thus has three serious difficulties. The first is that attitude evaluation of professional features such as those measured in this investigation can only be comparative with regard to that population, and, even here, norms for different samples of the population may differ. The second is that attitude evaluation without taking into account the surrounding situation is likely to be of little predictive value for other situations, or for distant future situations of a similar nature. And finally, attitude scales embody comparative judgements, which may be interpreted as value judgements, which, in turn, are likely to distort the teaching situation to fit the requirements of the test instrument. There are then serious limitations to the use of attitude scales as measurement in this type of situation.

Methodological Considerations

There were also three important conclusions arising from the programme of research rather than from the initial hypotheses.

The most important methodological conclusion related to actual measurement and was twofold in its direction. One aspect was the fact that measurement by comparison of group changes can often lead to misleading results, owing to compensatory movement inside the group masking actual change. This can occur, as shown in the investigation, not only with results from groups of people, but also results from groups of statements. The other aspect of this point is that change is relative to the criterion used to measure change. Hence we can actually have no apparent change in the climate of opinion between course years, and yet if we define the criterion of change more exactly then significant movement becomes discernible. As the analysis

of percentage responses shows, there is sufficient unanimity of response to justify the suggestion that there is a college climate of opinion, yet nevertheless there is significant change going on inside it as the course progresses.

The second methodological conclusion relates to final college results. These seem to have some significant relation with Attitude to Work (A) and the student's own claim to peer acceptance (Soc A) among the variables tested, but to relate to no other single measure in this test schedule. This, of course, may be accounted for by the fact that the test schedule does not set out to measure academic performance, which, by inspection, the Final College grades would appear to do. Yet the total final grades have also been shown to be significantly related to composite measures of student personality and attitude. It would thus appear that the final assessment in a continuous assessment college is a very compound measure of a student's success on the course, and this may well help to account for its lack of predictivity in teaching. Until the objectives of a teaching course are more clearly formulated, this kind of uncertainty in measurement, arising from the compound nature of the judgements made, would appear bound to persist.

The final major conclusion of this sort arose from the fact that the Bernreuter test stood revealed as measuring one bipolar factor of dominance/submission rather than the four discrete measures it originally purported to take. This discovery did not hamper the research as much as it might have done, since dominance has been shown to be a major factor in teacher effectiveness, and therefore the test results were still relevant to the research. However, it illustrates the need for validation of the

interpretation of test results; a need which was further supported by the consistent significant correlation between Dominance (B4D), Attitude C (to one another) and student sociometric status (Soc B), which together indicated very clearly what 'dominance' in the student actually means. Of course, not only test results suffer from this difficulty of interpretation. The way in which the final teaching practice grade showed itself to be a composite measure consisting of judgements on subject competence, authority (B) and attitude towards children (D) revealed a similar difficulty in normal college results. The growing practice of validating a test repeatedly in order to be sure of what it is measuring thus seems thoroughly justified.

Final Conclusion and Implications

The original hypothesis of this experiment asked two major questions: first, what is the nature of student attitudes in their training and are they of importance in course success; and second, can such attitudes be effectively measured.

On the first hypothesis, it would seem that student attitudes throughout the college population are disposed to be favourable to those supported by college staff, and, among those students who attended for each test session in their course, to grow more favourable as the course progresses, provided that a constant criterion is used to measure their comparative shift. Among the whole year group of students passing through a particular course it would seem that regression towards more conservative attitudes is common in the Third Year. Internal evidence would suggest that there is an element of maturation as well as one of course influence in this development, since it doesn't appear to vary with the student's own knowledge of his course progress,

and yet it does seem to vary with his personality orientation and growth. At the same time, however, it is clearly affected by the institution, since the professional orientation of these attitudes is marked, and the distinctive contribution of different college department is also recognisable in the results. In W. Taylor's classification of factors in the course as presage, process or product variables, it would thus seem that for some departments these attitudes appear to be strong process variables, if not actually product variables. However, these attitudes have also been shown to be a product not only of the individual personality reacting with the situation, but also both of these being affected by the individual's perception of his future role. In this sense, they would thus appear to be background process variables for the majority of students, resulting in an homogeneous range of expressed attitudes among third year students. They thus seem clearly to be an important factor in the course, and their effect on course success (provided the personality factor of dominance is also taken into consideration) has likewise been shown to be of major importance by the results from the 'straight through' group.

In respect of the second major hypotheses of the investigation, concerning attitude measurement, the situation is rather more clear cut. Attitudes, at any one time, are only one factor in a set of interacting influences in an ongoing situation, and, while they can be validly isolated and measured, cannot be effectively evaluated without consideration of the other influences, such as personality composition and the organisational situation around the student. Moreover, attitudes which reflect significant individual differences in a year sample are not themselves sufficiently stable in this type of

situation to be encapsulated for periods longer than about five years.

Thus the general conclusion to this investigation is that the initial major hypothesis, that student attitudes are an important factor in the course and in course success, has been borne out. However, the second hypothesis, that attitudes might be used as an objective basis for student measurement in the course, has shown itself to be much less valid except on a short term basis.

Implications

A number of major implications emerge from this investigation. One derives from the fact that attitude change, either negative or positive, take place in so many students. A clear implication here is that there should be more attention paid by the college to the idea of making students more aware of their own attitudes and more capable of some degree of self analysis. A second important implication stems from the fact that Authority has been shown to be a most sensitive area of student/staff relations. More attention would appear to need to be paid to the sphere of authority relationships in practice, and to theoretical explanation of the concept. The third implication is concerned with the fact that attitudinal foci showed up in the internal organisation of the college, where particular departments were organised in closed groups, or in accordance with some strong teaching ethos. If these are going to occur in any case, there is no necessary merit in them occurring entirely by accident. Attention thus could well be given in internal college organisation to the possible, attitudinal effect of particular adminsitrative or teaching structures.

Finally, it has been shown that attitudes are an important feature in the course which relates to student success, but which does not stand in isolation by itself. Attitudes are affected by the personality make up of the student, by the organisational structure within the college, and by the student's own frame of reference with regard to his present and future professional role. Furthermore, they are in themselves dynamic. They thus emerge as a symptom of the interaction, rather than the sole determinant of the action, in a particular situation. The implication here, therefore, is that their use as a measuring instrument in a college is probably best confined to that of an incidental monitoring device to discover the state of a particular situation, rather than a use which might try to make them more directly a part of the situation itself. Any organised adoption of the need to measure directly the affective objectives of the course by the use of attitude scales would tend merely to add another element to the interaction of the influences noted earlier, and itself cause further expressed attitude re-alignment, which might well be spurious. This is rendered even more likely when it is remembered that in this investigation students and staff were clearly willing to subscribe to college based norms in some college situations rather than to their own completely personal attitude positions. Hence the outcome of this research is to lay emphasis on the importance of attitudes as process variables in the course, rather than to emphasise their desirability as product variables of it.

SUMMARY OF FINDINGS

Attitudes in the Course:

1. That each year of the college population tested inclined towards the attitudes of staff tutors in all the attitudes tested except that of authority.

2. That attitudes to the basic features of the course tested here do change during the course among a substantial number of students.

3. That the balance of this change in each year population tested is significantly towards the position professionally favoured by college tutors.

4. That each year population as a whole in each successive year of the course progresses towards this 'favourable' position when horizontally compared with a constant criterion, such as chance.

5. That these attitudes become more homogeneous in the third year of the course, and consistent over successive third years.

6. That the only variable which was found to have a repeated and consistent relationship with 'favourable' attitudes was the Personality quality of Dominance, Possession of this quality to a marked degree ensured longer continuance of progressive attitudes in the course and less regression to conservatism as the actual teaching job became closer.

7. That the possession of 'favourable' attitudes alone does not affect student success in the course, but when combined with a marked degree of dominance does have a significant relationship with course success.

8. That attitudes are significantly affected by organisational change, particularly in the area of attitude towards authority, and by features of the organisational structure within the College, such as the degree of homogeneity of particular departments.

Attitude Measurement:

1. That the use of attitude scales as a crystallised measurement is not advisable in a relatively closed community over a period longer than five years.

2. That the use of data derived from consideration of groups tends to mask the extent of individual change going on in the group.

3. That horizontal comparison of intact groups is a somewhat suspect procedure for producing reliable evidence of attitude change.

4. That attitudes are relatively dynamic and part of a set of inter-related factors in a college course. Their uni-variate examination would therefore seem to be a somewhat suspect procedure.

BIBLIOGRAPHY

Key:

BJEP	British Journal of Educational Psychology
BJSP	British Journal of Social Psychology
BPS	British Psychological Society
HEJ	Higher Education Journal
JAP	Journal of Applied Psychology
JEE	Journal of Experimental Education
JEP	Journal of Educational Psychology
JER	Journal of Educational Research
JSP	Journal of Social Psychology
JTE	Journal of Teacher Education
PB	Psychological Bulletin
SRHE	Society for Research into Higher Education London.

Author	Initials	Date	Title	Publisher
Abercrombie	J.M.L.	1960	The Anatomy of Judgement	Hutchinson
Adorno	T.W.	1950	The Authoritarian Personality	Harper N.Y.
Allen	E.A.	1963	Professional Training of Teachers: a Review of Research	J.E.R.
Allport	G.W.	1961	Pattern and Growth in Personality	Holt, Rinehart
Allport, Vernon & Lindsay		1951	Study of Values: a scale for measuring the dominant interests in personality (rev.	Houghton Miflin ed.)
Amidon	E.J.	1967	Improving Teaching	Holt, R & W
Amidon and Hough		1967		
Barnett	K.	1964	Teacher Training	H.E.J.
Beard	R.	1967	Research into Teaching Methods in Higher Education	S.R.H.E.

Author	Initials	Date	Title	Publisher
Bennett	M.E.	1946	College & Life: Problems of Self Discovery and direction	McGraw Hill
Bennett	E.B.	1955	Discussion, decision, commitment and consensus in group decisions	J of Human Relations
Bernreuter	R.C.	1935	Personality Inventory	Consulting Psychologist Press Incorp
Biddle & Elna		1964	Contemporary research on teacher effectiveness	Holt Rinehar
Birch	C.	1963	The Teacher as Learner	B.P.S. Bulletin
Bloom	D.	1957	Taxonomy of Educational Objectives I and II	Longmans
Boyer & Michael		1968	Faculty and Student Assessments of the environments of several small religiously oriented Colleges.	California J.E.R.
Bruner	J.S.	1960	The Process of Education	Harvard U.P.
Bush & Allen		1967	Report on Micro-Teaching (Mimeograph)	University o Stanford.
Butcher	H.J.	1965	Attitudes of Student Teachers to Education.	B.J.S.P.
Butcher	H.J.	1968	Educational Research in Britain	U.L.P.
Calvin, Hoffman and Hardman		1957	Effect of Intelligence and Social Atmosphere on Group Problem Solving Behaviour	J.S.P.
Callis	R.	1950	Change in teacher-pupil attitudes related to training and experience	Educational Bulletin of Psychological Measurement.
Cane	B.S.	1967	Educational Research in England and Wales	N.F.E.R.
Carlile	A.B.	1954	Predicting Teaching Performance in the Teaching Profession	J.E.R.

Author	Initials	Date	Title	Publisher
Carroll	A.	1962	Baptism of Fire	Times Educ. Supplement 30/3/62
Caspari & Eggleston		1965	A New Approach to Supervision of Teaching Practice	Education for Teaching
Cattell	R.B.	1931	Assessment of Teaching Ability	BJEP
Cattell			16 P.F. Test	NFER
Cattell	R.	1950	Change in teacher-pupil attitudes related to training and experience	Educational Bulletin of Psychological Measurement.
Chanan	G.	1972	Research Forum on Teacher Education	NFER
Charlton, Stewart & Paffard		1958	Students' Attitudes to Courses in Departments of Education	BJEP
Child	D.	1970	Essentials of Factor Analysis	Holt R. & W.
Clark & Starr		1967	Secondary School Teaching Methods	Collier
Cohen	A.R.	1964	Attitude Change and Social Influence	Basic Books
Cohen	L.	1965	Exploratory Study of the Teacher's Role as perceived by head teachers tutors and students in a college of Education.	M.Ed. Thesis University of Liverpool
Cohen	L.	1968	College and the Training of Teachers	JER
Collier	K.G.	1957	Study of Students' Attitudes	Education for Teaching
Collier		1959	The Criteria of Assessment of Practical Teaching.	Education for Teaching
Collier		1964	Staff student relations in higher education.	Universities Quarterly
Coltham	J.B.	1965	An experiment in school practice	Education for Teaching

Author	Initials	Date	Title	Publisher
Conant	J.B.	1964	The Education of American Teachers	McGraw Hill
Cook	A.L.	1957	School Problems in Human Relations	McGraw Hill
Cook, Leeds & Callis		1958	Minnesota Teacher Attitude Inventory	Psychology Corp. N.Y.
Coombes	C.A.	1953	Theory and Methods of Social Mesurement	Dryden Press N.Y.
Cope	E.	1970	Teacher Training & School Practice	JER
Cornall	P.	1964	Educational Guidance	Education
Cornwell	H.	1958	Sociometric Analysis in a Residential Training College	Ph.D. Thesis U. of London
Cornwell	H.	1965	The Probaticnary Year (Mimeograph)	Univ. of Birmingham College Research Grou
Corwin	L.	1961	Sociology of Education	Appleton
Crisswell	J.H.	1942	The Saturation point as a Sociometric Concept	Sociometry
Daldy	D.M.	1937	Adaptability in a Group of Teachers	BJEP
Dale	R.R.	1955	Research on Selection for Teaching	World Organis for Early Child Educ.
Dale		1966	Pupil Teacher Relationships in Single Sex and Grammar School	BJEP
Davies & Shepherd		1961	Teaching: Begin Here	Epworth Press
Day	H.P.	1959	Attitude Changes of Beginning Teachers after initial teaching experience	JTE
Dewey	J.	1966	Deomocracy and Education	Free Press
Digman	J.M.	1962	The Dimensionality of Social Attitudes	JSP

Author	Initials	Date	Title	Publisher
Dodge	A.F.	1943	What are the Personality traits of a successful teacher.	J.A.P.
Domas & Tiedman		1950	Bibliography of researches into teaching in the U.S.A.	JEE
Drabich	L.W.	1967	Perceivers of the Teacher's Role the Teacher Educator	JTE
Duffy	A.	1940	A critical review of investigations employing the Allport & Vernon Study of Values	PB
Duffy & Crissy		1944	A further investigation into Alport and Vernon's study of values employed on college students	P.B.
Edwards	A.L.	1957	Techniques of Attitude Scale Construction	Appleton Century
Erikson	E.	1950	Childhood and Society	Norton N.Y.
Evans	K.M.	1951	Survey of Methods of Assessment	JER
Evans		1952	A Study of Attitude towards Teaching as a Career	BJEP
Evans		1953	A further study of attitude towards teaching as a career	BJEP
Evans		1957	Is the concept of interest of significance to success in the training course.	Educational Review
Evans		1958	Examination of the MTAI	BJEP
Evans		1961	Annotated Bibliography of British research on teaching.	JER
Evans		1965	Attitudes and Interests in Education	Routledge & Kegan Paul
Evans		1971	Change in Attitude among department of education students	JER
Eson	M.E.	1956	The Minnesota Teacher Attitude Inventory in evaluating the teaching of educational psychology	JEP

Author	Initials	Date	Title	Publisher
Eysench	H.J.	1943	Student selection by means of psychological tests	BJEP
Eysench		1952	Scientific Study of Personality	Routledge
Finalyson & Cohen		1967	The Teacher's Role: a comparative study of the conceptions of college of education students and head teachers.	BJEP
Flanagan	J.C.	1954	The Critical Incident Technique	PB
Flanders	N.A.	1969	Teacher Effectiveness in Encyclopaedia of Educational Research (4th Edition)	Macmillan
Fuller	C.	1951	The use of teacher pupil attitudes, self-rating and measures of ability in teacher selection.	J.E.R.
Furneaux	W.D.	1961	The Chosen Few	U.L.P.
Gabriel	J.	1957	An analysis of the emotional problems of the Teacher in the classroom	Melbourne, Cheshire.
Gage	N.L.	1963	Handbook of Research into Teaching	Rand McNally
Garrett	H.E.	1958	Statistics in Psychology and Education	Longmans
George	E.J.	1954	An experimental study of the relations between personal values, social attitudes and personality traits.	Ph.D. Thesis Univ. of London.
George	M.F.A.	1950	Education for Self Government	J. of E.
Goodacre	R.	1968	Teachers and their Pupils' Home Background	N.F.E.R
Gross	R.E.	1965	British Secondary Education	O.U.P.
Guilford & Zimmerman		1949	The Guilford Zimmerman temperament survery	Sheridan Supply Co.

Author	Initials	Date	Title	Publisher
Guildford	J.P.			
Guttman		1950	Basis for Scalogram Analysis (in Measurement and Prediction by Stouffer)	Princeton University Press
Hale		1964	Report on University Teaching Methods.	H.M.S.O.
Halliwell	K.	1965	Validity of Methods for Student Selection for Teacher Training	Ph.D. Thesis University of Sheffield
Halloran	J.D.	1967	Attitude Formation and Change	Leicester Univ. Press
Hallworth	H.J.	1957	Group Discussion in its relevance to teacher training.	Educational Review
Hallworth		1963	Valentine's Test for Higher Intelligences	BJEP
Hartog & Rhodes		1935	Examination of examinations	U.L.P.
Havighurst		1953	Human Development and Education	Longmans
Heim	A.W.		A H5 Test	N.F.E.R
Herbert & Turnbull		1963	Personality Factors and Effective Progress in Teaching.	Educational Review
Hooland, Janis & Kelly		1961	Communication and Persuasion	Yale U.P.
Howard	A.E.	1963	How our Children Learn (McNeill, Howard and Chevenix Trench)	Twentieth Century Press
Hyde	K.E.	1963	Religious Concepts and Attitudes	JER
Inlow	G.M.	1960	A Comparative Study of student teaching practices in 38 mid-west institutions	JEE
Jackson	B.	1964	Report on Education	Advisory Centre for Education
Jacob	P.E.	1957	Changing Values in College: an Exploratory study of the impact of college teaching.	Harper & Row N.Y.

Author	Initials	Date	Title	Publisher
Jahoda & Warden		1967	Attitudes	Pelican Press
James		1972	Teacher education and training	H.M.S.O.
Jersild	A.T.	1960	Child Psychology	Staples Press
Johnson	G.B.	1952	An experimental technique for the prediction of teacher effectiveness	JER
Joyce & Weatherall		1959	Effective Use of teaching time	Lancet
Kahn	T.C.	1955	Personality projection on culturally structured symbols	J. of Projective Techniques
Kearney & Rocchio		1955	Relation between a Teacher Attitude Inventory and pupil ratings of teachers.	School Review
Kearney & Rocchio		1956	The effect of teacher education on attitudes	JER
Kelman	H.C.	1962	Induction of Action and Attitude Change	Proceedings of the 14th International Conference of Applied Psychology
King & Janis		1956	Comparison of the effectiveness of improvised v non-improvised role playing in producing opinion change.	Human Relations Journal
Koenig & McKeachie		1959	Personality and Independent Study	JEP
Langeveld	M.J.	1963	Psychology of Teachers and the Teaching Profession	Year Book of Education
Lehmann		1966	Changes in attitudes and values associated with college attendance	J. of Ed. Psychology
Lewin	K.	1958	Group Decision and Social Change	Readings in Social Psychology Holt N.Y.

Author	Initials	Date	Title	Publisher
Lewin, Lippitt & White		1939	Patterns of aggressive behaviour in experimentally created social climates	JSP
Likert		1932	A Technique for the measurement of attitude	Arch. Psych. N.Y. No.240
Lindgren & Patton		1958	Attitudes of High School Teachers towards Children	California JER
Lipscomb	E.E.	1956	Study of the attitudes of student teachers in elementary education	JER
Loer		1941	Influence of pre-college teaching experience	BJEP
Lortie	D.C.	1959	Laymen to lawmen: law school, careers and professional socialisation.	Harvard Educational Review
Lovell	K.	1951	Factors underlying teaching ability	M.Ed. Thesis Univ. London
Maas	H.	1950	Attitudinal changes of Youth Group Leaders in Teacher Training	The Student Mental Healt
Maier	N.R.F.	1952	Principles of Human Relations	Wiley
Malloch	E.G.	1962	Residential address to the ATCDE	A.T.C.D.E.
Marsland	D.	1970	Progression through a College of Education	5th Annual Conference of S.R.H.E.
McGrath	C.D.	1950	Some experiences with a student teacher questionnaire	JER
McLeish	J.	1968	The Lecture Method	Cambridge Inst. Monograph
McLeish		1969	Teacher Attitudes	Cambridge Inst. Monograph
McNair		1944	Report: Teachers and Youth Leaders	H.M.S.O.
Mead	M.	1951	The School in American Culture	Harvard U.P.

Author	Initials	Date	Title	Publisher
Medley & Klein		1956	Measuring classroom behaviour with a pupil reaction inventory	Elementary School Journal
Michaelis	J.U.	1954	Prediction of success in student teaching from personality and attitude inventories	Univ. of California Educational Publications
Moreno	J.L.	1960	The Sociometry Reader	Free Press
Morris	B.	1967	Selection, Training and Examination of Students	The Student Mental Healt
Morrison & McIntyre		1967	Changes in Opinion about Education during the first year of teaching.	B.J. Soc. Clin. Psych.
Morrison & McIntyre		1968	Teachers and Teaching	Penguin Pres
Newcomb	T.M.	1943	Personality and Social Change	Dryden N.Y.
Newcomb	T.M.	1947	Some patterned consequences of membership of a college community.	Readings in Soc. Psych. Holt
Newcomb	T.M.	1967	Persistence and change: a college and its students after 25 years.	Wiley
Oalke	M.C.	1956	Study of student attitudes to children.	JEP
Oliver	R.A.C.	1953	Attitudes to Education	British Journal of Educational Studies.
Oliver & Butcher		1962	Teachers' Attitudes to Education	British Journal of Soc. & Clin. Psych.
Ottaway	A.K.C.	1952	Mental Health in the Training of Teachers	Bulletin of Education
Oxtoby	R.	1967	A Review of Current Research into Higher Education.	S.R.H.E.

Author	Initials	Date	Title	Publisher
Pace & Stern		1958	An approach to the measurement of psychological characteristics of college environments.	JEP
Palmer	J.S.	1954	Role concepts of prospective teachers of young children	Ph.D. Thesis Columbia U.
Palton	J.A.	1955	A study of the effects of student acceptance of responsibility in course behaviour	Ph.D. Thesis Michigan U.
Phillips	A.S.	1953	An examination of methods of selection of training college students.	M.A. Thesis London
Poppleton	P.	1968	Assessment of Teaching Practice	Education for Teaching
Powell	R.	1964	Experiment and Teaching in Higher Education.	JER
Rabinowitz & Rosenbaum		1960	Teaching experience and teachers' attitudes.	Elementary School Journal.
Rabinowitz $ Travers		1955	A drawing technique for studying certain outcomes of teacher education.	JEP
Remmers	D.	1954	Introduction to Opinion and Attitude Measurement.	Harper N.Y.
Riesman	D.	1959	Spotlight on the College Student	American Council of Education.
Riesman	D.	1959	Influence of student culture and faculty values in the American College.	H.E.J.
Rinsland	D.	1937	Rules for Objective Test Construction.	Harper N.Y.
Robbins		1963	Report Higher Education	H.M.S.O.
Robertson	J.D.C.	1957	Analysis of views of supervisors on attributes of successful graduate teachers.	B.J.E.P.

Author	Initials	Date	Title	Publisher
Rosenshine	B.	1970	Interaction analysis: a tardy comment.	Phi Delta Kappa
Ryans	A.	1960	Characteristics of Teachers	American Council
Ryans	A.	1964	(In Conference on Higher Education in U.S.A.)	on Education
Sanford	N.	1952	The American College	Wiley
Sandgren & Schmidt		1956	Does practice teaching change attitudes towards teaching.	JER
Scott & Brinkley		1960	Attitude changes of student teachers, and the validity of the M.T.A.I.	JEP
Shipman	M.D.	1965	Personal and Social Influences on the work of a Teacher Training College.	Ph.D. Thesis Univ. of London.
Shipman	M.D.	1966	Assessment of Teaching Practice	Education fo Teaching.
Shipman	M.D.	1967	Theory and Practice in the Education of Teachers.	JER
Shipman	M.D.	1967	Environmental influence on response to questionnaires	BJEP
Shottowe	J.	1957	Mental Health Handbook	Arnold
Skinner	R.S.	1949	Qualities necessary for teaching success.	M.A. Thesis U. of Londo
Snyder	L.H.	1950	Structure of functioning of personality	College and Univ. Journa
Staines	J.W.	1958	The Self picture as a factor in the classroom	BJEP
Start	K.B.	1967	Teachers from different colleges of education Report No.2 Selection, Training and Progress of Teachers.	University of Manchester
Start	K.B.	1967	Personality, Motivation and Educational Opinions of Final students in colleges of education.	S.H.R.E.

Author	Initials	Date	Title	Publisher
Stein & Hardy		1957	A validation study of the M.T.A.I. in Manitoba	JER
Stern, Stein & Bloom		1956	Methods in Personality assessment	Freepress, Glencoe, Illinois
Stewart	L.H.	1956	Study of Critical Training Requirements for Teaching Success	JER
Symonds	P.M.	1955	Characteristics of the effective teacher based on pupil evluation	JEE
Strong		1943	Vocational interests of men and women.	Stanford Univ. Press
Taft	R.	1959	Multiple Methods of personality assessment	P.B.
Taylor	W.	1969	Towards a Policy for the Education of Teachers.	Butterworth
Taylor	W.	1969	Society and the Education of Teachers	Faber
Tarpy	M.S.	1965	Personality factors in teacher trainee selection.	BJEP
Thompson	J.W.	1958	Factor Analysis of values and attitude of graduate teachers.	BJEP
Thimme Gowda	T.V.	1948	A study of the attitudes of teachers in England to their courses of training.	M.A. Thesis Univ. of London.
Thurstone & Chave		1929	Measurement of Attitude	Chicago U.P.
Tiegland	J.J.	1966	Relationship between measured attitude change and certain personality characteristics	JER
Tibble	J.W.	1959	Problems in the training of teachers and social workers.	Social Revie Monograph

Author	Initials	Date	Title	Publisher
Torrance	E.	1959	Effects of induced evaluative sets on the development of new ideas.	Univ. of Minnesota Bureau of Educational Research
Trabue	M.R.	1953	Judgements by college executives of desirable traits in lower college teachers	JEE
Tudhope	W.B.	1942	A study of the training college final teaching mark as a criterion of future success in the teaching profession	
Uttley	G.W.	1952	A study of some aspects of personality in relation to teaching ability in a group of students in an Emergency Training College.	M.A. Thesis Univ. of Birmingham
Valentine	G.W.	1961	Test of Higher Reasoning	Oliver & Boyd
Vernon	P.E.	1939	Educative Abilities of training college students	BJEP
Vernon	P.E.	1953	Psychological Traits of Teachers	Year Book of Education
Wall	W.D.	1968	Research into Teacher Education	NFER
Warburton, Butcher & Forrest		1963	Predicting student performance in University Departments of Education	BJEP
Ward	I.	1956	Group study v lecture demonstration method on Physical Science instruction for college students	JEE
Weaver		1966	Report of the Study Group on the government of Colleges of Education	HMSO
Wilson	J.	1966	An approach to modern education	New Era
Wispe	L.G.	1951	Evaluating Section Teaching Methods in the introductory course	JER

Author	Initials	Date	Title	Publisher
Wiseman	S.	1964	Education and Environment	Manchester Univ. Press
Wiseman & Start		1965	A follow up of teachers	BJEP

APPENDIX 1

SUBJECTIVE LAY OUT OF THE INITIAL ATTITUDE SCALES

Attitude to Work (A)

NEGATIVE - (a) Negative usefulness of work. (b) Exam passing concept of education. (c) Negative motivation.

Statements

1. Many become teachers in order to enjoy long holidays.
20. Many students go to Training College because they couldn't decide what they wanted to do.
49. The Training College course could be made shorter.
58. You are bound to pass the course in the end.
73. I don't think I will ever make a good teacher.
101. I don't think I will ever get through this course.
116. Lectures should be much more compressed to leave the student more free time.
134. "He gets away with it, why can't I?"
139. We should work to live.
167. To get a good assessment you need to be on good terms with your tutor.
184. The purpose of going to a Grammar School is to get a G.C.E.
201. The education course will not help me to teach my subject.
218. Teaching is very much a matter of dramatic tricks to stimulate interest.
232. It isn't worth doing work unless it is marked.
247. Much of the information gained by reading a selection of books could be better gained from dictated notes.
257. Modern methods of teaching demand less background knowledge on the part of the teacher.
264. You don't need to do so much reading for a practical subject.
296. The need to pass exams ruins the Training College course.

NEUTRAL - (a) Fulfilling quota (b) 'Trade Unionist' approach to the work.

Statements

6. Course marks should not be a means of discipline.
25. You should not go 'against the crowd' in matters of work.
44. The attraction of teaching is that it is a safe job.
63. Few students aim at credit or distinction marks.
78. Living should not be mostly a matter of working but of enjoying oneself.
96. Lectures which are full of information are more useful than those which are full of inspiration.
111. I would like more work in term and less in holidays.
129. As long as you 'get by' you are doing all right.
144. The teacher ought to be paid for extra activities after school.
162. Essays should be of a fixed length.
179. Your standards of work should conform to those of your group.
196. It is the tutor's job to get the students past the course.
211. Playground duties are a waste of time.
222. Dinner duties should be done by paid extra helpers.
242. Out of school activities should be the responsibility of the Parent Teachers Association.
300. A student's life is generally too easy to encourage him to strive.

POSITIVE - (a) Enthusiasm. (b) Insistence on standards of proficiency. (c) Conscientiousness. (d) The subject for its own sake. (e) Understanding of transfer effect of work on personality.

Statements

11. I hate being poorly graded in a subject.
30. I came here to learn how to teach and I intend to work to that end.
39. There is satisfaction in completing a good piece of work.
68. This work helps us even where we don't actually use it in teaching.
83. 'Work hard, play hard' is the best motto for life.
91. All work involving opinion requires sincerity.
106. The amount of work required by College is reasonably light.
124. Hard work brings its own satisfaction.
149. We should live to work.
157. The distinction between play and work should be non-existent.
174. To improve the status of the qualification Training Colleges should have a higher failure rate.
191. The best work you do is not always that which comes easiest.
206. It isn't possible to teach a subject you don't enjoy.
227. In the Training College you don't need intelligence so much as hard work to get through.
237. The most satisfying work is that which you do on your own.
252. Success in the college course depends on more than academic standards.
268. All teachers should be actively engaged in the P.T.A.
277. The idea of a Parent Teacher's Association is a good idea.
281. Good students are ones who are enthusiastically engaged in something all the time.
285. The standard of College work should progress in each of the 3 years.
295. The Three Year course is a big improvement in the training of teachers.

FAKING STATEMENTS

88. I like to get my work over and then go out for enjoyment - preference
121. I find that I tend to put off my work until it has to be done - acceptance
154. Once I am in the middle of a piece of work I find I enjoy doing it. commitment
172. There should be freedom to be absent from lectures provided there is complete freedom to fail - commitment
189. Voluntary attendance at lectures should be obligatory - preference
216. Attendance at all lectures is essential for passing the course - acceptance

ATTITUDE TO AUTHORITY (B)

Areas: (a) Authority in General (b) Authority in School (c) Authority in College

NEGATIVE - (a) Rebellion (b) Carping attitudes

College Statements

4. Tutors need to be opposed, or their demands become excessive.
23. Students still need firm guidance in their personal development.
52. On teaching practice the student is too often shielded too much from the effects of his failure.
61. Students need sterner discipline.
76. The majority of students have a relatively easy time in College.

School Statements

104. The class and teacher form two separate groups.
119. A good Head should always support his staff.
137. A loud voice is a useful short cut to discipline.
142. The essence of control is a conscious contact between teacher and taught
170. A Head should be master in his own school.
187. The present day trend is for teachers to be too easy with their pupils.

General Statements

204. I don't like being told what I can or cannot do.
225. The trammels of authority are a brake on development.
235. A community doesn't need rules, only commonsense.
245. Big communities are bound to have too many rules.
250. Freedom implies the right to please yourself without interference from others.
261. It is very difficult to be co-operative without being subservient to those in authority over you.
267. Parents are too afraid to exert their authority over their children nowadays.
276. Would you rather assume responsibility yourself than share it with a committee?
293. Even when it is justified I don't like being told what to do.

NEUTRAL - (a) Conformity (b) Passivity

College Statements

9. Conformity is essential if you are going to get on.
28. In the end authority always wins.
47. The student/tutor relationship is becoming too permissive nowadays.
66. Students need to know that their tutor is at hand to help them in personal problems if they should require it.

School Statements

81. Frequently justice cannot be done to pupils in matters of discipline, but it should always appear to be done.
99. A teacher must put up with some disciplinary failures in class.
114. Democracy is alright, but the real power must still rest with the teache

General Statements

132. Authority has to be accepted.
147. We don't have to understand rules to obey them.
165. Any group is as strong as its weakest member.
182. Everybody needs to submit himself to some discipline.
192. Do you often feel nervous when talking to someone in authority over you?

POSITIVE - (a) 'Corporate' understanding (b) Responsibility (c) Co-operation

College statements

14. Students are capable enough to run their own affairs entirely in College.
33. The poor student is usually the irresponsible one.
42. Students should be treated as responsible people.
71. Students need unobtrusive guidance by their tutors in their personality development.
86. On teaching practice the student doesn't have enough responsibility for his own success or failure.

94. There should be more initiative and opportunity to experiment allowed to the student on teaching practice and less help from tutors and teachers.
109. Students ought to be able to be trusted.
127. Tutors should be met halfway by students.

School Statements

152. Teachers are on the whole very responsible people.
160. A teacher should be obeyed because he is in charge of the class.
177. A school staff should be united.
194. A staff should not be just a collection of individuals.
209. In discipline justice has to be seen, as well as done.
214, A hectoring teacher prevents concentration by the pupil.
230. Teaching, for any age of pupil, depends on the quality of the 'rapport' between teacher and taught.

General Statements

240. Authority always knows best.
255. Every individual has a responsibility to the community in which he lives
272. The person in authority must be obeyed because he is in that position.
280. The true leader of a group needs no official position to establish his prestige.
284. Licence differs from freedom only in its lack of responsibility.
288. You can't have freedom without responsibility.
290. Do you welcome additional responsibilities?

FAKING STATEMENTS

19. The teacher should trust his pupils completely. Commitment.
38. The teacher should trust his pupils, but check to make sure whenever he can do so unobtrusively. Preference.
57. The teacher should stress that he trusts his pupils, but let them know he checks to make certain that they can be trusted. Acceptance

ATTITUDE TO ONE ANOTHER (C)

NEGATIVE - (a) Selfishness (b) Introvertedness (c) Hardness

Statements

3. You can't be sympathetic and survive in any community.
22. Community life convinces you of the depravity of human nature.
51. I like to stay in when I am at home during the holidays.
60. I would rather have one good friend than half a dozen I didn't know so well.
75. I often find it difficult to say what I really feel.
103. 'Thinking' is better than 'doing'.
118. I have a lot of acquaintances, but no friends.
136. The world is an unfriendly place.
141. I don't like to make new acquaintances.
169. Real living lies in success not in personal relationships.
186. A comfortable staffroom makes for a lazy staff.
203. At a party do you shun taking a major part in any amateur dramatics or other party game suggested?
220. Do you always feel that you are going to say something wrong when talking to some celebrity?

224. I often feel lonely even when in the company of others.
234. I feel some embarrassment when meeting strangers for the first time.
244. People say that I am rather 'reserved'.
249. At a social gathering I often feel that I am the 'odd one out'.
260. I seem to have little in common with the majority of people I know.

NEUTRAL - (a) Willingness to mix (b) Lack of confidence in personal relationships

Statements

8. Talking shop should be banned from the Common Room.
27. There are too many duties in a College community.
46. I have a very large number of friends.
65. People's opinions about me do not worry me.
80. I don't like people who are always trying to get more than their fair share.
98. I like meeting new acquaintances, but don't know what to say to them.
113. I do not like to be alone.
131. I don't like the idea of going to a party, but I enjoy it when I get there.
146. Man cannot live alone.
164. I get bored when I am by myself.
181. Man is first and foremost an individualist.
198. People generally talk too much and yet say nothing of significance.
213. When you really get to know somebody else they nearly always tend to become 'catty' about mutual acquaintances.

POSITIVE - (a) Extravertedness (b) Tact (c) Consideration (d) Friendliness

Statements

13. Communal life develops your understanding of people.
32. Communal life develops your liking for people
41. T.V. should be banned from the Common Room.
70. Politeness is consideration for others.
85. I am my brother's keeper.
93. I like to hear what other people think about things.
108. A new activity is always more interesting than an old idea.
126. I like being busy all the time.
151. I like to hear about other people's interests.
159. Club activities should be at least as important as academic work in the College life of the student.
176. You need to be helpful to others to live fully yourself.
193. When the truth is likely to hurt it shouldn't be told.
208. The majority of people, at bottom are kind hearted.
229. Sociability is the life of the school.
239. Everyone should have experience of living in a community.
254. People are endlessly various and always interesting.
271. Residential colleges are much more educative than Day colleges.
275. Friendliness is a characteristic of the majority of students.
279. I would sooner go to a dance or social than a cinema.

FAKING STATEMENTS

90. I do not like giving a lecturette in front of my education group. Preference

123. I would hate to speak in front of a large audience. Commitment

156. I am not very keen on speaking my mind even in a small discussion group. Acceptance

On teaching will you prefer:-

173. A small isolated rural school where social contacts will be at a minimum. Acceptance

190. A large city school where you will be just another one of the crowd on the staff. Preference

217. A school in a medium sized market town where everybody on the staff knows everybody else. Commitment

ATTITUDE TO CHILDREN (D)

NEGATIVE -

(a) Behavioural attitude to children in general and particular
(a) Dogmatic. (b) Domineering. (c) Subject first. (d) Closed mind.

(b) Behavioural attitude to children in the classroom
(a) Authoritarian. (b) Anxious.

Statements - (a)

2. The joy of teaching is in knowing your own subject well.
21. A child should be able to read at six years old.
50. The teacher is not also a member of the class.
59. It is more important to understand your subject than the child.
74. The rebellious child is the son of overbearing parents.
102. Children don't know what is best for themselves.
117. Children need to be told what to do.
135. Teachers' responsibilities end at 4 o'clock.
140. The child respects a teacher who uses a bit of force occasionally.
168. Free expression is overrated - children should learn not play. (A busy class is a learning class?)
185. It isn't necessary to know so much to teach in a Junior School.
202. The democratic teacher is a weak teacher.
219. Children admire a domineering teacher more than an unassuming one.
299. If a child is well behaved there is something wrong with it.

(b)

223. You need to be a lot older than the children you teach before you can teach without fear.
233. Teaching practice is a worrying time because you might get a class you can't control.
243. The chief problem of the new teacher is handling the 4th Year children who are poorly behaved.
248. The new teacher should aim at being liked by his class.
258. Probably the chief cause of failure on teaching practice is badly behaved children.
259. Children in class are always on the lookout to take advantage of the teacher.
262. A class is a group on its own and fundamentally alien to the teacher.
265. It is more important for justice to appear to be done than to be done in class.
266. The teacher should never admit to being wrong in front of his class

197. Children want to be liked by the teacher.
207. Children seek approval from those in authority over them.
212. Teaching Practice needs to be longer so that one can establish really good relations with one's class.
228. Children need to talk among themselves about the work in order to understand it thoroughly.
238. The withdrawn child is not a problem for the teacher.
253. Children need guidance.
270. Children appreciate law and order.
283. To work well children need approval.
286. Respect for the teacher is not taught but inspired.

FAKING STATEMENTS

Which of these statements do you agree with most?

17. Children need spiritual guidance. — Preference
36. Children should have spiritual guidance from the teacher. — Commitment
55. Children spiritually develop by themselves. — Acceptance

Which of these do you disagree with most?

89. The cane does little damage to the pupil.
122. Sarcasm does a great deal of harm to the child.
155. Detention is ineffectual as a means of punishment.

ATTITUDE TO LIFE IN GENERAL (E)

Areas:-

(a) Personal Views (i) Cynical (ii) Pragmatic
(b) Personal Qualities (i) Childishness (ii) Immaturity (iii) Apathy
(c) Qualities of Mind (i) Dogmatic (ii) Closed (iii) Apathetic

NEGATIVE -

Statements (a)

5. Trying gets you nowhere.
24. Community life makes you more indifferent to other people's problems.
53. Right and wrong are relative to the situation you are in.
62. If it works it is alright.
77. The scientist ought to be today's priest.
105. Everything can be explained by scientific principles.
120. The means doesn't matter if the end is a good one.
138. A thing can't be called true if you haven't proved it in practice.
143. Success is measured by the goods you have.
171. Life is all a matter of 'power politics'.
188. You have to join the 'rat race' in order to live.
199. Influence is what usually counts in obtaining promotion.

Statements (b)

205. The poor student is usually the childish one.
221. The importance of a job depends on the money you get for it.

Statements (c)

226. I like to be able to see things as either wrong or right, not to have a lot of discussion and uncertainty about them.
236. Discussion is pointless, because you never arrive at a conclusion.
246. The rebellious child is the son of overbearing parents.
251. Do you always 'know your own mind' on any particular question?
263. Having made a decision to you tend to look back on it to see if it was right?

305. People are very rarely sincere.

NEUTRAL - (a)

10. The present is a preparation for the future.
29. The important thing about living is to live for the present.
48. Practice is more important than theory.
67. It is only necessary to give the opportunity to learn and people will take it.

(b) Nil.

(c)

82. The difference between discussion and argument is that nobody is out to win in discussion.
100. Important decisions tend to take a long time to make.
115. Life is what you make it.
133. Good intelligence is more important than good character.

POSITIVE

(a) Personal Views (i) Optimistic (ii) Idealistic
(b) Personal Qualities (i) Balance in listening to argument (ii) Honesty (iii) Emotional Stability (iv) Responsibility
(c) Qualities of Mind (i) Receptive (ii) Open (iii) Adventurous initiativ

Statements (a)

15. Education is the means for providing a better world.
34. College makes you more sympathetic to other people's problems.
43. Life is a pleasure.
72. College makes you think.
87. Discontent is an essential ingredient of a person's life.
95. Full personal development can only be achieved by willing sacrifice.
110. Adolescence is the time for going out and exploring new experience.
128. The only way to true personal realisation is through sacrifice for others.
153. Life has endless possibilities of self improvement.
Teaching is a matter of inspiration not instruction at all.
175. Life is like a pane of many coloured glass.

Statements (b)

148. A sense of humour is essential to success in teaching.
161. A sense of humour is a saving grace in any student.
166. The clown is a thing of pity in the college community.
178. Personal development is more important than development as a teacher.
183. The majority of students are still occupied with the problems of adolescence.

Statements (c)

195. The value of college life is independence from home.
200. College should help to make you independent.
210. Society is an enormous complex into which each individual has to fit.
215. There is no such thing as a foregone conclusion.
231. Independence for its own sake can be valued too highly.
241. People are convinced by emotion rather than by logical argument.
256. Society is ultimately the arbiter of what is good.

APPENDIX 2

COMPOSITION OF THE TPY-OUT SAMPLE AND RAW RESULTS OF THE TRY-OUT TEST, TOGETHER WITH THE REVISED RESULTS OF THE ATTITUDE SCALES

	School			College Final Grade				Class		Personality				
Group A	Age	'O'	'A'		Main	Subsid. Sc.	Educ^{n}.	T.P.	Family	Own	IQ	B1N	B2S	B4D	F2S
C.E.B.	21.0	10		10	A	B	A	B	LM	LM	33	24	80	92	82
B.C.	21.0	8		8	B	B	B	A	M	UM	7	76	58	56	64
S.F.	21.3	4	2	8	C	C	C	B	LM	LM	5	63	84	64	45
D.J.F.	21.10	6	1	8	B	C	C	C	M	M	25	38	76	79	75
J.H.									LM	UM	18	84	67	33	63
S.A.L.	21.8	5	3	11	B	B	B+	B	UW	LM	33	12	76	92	70
J.A.L.	21.11	8	1	10	B	B	C	C			14	85	52	14	34
J.L.P.	21.9	10	1	12	B	C	C+	B		M	6	69	56	70	60
R.V.P.	21.5	6	1	8	D	C	C	C	UW	LM	14	16	94	62	75
J.H.R.	21.0	5	2	9	C	B	C	B	M	UW	28	70	79	67	83
J.M.R.	21.0	7	1	9	C	C	B	B	UM	LM	13	84	45	45	67
E.A.U.	21.0	8	1	10	C	C	C	C	LM		13	71	57	31	50
J.W.	21.9	7	1	9	B	C	C	B	LM	LM	25	42	88	58	94
J.M.C.	23.0	5	2	9	B	B	C	C	M	M	18	62	46	52	89
C.M.D.		7	1	9	C	Geog. C Maths.	D	C	UM	UM	50	44	12	80	38

	Attitudes					Sociometric				Revised Attitudes				
	A	B	C	D	E	A_1	A'	B'	B_1	A	B	C	D	E
C.E.B.	223	184	211	252	168	67	97	97	47	97	86	156	148	67
B.C.	218	187	200	260	182	132	266	166	79	107	79	145	141	68
S.F.	208	175	201	268	157	104	169	136	58	85	71	158	165	57
D.J.F.	210	170	196	253	150	93	166	105	48	96	69	103	137	49
J.H.	220	182	196	268	169	103	188	87	38	83	68	156	154	74
S.A.L.	208	174	197	250	172		83	86		89	80	152	130	69
J.A.L.	253	184	203	266	183	73	149	73	32	113	92	161	146	78
J.L.P.	216	187	211	284	183	76	113	93	60	95	80	160	145	74
R.V.P.	210	176	200	253	167	76	96	100	32	84	72	133	127	57
J.H.R.	228	173	190	237	190	83	133	102	58	97	73	129	142	74
J.M.R.	218	180	199	265	182	122	224	125	66	102	79	156	147	78
E.A.U.	238	192	198	145	178	109	216	100	48	105	79	159	130	71
J.W.	227	189	187	264	156	104	164	74	38	91	84	130	154	58
J.M.C.	208	188	206	263	174		260	167		94	69	141	149	73
C.M.D.	219	178	214	257	171		193	146		67	74	130	126	69

		School			College Final Grade				Class			Personality			
Group B	Age	'O'	'A'		Main	Subsid. Sc.	Educn.	T.P.	Family	Own	IQ	B1N	B2S	B4D	F2S
S.M.A.	22.0	7		7	C	C	C	C	M	M	6	42	39	55	33
L.B.	21.5	7		7	C	C	C	C	LM	LM	8	77	20	27	64
M.H.F.	22	5		5	C	C	C	C			5	71	41	21	18
D.C.H.	21.5	6		6	C	C	D	D	M	M	6	9	41	82	8
E.L.J.	23	8		8	C	C	C	B			12	8	40	56	2
S.M.O.	21	9		9	C	B	C	D			11	22	67	57	2
V.O.S.	22	6		6	D	C	C	C			13	57	80	84	89
P.S.W.	21	5	1	7	D	C Geog.	C	C			23	28	89	97	96
J.G.A.	22	5	2	9	C	C Hist.	C	C			32	22	89	79	66
G.J.G.	24	5		5	C	C	C	C			16	82	18	32	42
J.H.		6	3	12	C	D Geog. Eng.	C	C	M	LM	39	11	86	84	79
C.L.J.	21	6		6	B	C-	B	A	LM	LM	31	30	25	5	99
C.M.J.L.	21	7	2	11	A	B Hist.	B	C			22	36	94	76	91

	Attitudes (Raw)						Sociometric			Revised Attitudes				
	A	B	C	D	E	A_1	A	B	B_1	A	B	C	D	E
S.M.A.	211	165	205	260	168	52	156	94	45	84	70	155	140	31
L.B.	219	181	185	243	155	61	105	110	53	91	73	129	122	57
M.H.F.	223	165	191	237	178		15	93		87	66	105	115	75
D.C.H.	212	186	208	248	159	41	111	101	57	77	75	152	145	87
E.L.J.	221	171	225	238	174		203	111		90	75	161	141	69
S.M.O.	216	188	203	244	157	57	163	108	53	91	80	144	132	62
V.O.S.	237	190	220	277	181	121	257	144	68	112	77	183	152	70
P.S.W.	227	186	197	244	179	99	184	116	60	91	70	156	127	72
J.G.A.	232	196	213	258	177		305	167		95	84	161	135	66
G.J.G.	231	191	191	246	172		241	134		81	85	147	128	69
J.H.	242	186	215	263	170		267	123		103	73	151	148	64
C.L.J.	240	194	224	256	174		215	151		100	77	169	141	76
C.J.M.L.	253	187	183	238	165		64	108		124	70	118	138	56

Group C	Age	School 'O'	School 'A'	School	College Final Grade Main	College Final Grade Subsid. Sc.	College Final Grade Educ[1].	Class T.P.	Personality Family	Personality Own	IQ	B1N	B2S	B4D	F2S
S.M.A.	21.8	7	1	9	C	C	C	C	UW	UW	16	25	69	84	66
J.A.	21.6	6		6	C	C	B	C			50	84	71	21	61
A.L.C.	21.0	5	1	7	C	C	C	C			23	76	44	40	82
V.D.C.	21.0	5		5	C	C	B	C	UW	LM	38	34	36	60	96
R.J.E.	21.0	8	1	10	B	C	B	B	UW	LM	42	33	77	45	77
D.M.B.J.	21.0	8		8	D	C	C	D			11	51	61	70	55
I.M.J.	21.0	10		10	C	C	C	C			13	66	25	54	61
A.J.O.	27(M)				C	C	B	B			15	94	22	23	82
E.J.P.	21.0	4		4	C	B	C	C	M	M	10	79	16	41	31
M.J.W.		5	2	9	C	C Hist.	B	C	M		33	90	28	15	37
F.X.O.	23.0	6		6	C	C Geog.	C	C			14	58	24	37	29
P.E.S.	27.0	5		5	B	B Eng.	B	C	M	M	46	8	97	99	93
T.S.	27.0	5		5	B	B- Eng.	B	A	M	UW	33	89	18	27	79
W.G.T.	29.0	6		6	C	C+ Geog.	C	B	W	W	42	32	75	88	83
J.H.T.	34(M)				C	D	C	C	W	W	7	4	81	97	81

	Attitudes (Raw) A	B	C	D	E	A_1	Sociometric A	B	B_1	Revised Attitudes A	B	C	D	E
S.M.A.	222	184	216	259	187	91	148	106	57	93	78	165	142	82
J.A.	199	167	215	237	167	.	150	107		93	75	156	130	65
A.L.C.	228	177	203	244	181	44	61	75	63	106	73	155	139	78
V.D.C.	227	172	209	252	191	111	200	166	81	95	82	154	115	71
R.J.E.	230	181	202	255	168	107	252	99	42	87	73	132	123	72
D.M.B.J.	235	173	222	263	183	41	81	125	59	106	57	176	153	73
I.M.J.	241	182	214	253	168	121	244	134	65	83	74	157	134	100
A.J.O.	222	181	190	260	169	9	20	87	43	85	78	126	148	69
E.J.P.	207	168	202	234	178	19	34	48	30	111	96	192	135	102
M.J.W.	229	186	208	264	183	69	106	130	72	91	85	144	142	70
F.X.O.	191	153	198	261	147	96	230	137	58	85	57	145	140	76
P.E.S.	243	185	210	254	170	58	114	132	63	110	74	156	146	74
T.S.	201	185	199	255	178		170	153		89	83	142	132	70
W.G.T.	229	197	204	258	176	72	152	152	45	108	79	149	147	82
J.H.T.	213	194	210	243	160	59	150	108	50	87	86	155	134	70

		School			College Final Grade		Class		Personality				
Group D	Age	'O'	'A'		Main	Subsid.	Educ^{n}.	T.P.	Family	Own	IQ	B1N	B2S	B4D	F2S
I.J.B.	21.9	8	3	14	Frch. B	Eng. B	B	B	LM		47	6	69	75	55
V.B.	21.0	7	1	9	Frch. B	Eng. C	C	B	UW	LM	33	97	3	5	3
J.B.	23.0	7	2	11	Frch. C	Geog. C	C	C	UW	LM	15	77	67	30	82
G.M.C.	22.0	7	1	9	RK. C	Geog. C	C	C	UW	UW	40	74	38	34	40
J.F.G.	21.0	6	1	8	Frch. C	Geog. C	C	B	M	M	11	6	93	90	54
A.E.K.	22.0	10	3	16	Eng. B	Frch. C+	C	A	UM	UM	35	86	73	56	60
J.R.K.	23.5	6	1	8	RK. B	Eng. C	B	C	UW	LM	19	66	56	43	46
E.J.M.	22.0	11	3	17	Frch. C	Eng. C	B	C	LM	LM	24	51	49	76	68
J.O.	21.0	6	2	10	Frch. B	Eng. C	C	C	UM	LM	6	30	38	72	61
E.A.R.	21.0	6	2	10	Frch. B	Eng. B	B	C	LM		28	33	96	72	96
M.S.	22.0	10	1	12	Frch. C	Eng. C	C	C	UW	UW	45	67	28	24	31
D.B.	22.0	6	2	10	Geog. B	Scce. B+	C	B			36	58	61	10	4
T.A.C.	25.0	6	1	8	Maths. C	Scce. C	D	D	UW	LM	29	56	21	12	27
M.J.E.	21.0	7	-	7	Frch. D	Frch. D	D	D	UM	UM	35	12	57	86	53
F.L.	22.0	6	1	8	Maths. C	Scce. C+	C	B			18	78	27	11	30
P.M.	22.0	6	3	12	Geog. B	Hist.C	C	C	LM	LM	17	23	57	92	63
J.T.	22.0	6	1	8	Frch. C	Eng. C	B	C	M	UW	38	3	89	79	75
J.H.W.	24.0	4	1	6	Frch. D	Eng. C	D	C	M	M	32	46	71	90	86

	Attitudes (Raw)					Sociometric			Revised Attitudes				
Group D	A	B	C	D	E	A_1	A	B	B_1	A	B	C	D	E
I.J.B.	224	182	218	260	174	86	146	148	72	104	82	165	144	70
V.B.	223	191	193	266	171	87	189	155	64	94	81	135	149	71
J.B.	236	204	232	245	193	90	151	128	61	104	93	147	140	83
G.M.C.	215	183	192	245	172	75	168	141	61	89	68	142	128	69
J.F.G.	225	209	219	288	181	43	118	111		98	85	169	170	76
A.E.K.	224	183	211	256	157	68	147	122	61	90	77	149	135	68
J.R.K.	240	199	172	286	186	142	299	230	96	104	91	172	152	79
E.J.M.	228	202	227	272	174	97	280	180	84	97	89	165	152	73
J.O.	222	186	211	271	164	58	128	136	60	91	72	153	152	55
E.A.R.	216	172	163	276	184	30	68	70	27	104	56	119	166	68
M.S.	223	176	206	250	165	51	133	115	48	86	77	171	134	70
D.B.	222	174	187	247	163	114	260	225	98	96	77	134	131	61
T.A.C.	217	176	187	247	168	94	193	126	65	93	64	126	130	77
M.J.E.	211	184	203	247	166	124	373	169	80	87	111	150	114	67
F.L.	205	185	200	241	166	101	205	151	72	84	70	146	133	68
P.M.	210	188	193	237	158	65	126	150	72	85	74	136	124	61
J.T.	215	189	209	251	170	53	135	107	48	90	80	150	142	70
J.H.W.	225	184	212	294	182	92	248	131	60	92	78	129	163	80

	School			College Final Grades		Class				Personality				
Group E	Age	'O'	'A'		Main	Subsid.	Educ^{n}.	T.P.	Family	Own	IQ	B1N	B2S	B4D	F2S
D.M.D.	21.0	6	2	10	Geog. C	Music C	C	C			8	95	20	10	36
J.H.	42.0	5 miscells exams			Maths C	A/C B	C	C	M	UM	26	80	41	24	83
M.C.H.	21.0	9		9	Geog. B	P.E. C	C	C			37	97	15	62	86
D.B.J.	21.0	6	2	10	Eng. C	A/C C	C	C	LM	LM	16	46	64	41	76
J.M.L.	22.0	9		9	Maths B	Scce. B-	B	B	LM	LM	42	20	15	80	11
B.E.L.	41.0	7		7	Maths B	Music C	B	B	UM	LM	24	16	87	62	86
B.S.	22.0	8	2	12	Music B	Hist. C	B	B	M	M	9	92	13	71	16
S.M.S.	22.0	7	2	11	Music A	Frch. C	C	C	MC	MC	48	90	35	65	15
J.M.B.	29.0	5		5	Geog. E	R.K. D	D	C	MC	MC	14	33	27	63	83
J.C.	41.0	2	5	12	Maths B	Scce. C	B-	B	UW	LM	31	16	61	82	56
M.J.G.	21.0	8	3	14	Geog. B	Music C	C	C	LM	LM	33	62	46	51	40
H.M.L.	35.0	6	1	8	Eng. C	Scce. C	C	C			10	76	53	26	87
R.A.M.	21.0	5	2	9	Geog. B	A/C C	C	C	MW	UM	24	82	88	35	91
M.C.M.	21.0	6	3	12	Geog. B	A/C A	C	C	UW	LM	28	96	18	5	84
L.T.	23.0	8		8	A/C A	Geog. C	A	A	M		40	79	24	75	90
E.J.W.	22.0	8	3	14	Geog. C	Eng. C	C	C	UW	LM	43	32	90	77	88
T.G.W.	21.0	7		7	Geog. C	Hist. C	B	B	UW	UW	34	81	46	43	87

	Attitudes (Raw)					Sociometric				Revised Attitudes				
Group E	A	B	C	D	E	A_1	A	B	B_1	A	B	C	D	E
D.M.D.	232	190	206	266	190	89	112	78	52	107	81	155	145	46
J.H.	222	191	221	252	203	5	16	77	40	110	88	160	153	67
M.C.H.	239	195	168	265	174	109	240	78	40	102	83	124	146	73
D.B.J.	225	186	230	267	183	103	173	97	39	103	66	169	156	75
J.M.L.	224	191	198	248	164	52	114	78	41	85	80	145	142	70
B.E.L.	223	183	214	263	188	31	60	74	43	94	78	156	146	73
B.S.	228	175	183	242	160	40	78	90	43	96	72	131	121	66
S.M.S.	228	181	192	241	172	96	150	125	58	88	82	136	131	66
J.M.B.	221	196	211	261	173	86	125	144	82	99	80	152	140	71
J.C.	223	205	221	269	191	46	116	82	43	107	87	130	144	80
M.J.G.	215	179	190	221	178	183	307	147	72	89	77	136	116	73
H.M.L.	225	197	197	259	161	24	52	99	54	108	76	147	140	72
R.A.M.	234	188	209	247	175	26	43	81	87	107	72	149	131	73
M.C.M.	238	196	158	267	167	135	230	159	80	98	83	122	146	68
L.T.	228	179	195	241	174	100	189	207	95	100	78	136	128	71
E.J.W.	239	183	207	260	175	124	240	152	71	94	74	142	153	65
T.G.W.	201	176	204	227	167	41	65	175	80	88	66	147	133	72

		School			College Final Grades				Class		Personality				
Group F	Age	'O'	'A'		Main	Subsid.	Educn.	T.P.	Family	Own	IQ	B1N	B2S	B4D	F2S
P.N.	21.0	9	1	11	Geog. C	A/C C	C	C		LM	16	37	17	27	1
PJ.A.	21.0	6	2	10	A/C C	R/K C	C	C-	M	M	13	91	2	14	16
P.J.B.	26.0	8		8	A/C B-	Hist. B-	B-	B	UW	UW	19	57	45	80	70
K.M.C.	41.0	9		9	A/C C	Eng. C	B	C	UW	UW	31	97	55	5	81
J.M.F.	22.0	7	1	9	Maths.B	Sce. B-	C	C	UW	UW	57	41	34	64	35
M.E.H.	21.8	6	1	8	Geog. C	A/C B	C	C			39	34	34	24	2
A.R.H.	21.0	7	3	13	Frch. C	Eng. B	B	B	UW	UW	32	93	7	74	73
J.A.L.	22.0	6	1	8	A/C C	Maths.C	C	C	M		15	73	14	52	41
F.P.	21.8	8		8	Frch. A	Eng. B	B	C	LM	M	41	97	73	60	55
M.J.R.	22.0	6	2	10	Frch. C	Eng. B	B	C	LM		39	97	70	9	94
D.M.R.	22.0	6	3	12	Frch. D	Sce. C+	C	C			8	86	30	27	87
J.B.S.	21.0	7	2	11	Frch. C	Eng. C	C	C	M	M	45	59	25	60	11
S.A.A.	21.0	8	3	14	Frch. C	Eng. A	B	B	UW	UW	18	12	44	80	22
H.S.	21.0	9		9	Eng. C	Geog. B	C	C	M	UW	57	75	49	48	73
J.A.S.	21.0	8	1	10	Maths.B	A/C C	C	B			30	97	19	1	54
P.A.T.	21.0	9		9	Geog. C	A/C C	C	B	LM	LM	23	20	58	60	5
E.A.T.	22.0	7	1	9	Eng. C	A/C C	C	C	UW	UW	15	88	11	14	95
J.M.W.	21.0	7	2	11	Geog. B	A/C A	B	B	LM	LM	17	3	79	98	94
B.W.	22.0	5	2	9	Eng. C	A/C B	B	C			36	45	26	39	21
E.W.	39.0	9		9	Maths.C	Sce. C	C	C	UW	UW	31	95	22	20	24
G.D.W.	21.0	5	2	9	Eng. C	A/C C	C	C	M	M	33	80	67	18	94
J.W.	22.0	7	1	9	A/C B	Eng. C	C	B			27	49	26	56	61

	Attitudes (Raw)						Sociometric			Revised Attitudes				
Group F	A	B	C	D	E	A_1	A	B	B_1	A	B	C	D	E
P.N.	211	177	206	252	178	126	224	157	73	75	76	147	137	68
P.J.A.	212	189	209	242	169	106	249	148	65	90	75	152	136	67
P.J.B.	230	198	200	253	183	80	250	94	42	96	92	141	144	70
K.M.C.	230	190	180	252	187		91	69		96	77	131	152	71
J.M.F.	255	192	203	272	191	90	168	129	55	113	89	142	148	82
M.E.H.	216	175	196	256	168	126	223	162	71	80	76	136	138	68
A.R.H.	216	178	203	253	176		163	113		93	75	137	133	74
J.A.L.	212	185	203	234	165		182	124		90	64	149	115	87
F.P.	223	181	210	232	181		96	129		104	74	157	129	70
M.J.R.	241	187	202	284	181		322	133		104	86	139	162	80
D.M.R.	217	179	189	251	170		174	96		90	79	136	141	67
J.B.S.	209	169	209	264	170		176	121		85	71	159	145	74
S.A.A.	222	203	233	274	191	86	227	117	53	95	83	177	154	87
H.S.	206	182	189	233	170	95	240	117	48	75	68	131	127	64
J.A.S.	221	177	192	257	169	25	35	119	54	91	86	129	142	68
P.A.T.	210	165	198	230	170		140	140		78	76	145	132	71
E.A.T.	214	185	203	267	180		110	109		77	74	147	148	72
J.M.W.	225	170	216	260	169		252	165		93	62	166	134	74
B.W.	208	181	208	263	170	106	271	117	42	82	71	142	151	73
E.W.	215	181	171	254	180	55	132	81	37	84	80	123	143	71
G.D.W.	219	173	217	257	175	125	270	100	41	90	68	153	141	68
J.W.	218	188	213	251	173	107	235	145	68	90	76	166	148	85

		School			College Final Grade				Class		Personality				
Group G	Age	'O'	'A'		Main	Subsid.	Educ^{n}-	T.P.	Family	Own	IQ	B1N	B2S	B4D	F2S
C.M.A.	21.8	6	1	8	Music C	Hist. C	C	B	LM	LM	11	44	3	41	11
J.B.	24.0	5		5	Eng. C	A/C C	C	C			11	51	66	64	81
J.B.	21.0	8	1	10	Geog. D	Hist. C	C	C		LM	30	98	5	8	70
A.L.C.	21.0	8	3	14	R/K A	Music B	B	C	LM	LM	27	94	9	15	13
M.P.F.	21.0	6	2	10	C/C C	Hist. B	C	C	UM	UM	13	50	49	30	55
M.J.G.	21.0	7		7	Music C	R/K C	C	B-	UW	LM	22	15	27	79	16
A.G.	22.0	6	3	12	R/K C	Geog. C	C	C+	M	UW	14	61	23	67	50
K.E.G.	21.0	6	2	10	R/K C	A/C C	C	B	UM		34	88	67	56	98
S.M.H.	21.0	8	1	10	R/K C	A/C C	C	C	UM		11	24	89	58	77
E.H.	21.0	6	1	8	Geog. C	P.E. C	B	B	LM	LM	23	78	67	34	84
S.E.H.	21.0	8		8	R/K C	Music C	C	C+		UM	29	50	52	25	39
P.J.	22.0	7	1	9	A/C C	R/K C	C	C	UM	M	15	94	31	20	63
H.A.L.	21.0	5		5	R/K C	Eng. C	C	C+	UW	UW	22	40	42	56	34
E.M.L.	21.9	8	1	10	Maths B	A/C B	B	B+	LM		26	65	34	56	90
J.M.	21.0	7	1	9	Geog. C	A/C C	C	C	UM	UM	27	67	55	41	74
J.A.M.	21.0	6		6	Geog. D	A/C C	C	B			13	76	8	38	32
J.P.N.	21.0	7		7	Maths C	A/C C	C	C	LM	LM	26	37	65	58	50
C.M.P.	21.0	10		10	R/K C	Eng. C	C	C			27	62	27	70	58
P.A.S.	21.0	8	2	12	Geog. C	Hist. C	C	C			49	61	60	47	86
V.R.S.	21.0	6	2	10	P.E. B	Frch. C	C	A	M	M	35	87	12	32	54
S.W.	22.0	6		6	Eng. C	P.E. C	C	D	UM	M	33	95	1	69	30
M.V.	21.0	7	2	11	P.E. B	Eng. C	C	C+	M		15	80	50	25	70

Group G	A	B	C	D	E	A_1	A	B	B_1	A	B	C	D	E
C.M.A.	212	177	200	247	176		104	104		81	78	149	135	71
J.B.	239	176	202	265	172		270	123		101	68	148	141	71
J.B.	192	181	200	238	174		73	68		88	80	140	135	82
A.L.C.	218	172	193	232	173		140	91		86	72	134	125	74
M.P.F.	222	182	193	248	171		91	75		91	68	145	135	63
M.J.G.	233	180	212	262	176		119	104		96	60	156	99	87
A.G.	218	191	210	269	184		119	109		99	84	145	145	72
K.E.G.	199	182	198	260	170		35	66		80	85	149	144	71
S.M.H.	230	170	196	245	169		108	136		98	76	148	124	76
E.H.	223	175	206	260	181		65	87		94	69	151	145	74
S.E.H.	211	175	191	230	169		214	74		87	66	135	130	65
P.J.	219	188	203	251	164		65	53		96	83	145	142	62
H.A.L.	226	190	205	265	185		92	79		92	75	126	152	78
E.M.L.	217	174	210	263	173		106	147		89	72	158	153	72
J.M.	217	181	191	251	162		106	170		98	75	137	135	71
J.A.M.	214	180	201	250	174		98	167		93	76	144	78	72
J.P.N.	219	199	220	269	171		77	103		93	80	164	131	66
C.M.P.	212	187	210	242	173		80	148		89	66	144	136	69
P.A.S.	219	188	196	248	177		86	100		84	80	138	137	66
V.R.S.	224	192	191	262	169		316	142		103	68	134	131	75
S.W.	218	194	206	240	183		84	63		85	90	141	149	77
M.V.	211	174	206	275	168		82	77		89	63	150	133	72

Statements significantly differentiating between High and Low Scoring Groups on the Attitude Scales

'A' Scale Frequency of Statements

Statement No.	Significant Difference between Means	Statement No.	Significant Difference between Means	Statement No.	Significant Difference between Means
1	2.41*	222	.42	147	.42
6	0.00	227	.10	152	2.69**
11	.65	232	2.64*	160	1.12
16	-.92	237	2.24*	165	1.35
20	.77	242	1.44	170	.28
25	2.79**	247	2.85**	177	2.56*
30	.34	252	-	182	3.15**
35	-.11	257	-	187	-1.07
39	4.34**	264	2.64**	194	1.87
44	1.99*	268	2.85*	204	1.13
49	4.12**	277	.77	209	2.02*
54	0.00	281	1.68	214	.89
58	1.09	285	2.70**	225	1.04
63	.52	294	1.93	230	2.16*
68	2.13*	295	1.53	235	.65
73	.61	296	.98	240	.56
78	-.59	300	3.46**	245	2.67**
83	2.89**			250	1.39
88	.49	'B' Scale - Frequency of Statements		255	2.41*
91	-.36			261	.61
96	-.88			267	2.72**
101	2.72**	4	.34	272	0.00
106	1.91	9	1.86	276	1.58
111	1.98	14	1.34	280	2.95**
116	.33	19	1.93	284	1.02
121	1.62	23	3.98**	288	2.87**
124	1.97	28	2.65**	290	1.65
129	1.93	33	3.55**	293	2.83**
134	3.27**	38	1.56	303	2.45*
139	.38	42	1.34		
144	.48	47	1.59	'C' Scale - Frequency of Statements	
149	.65	52	2.39*		
154	3.36**	57	2.25*		
157	2.90**	61	2.23*	3	1.50
162	2.55**	66	5.74**	8	-1.02
167	1.64	71	3.51**	13	1.69
172	2.49*	76	6.40**	18	3.00**
174	5.36**	81	.14	22	1.30
179	2.57*	86	1.89	27	.95
184	3.24**	94	3.40**	32	4.62**
189	1.18	99	-.22	37	3.15**
191	2.90**	104	1.69	41	.59
196	2.53*	114	1.84	46	5.54**
201	3.07**	119	.50	51	4.58**
206	1.52	127	2.75**	56	4.45**
211	.51	132	1.51	60	2.57**
216	2.70**	137	.27	65	-1.78
218	0.00	142	1.66	70	2.20*

Statement No.	Significant Difference between Means
75	1.95
80	.41
85	-.26
90	3.83**
93	3.06**
98	4.76**
103	.51
108	3.03**
113	2.08*
118	3.53**
123	2.82**
126	2.34*
131	-1.09
136	3.70**
141	4.60**
146	4.01**
151	3.40**
156	3.46**
159	2.13*
164	2.08*
169	2.85**
173	2.82**
176	2.54*
181	.63
186	2.93**
190	1.90
193	.94
198	3.99**
203	4.05**
208	2.41*
213	3.00**
217	2.06*
220	2.67**
224	3.50**
229	1.92
234	3.00**
239	1.51
244	3.38**
249	4.69**
254	3.40**
260	3.75**
271	-.43
275	3.25**
279	2.56*
302	3.27**

Statement No.	Significant Difference between Means
'D' Scale - Frequency of Statements	
2	2.73**
7	3.50**
12	2.93**
17	.14
21	.91
26	1.93
31	2.44*
36	1.34
40	2.20*
45	1.86
50	2.07*
55	1.12
59	2.42*
64	2.23*
69	2.26*
74	-.81
79	4.46**
84	2.56*
89	3.50**
92	1.06
97	-.48
102	-.84
107	1.68
112	1.97
117	1.82
122	4.93**
125	2.86**
130	.25
135	3.98**
140	1.64
145	.60
150	.55
155	2.47*
158	1.13
163	.48
168	2.36*
180	-.21
185	3.33**
192	1.09
197	2.45*
202	3.68**
207	2.69**
212	1.05
219	1.67
223	2.93**

Statement No.	Significant Difference between Means
228	.43
233	1.44
238	3.55**
243	2.96**
248	-.74
253	1.65
258	3.90**
259	3.55**
262	1.79
265	2.24*
266	1.30
269	4.55**
270	.89
273	3.80**
274	6.21**
278	2.87**
282	1.00
283	2.73**
286	3.82**
287	3.38**
289	5.71**
291	-.79
292	3.26**
297	3.95**
298	-1.07
299	1.29
300	1.21
'E' Scale - Frequency of Statements	
5	1.18
10	-1.45
15	1.95
24	1.71
29	.88
34	2.26*
43	1.62
48	.75
53	.96
62	.54
67	-1.17
72	2.58
77	1.69
82	1.57
87	2.64
95	3.80**
100	2.58*

Statement No.	Significant Difference between Means	Statement No.	Significant Difference between Means	Statement No.	Significant Difference between Means
105	3.28**				
110	3.92**				
120	2.61*				
128	-				
133	1.31				
138	.69				
143	4.69**				
148	3.17**				
153	2.50*				
161	2.56*				
166	.12				
171	2.75**				
175	1.09				
178	2.18*				
183	1.28				
188	1.23				
195	1.44				
199	1.90				
200	4.68**				
215	1.03				
210	2.18*				
215	.62				
221	1.98				
226	1.57				
231	.17				
241	1.77				
246	1.14				
251	2.62*				
256	.72				
263	-.79				
304	2.59**				
305	2.82**				

Footnote: * = 5% significance ** = 1% significance.

APPENDIX 4

DATA FOR THE VALIDATION OF THE ATTITUDE SCALES AGAINST FOUR INDEPENDENT CRITERIA

Criterion A. Correlation of Final College Score with Attitude Scale

The standardised marks of the revised attitude test (Appendix 2) were used for this criterion.

Criterion B. Correlation of Final Grades with Tutor Ratings

Student	Ratings Avge.	Ratings Modal Score	Final Grade Total
A 1	42	42	46
2	39	40	43
3	24	25	31
4	34	30	31
5	35		41
6	36		34
7	31	35	35
8	16	15	25
9	22	23	34
10	20		34
11	20		28
12	30		34
13	40		34
14	19		25
B 1	18		28
2	22	22	28
3	22		28
4	17		22
5	28	28	31
6	40		28
7	20		25
8	31	34	28
9	31		28
10	29		
11	22	24	25
12	40	43	39
13	44	44	40

Student	Ratings Avge.	Ratings Modal Score	Final Grade Total
C 1	26	26	28
2	20		31
3	20		28
4	30		31
5	45		34
6	12		22
7	38		34
8	18		31
9	30		31
10	25	20	28
11	37	45	37
12	36	38	42
13	34	35	32
14	23	23	25
D 1	32	35	40
2	35	35	34
3	25	25	28
4	25	25	28
5	29	30	31
6	42	44	38
7	33	33	34
8	27		31
9	35		31
10	25	25	37
11	25	25	28
12	45	45	38
13	17	17	21
14	17	18	16
15	25	22	32
16	34	35	31
17	26	26	31
18	13	17	22

Student	Ratings Avge.	Ratings Modal Score	Final Grade Total	Student	Ratings Avge.	Ratings Modal Score	Final Grade Total
E 1	30	22	28	G 1	25	21	31
2	18		31	2	32	26	28
3	22	22	31	3	23	25	25
4	20		28	4	32		40
5	40		39	5	25	24	31
6	45		37	6	30	25	30
7	34		37	7	36	35	29
8	31		34	8	28		31
9	10	16	16	9	20		28
10	34		36	10	34	33	34
11	26	25	31	11	20		29
12	22		28	12	22	23	28
13	30	28	31	13	27	27	29
14	37		37	14	40	40	41
15	42	44	46	15	22	20	28
16	33	30	28	16	27	25	38
17	33	34	34	17	25		28
				18	30	30	28
F 1	32	32	28	19	27	25	28
2	10		27	20	32		37
3	28		37	21	20	20	25
4	40		33	22	32		32
5	35		33				
6	22	22	31				
7	33		37				
8	25		28				
9	45	45	40				
10	37	42	34				
11	22	22	26				
12	25	24	28				
13	40	40	40				
14	25		34				
15	26	28	31				
16	30	30	28				
17	33	33	43				
18	30		34				
19	30	30	28				
20	25		28				
21	27	27	34				

Criterion C. Validation:- Thurstone Chave with Likert Attitude Test on Try-Out Sample

Name	A	B	C	D	E	T.C.St$^{d.}$ Scores Total	A	B	C	D	E	Likert St$^{d.}$ Scores Total
S.A.	72	61	56	63	65	317	51	54	71	55	68	299
C.B.	65	66	65	58	50	304	57	69	61	70	43	300
B.C.	56	41	37	53	58	245	72	56	50	50	45	273
P.K.	69	87	56	29	42	283	72	54	51	48	45	280
E.L.	48	44	52	78	43	265	45	43	63	67	52	270
R.P.	39	31	52	47	45	214	38	43	37	30	27	175
V.S.	63	69	43	43	45	263	66	35	37	38	57	233
S.S.	41	57	74	64	63	299	54	63	84	67	77	345
B.S.	54	50	50	37	18	209	56	43	35	25	42	201
J.P.	78	42	76	64	48	308	54	57	65	57	55	288
C.J.	50	42	69	37	43	241	61	52	76	52	58	299
E.P.	43	59	52	49	70	273	78	87	99	45	100	309
C.L.	72	30	13	20	50	185	97	39	20	48	25	229
C.W.	72	35	44	41	38	230	47	57	33	55	67	259
S.L.	39	37	41	41	65	223	45	57	56	35	47	240
S.W.	44	63	52	47	62	268	40	57	46	62	60	265
B.L.	50	43	69	67	68	297	53	54	61	57	53	278
E.U.	46	44	54	63	78	285	69	56	65	35	50	275
P.M.	65	28	20	31	22	166	40	46	39	28	33	186
C.D.	28	45	61	51	38	223	13	46	33	30	47	169
D.M.	41	38	39	49	28	195	28	48	56	57	77	266
M.F.	35	40	48	35	48	206	43	31	7	18	57	156
L.B.	59	57	18	19	35	188	49	44	44	25	27	189
J.W.	50	72	69	53	57	301	50	54	33	80	65	282
S.A.	48	34	56	66	48	252	38	39	59	50	1	187
P.S.	80	72	63	61	65	341	76	46	61	57	55	295
E.W.	63	37	39	61	82	282	53	46	46	67	40	252
M.W.	56	63	44	66	35	264	49	67	48	52	48	264
J.B.	46	35	57	34	60	232	44	57	44	45	68	258
J.L.	70	68	43	50	38	269	40	57	50	52	48	247

M = 50 SD = 15

Criterion C. Thurstone Scale Values of Chosen Statements

Key: Ste. No. = Statement No.
MV = Mark Values
TCV = Thurstone Chave Value

A Scale			B Scale			C Scale			D Scale			E Scale		
Ste. No.	MV	TCV	Ste. No.	MV	TCV	Ste. No.	MV	TCV	Ste. No.	MV	TCV	Ste. No.	MV	TCV
11	1	7.3	4	5	1.5	3	5	1.5	7	1	8.4	5	5	2.0
20	1	5.2	71	1	8.6	13	1	8.4	12	1	9.8	10	5	8.5
25	5	3.3	76	1	5.6	29	5	3.8	18	1	6.4	43	1	8.6
30	1	8.5	81	5	6.4	10	1	9.4	26	5	7.2	48	5	5.6
39	1	10.2	94	1	4.1	75	5	5.6	40	1	6.8	77	5	3.0
54	5	6.0	99	5	5.4	85	1	8.0	45	1	7.0	95	1	8.0
58	5	1.5	114	1	7.7	93	1	8.9	64	1	7.7	100	1	6.2
63	1	4.9	152	1	7.0	103	5	4.2	74	5	5.2	105	5	4.2
68	1	9.4	165	1	5.8	108	1	5.8	89	5	3.6	120	5	2.4
73	5	7.8	166	1	5.2	113	1	7.0	92	1	7.4	143	5	1.8
83	1	6.5	170	5	8.8	123	5	5.1	107	1	8.7	148	1	9.3
91	1	9.1	182	1	9.8	126	1	4.6	125	1	8.2	153	1	9.7
96	1	4.5	204	5	1.4	131	1	6.1	135	5	0.8	161	1	8.4
106	1	5.7	209	1	8.3	136	5	0.9	150	1	7.8	171	5	3.1
111	1	5.6	225	5	3.1	141	5	1.8	168	5	3.0	175	1	6.6
121	5	3.8	245	1	3.2	146	1	8.8	192	1	8.9	178	1	7.8
129	5	1.2	250	5	2.0	164	5	6.4	197	1	8.0	188	5	2.6
134	5	1.7	255	1	9.7	169	5	1.3	219	5	3.0	195	1	6.3
162	5	2.9	261	5	2.5	176	1	8.6	223	5	3.1	200	1	8.1
167	5	2.7	280	1	8.0	181	5	4.8	238	5	1.8	205	5	4.3
174	1	7.2	293	5	1.6	193	1	6.6	253	1	9.7	215	1	7.3
196	5	2.1				198	5	3.6	258	5	1.7	221	5	2.3
206	1	4.1				203	5	4.4	259	5	2.4	224	5	3.5
2k6	5	6.1				217	1	7.7	262	5	1.3	226	5	3.6
218	5	2.5				220	5	5.4	266	5	1.1	246	5	4.8
227	1	6.1				229	1	7.6	273	5	0.5	263	5	5.8
242	5	3.5				234	5	4.0	274	5	2.1	304	5	3.8
247	5	2.6				249	5	3.0	283	1	9.4	305	5	1.7
257	5	2.4				254	1	10.2	289	5	2.0			
277	1	8.0				260	5	2.2	301	5	4.8			
281	1	8.8				275	1	8.2						
295	1	9.0				302	5	3.1						

Section C.

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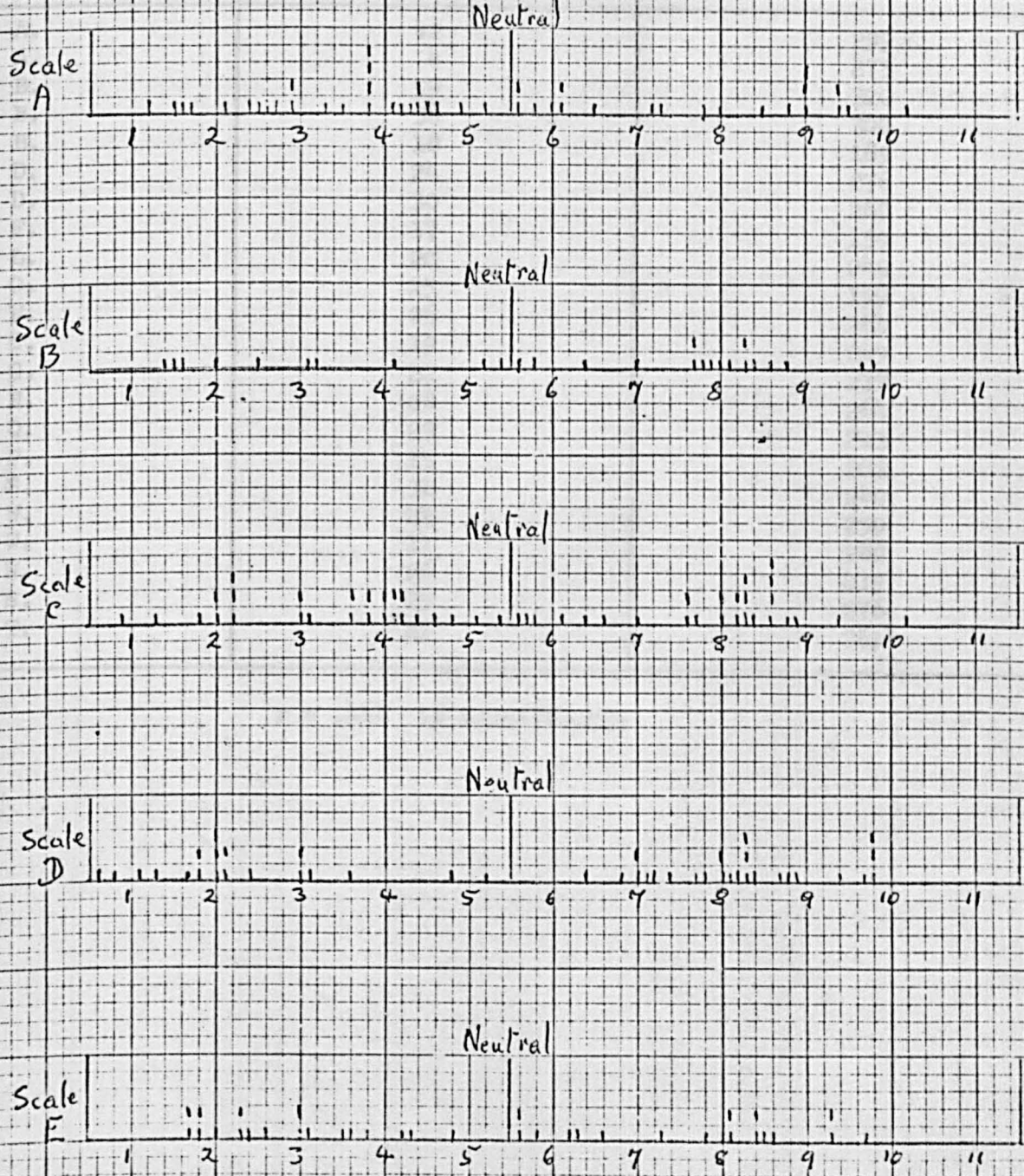
Criterion C: Continua for balancing Statements on Scales A, B, C, D, E.
(using base scale values of statements)



N.B. Statements chosen to obtain as even a scale as possible

Criterion D. M.T.A.I. Validation Results for Try-Out Test

Name	M.T.A.I.	Standard Total Score (Attitudes)
A.	42	299
A.	4	273
B.	59	320
B.	38	300
B.	18	189
D.	24	276
D.	30	269
F.	17	159
L.	20	240
O.	25	199
W.	26	264
C.	19	249
G.	22	233
H.	28	264
O.	23	213
P.	15	203
S.	32	240
W.	22	259
W.	11	282
W.	26	219
S.	25	276
T.	27	261

r = .448 5% significance

APPENDIX 5

SECTION A

Comparison of differences of means of all statements (for Significant Statements) Try Out Test with 3rd Issue-3rd Year and 3rd Issue-2nd Year. (as being furthest away from original test) (i.e. these are the means of High/Low groups on test).

HM = High Group Mean
LM = Low Group Mean
S = Significance

\+ = Those statements which have significantly changed their value over the 3 years tested.
* = Original significant statements

State No.	Try-Out		3rd Issue 3rd Year		State No.	Try-Out		3rd Issue 3rd Year	
	HM-LM	S		S		HM-LM	S	HM-LM	S
1	.6	2.41*	.4	1.11+	35	.05	.11	.3	Nil
2	.7	2.73*	.3	1.0+	36	.4	1.34	0.0	Nil
3	.3	1.51	.1		37	.7	3.15*	.5	2.09*+
4	.1	.33	.4		38	.4	1.56	.4	Nil
5	.2	1.17	.2		39	.57	4.34*	.3	2.00*
6	0.0	0.0	.4		40	.3	2.19*	.4	1.76+
7	.7	3.50*	.2	1.0*	41	.1	.58	.1	Nil
8	.3	1.02	.1		42	.3	1.34	.3	Nil
9	.4	1.85	0.0		43	.3	1.62	.7	3.23*
10	.2	1.45	.5	2.68*	44	.45	1.99*	.5	2.00*+
11	.1	.65	.3		45	.3	1.85	.4	Nil
12	.3	2.93*	.4	2.35*	46	1.0	5.54*	.4	1.61+
13	.3	1.69	.2	1.0	47	.1	.59	.6	2.61*
14	.3	1.34	.1	Nil	48	.2	.75	.2	Nil
15	.3	1.9	.5	2.77*	49	1.05	4.12*	.4	1.14
16	.2	.92	.2	Nil	50	.4	2.07*	.8	2.11*
17	.02	.137	.1	Nil	51	.9	4.57*	.3	1.20+
18	.5	3.00*	.4	2.86*	52	.5	2.39*	0.0	Nil+
19	.4	1.93	.5	2.08	53	.2	.95	.3	Nil
20	.2	.76	.1	Nil	54	0.0	0.0	.3	Nil
21	.2	.91	.2	Nil	55	.3	1.12	0.0	Nil
22	.3	1.29	.2	Nil	56	1.0	4.45*	.7	2.63*
23	.9	3.98*	.3	1.07	57	.6	2.25*	.63	2.52*
24	.3	1.71	.2	Nil	58	.33	1.09	0.0	Nil
25	.4	2.78*	.5	2.01*	59	.3	2.41*	.3	2.00*
26	.4	1.92*	.4	Nil	60	.5	2.57*	.4	1.82
27	.2	.94	0.0	Nil	61	.4	2.23*	.3	2.00*
28	.7	2.65	.2	.80	62	.2	.53	.4	Nil
29	.3	.88	.3	Nil	63	.1	.515	.2	Nil
30	.1	.34	.3	Nil	64	.4	2.23*	.5	2.63*+
31	.4	2.44*	.5	2.94*	65	.5	1.78	.2	Nil
32	.7	4.61*	.6	2.50*	66	1.2	5.74*	.6	2.00*
33	.8	3.55*	.7	2.69*	67	.2	1.17	.3	1.30
34	.4	2.26*	.6	2.61*	68	.4	2.13*	.5	2.77*

State No.	Try Out		3rd Issue 3rd Year		State No.	Try Out		3rd Issue 3rd Year	
	HM-LM	S	HM-LM	S		HM-LM	S	HM-LM	S
69	.4	2.26*	.3	1.23	117	.4	1.82	.1	Nil
70	.3	2.19*	.5	2.39*	118	.7	3.53*	.1	Nil
71	.8	3.51*	.4	1.35+	119	.1	.49	.5	
72	.5	2.76*	.5	2.15*	120	.5	2.61*	.5	2.97*
73	.1	.614	.3	Nil	121	.4	1.62	.3	
74	.2	.813	.3	Nil	122	1.0	4.93*	.6	2.25*
75	.4	1.95	.6	1.69	123	.7	2.82*	.1	0.0+
76	1.3	6.40*	.4	1.18+	124	.4	1.96	.1	Nil
77	.3	1.68	.1	Nil	125	.6	2.85*	.6	2.86*
78	.15	.587	.6		126	.6	2.34*	.6	2.00*
79	.8	4.46*	.3	1.16	127	.4	2.74*	.7	3.38*
80	.1	.41	.1		128	.4	1.78	1.3	5.91*
81	.1	.141	.3		129	.4	1.93	.1	Nil
82	.4	1.57	.6	2.59*	130	.05	.249	.5	
83	.6	2.894*	.7	2.21*+	131	.3	1.09	.2	
84	.6	2.56*	.6	2.17*	132	.3	1.51	.1	
85	.1	.25	.1	Nil	133	.1	1.31	.1	
86	.4	1.89	.3	Nil	134	.6	3.27*	.5	3.29*+
87	.5	2.64*	.3	1.15+	135	.5	3.98*	.4	2.72*
88	.1	.491	.4	Nil	136	.9	3.70*	.4	3.74*
89	.6	3.50*	.5	1.72+	137	.1	.27		
90	1.0	3.83*	.5	1.68+	138	.1	.68	.6	
91	.05	.356	.4	2.02*	139	.1	.37	.2	Nil
92	.1	1.06	.1		140	.3	1.64	.2	Nil
93	.3	3.05*	.4	3.74*	141	.7	4.59*	.3	1.87
94	.7	3.39*	.3	.98	142	.2	1.66	C.0	
95	.8	3.80*	.4	1.54	143	1.0	4.69*	.8	3.15*+
96	.2	.882	.4		144	.4	1.48	.8	
97	.1	.481	.3		145	.1	.60	.2	
98	.9	4.76*	.1	.01	146	.5	4.01*	.7	2.340*
99	.05	.22	.2		147	.1	.42	.4	
100	.6	2.58*	.7	2.8*+	148	.5	3.16*	.4	3.28*+
101	.5	2.72*	.4	2.16*+	149	.1	.65	.7	
102	.1	.835	.3		150	.1	.55	.3	
103	.1	.51	.2		151	.3	3.39*	.2	1.39
104	.3	1.69	.8	4.82*	152	.4	2.69*	.3	1.50+
105	.6	3.28*	.1	.03	153	.3	2.50*	.1	.76
106	.5	1.91	.5		154	.6	3.36*	.6	2.86*
107	.3	1.67	.5		155	.5	2.47*	.4	1.67
108	.8	3.03*	.3	1.14+	156	.7	3.46*	.3	1.22
109			.3		157	.6	2.89*	.7	2.51*
110	.6	3.92*	.3	1.58	158	.2	1.12	.4	
111	.4	1.98	0.0		159	.5	2.13*	.2	.69
112	.3	1.96	1.0	4.26*	160	.3	1.12	.3	
113	.5	2.07*	0.0	0.0	161	.4	2.56*	.4	1.74
114	.4	1.84	.1	Nil	162	.5	2.55*	.5	.185
115			.4	2.00*	163	.1	.479	0.0	
116	.1	.332	0.0		164	.4	2.08*	.4	1.67+

State No.	Try Out		3rd Issue 3rd Year		State No.	Try Out		3rd Issue 3rd Year	
	HM-LM	S	HM-LM	S		HM-LM	S	HM-LM	S
165	.2	1.35	.3		210	.4	2.18*	.3	.88
166	.02	.12	.2		211	.1	.51	.1	
167	.4	1.64	.1		212	.2	1.05	.6	
168	.4	2.36*	.8	4.32*	213	.6	3.00*	.1	Nil
169	.5	2.84*	.8	4.23*	214	.1	.88	.3	
170	.1	.27	0.0		215	.1	.62	.4	
171	.4	2.75*	.7	3.11*	216	.4	2.69*	.2	Nil
172	.4	2.49*	.4	2.00*	217	.4	2.06*	.4	1.57
173	.5	2.82*	.6	4.00*	218	0.0	0.00	.2	
174	.5	2.82*	.6	4.00*	219	.3	1.67	.1	
174	.2	5.36*	.2	.35+	220	.6	2.66*	.3	1.36+
175	.2	1.09	.5		221	.3	1.97	.5	
176	.4	2.54*	.7	4.4*	222	.1	.424	.1	
177	.3	2.55*	.3	1.58	223	.6	2.93*	.3	1.59
178	.4	2.12*	.4	2.00*+	224	.8	3.50*	.2	.77
179	.4	2.57	.3	1.20	225	.2	1.04	.1	
180	.05	.21	.2		226	.4	1.57	.2	
181	.1	.62	0.0		227	.025	.101	0.0	
182	.4	3.15*	.4	1.11	228	.1	.43	.4	
183	.2	1.27	.2		229	.3	1.92	.4	
184	.8	3.24*	.1	Nil+	230	.3	2.16*	.5	2.69*
185	.5	3.3*	.4	2.41*	231	.1	.166	0.0	
186	.4	2.93*	.4	2.01*	232	.7	2.64*	.4	1.39
187	.3	1.07	0.0	Nil	233	.3	1.44	0.0	
188	.3	1.23	.2	Nil	234	.6	3.00*	.2	.95
189	.2	1.18	.3	Nil	235	.1	.65	.4	
190	.3	1.90	0.0	Nil	236			.4	
191	.4	2.89*	.1	.52	237	.5	2.24*	.4	1.29+
192	.2	1.09	.4		238	.4	3.54*	.4	2.41*+
193	.2	.94	.1		239	.2	1.51	.4	
194	.3	1.87	.2	.58	240	.1	.56	.1	
195	.3	1.44	.1		241	.4	1.76	.2	
196	.5	2.53*	.2	Nil	242	.3	1.44	0.0	
197	.3	2.44*	.6	3.77*	243			0.0	Nil
198	.8	3.99*	.6	2.09*	244	.7	3.37*	.1	Nil+
199	.4	1.89	.4		245	.6	2.67*	.4	1.61
200	.5	4.68*	.3	1.25	246	.2	1.14	0.0	
201	.6	3.07*	.6	2.00*	247	.5	2.85*	.9	5.00*
202	.5	3.68*	.8	4.47*	248	.2	.74	.2	
203	1.0	4.05*	.1	Nil	249	.8	4.68*	.4	1.76
204	.2	1.13			250	.3	1.39	.1	
205	.3	1.03	.6		251	.5	2.61*	.2	1.18
206	.4	1.52	0.0		252			.3	
207	.4	2.69*	.3	3.00*	253	.3	1.65	.3	
208	.4	2.41*	.9	3.75*	254	.5	3.39*	.5	2.27*
209	.3	2.02*	0.0	Nil	255	.4	2.41*	.4	3.64*

State No.	Try Out		3rd Issue 3rd Year		State No.	Try Out		3rd Issue 3rd Year	
	HM-LM	S	HM-LM	S		HM-LM	S	HM-LM	S
256	.1	.72	.2		301	.3	1.21	.2	
257			.3		302	.6	3.27*	.1	Nil+
258	.8	3.89*	.7	2.50*	303	.4	2.45*	.1	Nil+
259	.8	3.55*	.3	1.13	304	.6	2.59*	.2	.71+
260	.6	3.75*	0.0	Nil	305	.6	2.82*	.5	2.17*
261	.2	.61	.5						
262	.3	1.79	.5						
263	.1	.78	0.0						
264	.5	2.64*	.6	3.00*+					
265	.4	2.24*	0.0	Nil					
266	.2	1.30	.6						
267	.5	2.72*	.1	Nil					
268	.5	2.85*	.4	1.54+					
269	.9	4.55*	.1	Nil					
270	.1	.89	.1						
271	.1	.89	.3						
272	0.0	0.0	.1						
273	.7	3.79*	.5	2.31*					
274	.6	6.21*	.5	3.12*+					
275	.5	3.25*	.2	.8					
276	.3	1.58	.4						
277	.1	.77	.5						
278	.6	2.87*	.5	2.18*					
279	.6	2.56*	.5	1.24					
280	.3	2.95*	.5	2.66*					
281	.4	1.68	.5	2.05*					
282	.2	.99	0.0						
283	.3	3.73*	.4	2.66*					
284	.2	1.02	.1						
285	.3	2.69*	.3	2.92*					
286	.4	3.82*	.4	3.07*					
287	.8	3.28*	.3	1.86					
288	.5	.87*	.7	3.36*					
289	.9	5.71*	.5	2.84*					
290	.3	1.65	.4						
291	.2	.78	.1	Nil					
292	.4	3.25*	.3	2.12*					
293	.6	2.83*	.5	2.17*					
294	.3	1.93	.4						
295	.4	1.53	.2						
296	.3	.97	0.0	Nil					
297	.4	3.95*	.3	2.46*					
298	.2	1.07	0.0						
299	.2	1.29	.1						
300	.2	3.45*	.1	Nil+					

Comparison of differences between years of means of all statements - Try Out Test with 1st Issue 1st, 2nd and 3rd Year and 3rd Year 3rd Issue.

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Column A - Statement Number - Column B - Try Out Test
" C - 1st Year 1st Issue - " D - 2nd Year 1st Issue
" E - 3rd Year 1st Issue - " F - 3rd Year 3rd Issue
" G - Range of difference of mean Overall
" H - Range of difference of mean between 3rd Year

* = significant change between 1st, 2nd and 3rd Years
+ = " " " 3rd Years.

A	B	C	D	E	F	G	H
1+	3.3	3.68	3.48	3.6	3.35	.30	.30+
2+	3.14	3.24	2.8	2.64	2.8	.50*	.34+
3	3.76	3.80	3.88	4.10	3.85	.34*	.34
4	2.89	2.84	2.84	3.06	3.1	.26	.21
5	4.14	4.28	4.56	4.32	4.4	.42*	.26
6	3.73	3.68	3.4	3.78	3.80	.33*	.07
7+	3.93	4.16	3.88	4.32	4.2	.44*	.39+
8	2.38	1.52	1.76	2.10	2.0	.86*	.38
9	3.31	3.72	3.16	3.44	3.5	.34*	.19
10	1.97	1.84	4.08	2.02	1.75	2.33*	.27
11	4.03	3.80	4.12	3.92	3.95	.23	.11
12*	4.45	4.40	4.48	4.38	4.3	.15	.15
13	4.46	4.44	4.4	4.44	4.4	.06	.06
14	3.74	3.44	3.6	3.58	3.2	.54*	.54
15	4.19	4.08	3.92	3.90	4.15	.29	.29
16	3.88	3.52	3.76	3.52	3.80	.36*	.36
17	3.72	3.40	3.44	3.78	3.55	.79*	.22
18+	3.86	4.20	4.24	4.10	4.00	.38*	.24+
19	2.85	3.20	3.6	3.26	2.70	.90*	.56
20	3.42	3.6	3.68	3.52	3.75	.33*	.33
21	3.25	3.04	3.2	3.38	3.10	.34*	.28
22	3.12	3.32	3.24	3.02	3.10	.30	.10
23	3.25+	3.00	2.88	3.18	3.00	.37*	.25
24	4.05	3.72	4.16	4.26	3.9	.54*	.36
25+	3.64	3.72	4.12	3.36	3.65	.76*	.28
26	2.42	3.00	2.44	2.74	2.40	.60*	.34
27	4.46	3.72	3.76	3.70	3.90	.76*	.76
28+	2.74	3.16	3.12	2.86	3.15	.40*	.41
29	3.22	3.64	3.32	3.32	3.1	.54*	.22
30	3.67	4.12	4.16	3.70	3.75	.49*	.12
31+	3.85	3.88	3.68	3.78	3.90	.22	.12
32+	3.38	3.36	3.12	3.36	3.50	.48*	.14
33+	2.41	2.16	2.40	2.32	2.50	.34*	.18
34+	3.64	3.40	3.9	3.80	3.60	.40*	.20

A	B	C	D	E	F	G	H
35	3.53	3.4	3.24	3.40	3.70	.46*	.30
36	3.43	2.96	3.04	3.48	3.0.	.52*	.48
37+	3.26	3.64	3.6	3.66	3.6	.40*	.40+
38	3.71	3.16	3.32	3.38	3.5	.55*	.33
39+	4.32	4.52	4.36	4.42	4.45	.20	.13
40+	3.60	3.68	3.32	4.32	3.30	1.02*	1.02+
41	2.15	2.32	1.56	2.72	2.15	1.16*	.57
42	4.26	4.44	4.56	4.54	4.45	.30	.28
43	3.90	4.12	4.11	4.20	4.0	.30	.30
44+	3.34	3.40	3.2	3.70	3.25	.50*	.45+
45	3.43	3.36	3.48	3.36	3.20	.28	.23
46+	3.38	3.48	3.56	3.50	3.20	.36*	.30+
47	2.31	2.44	2.20	2.42	2.30	.24	.12
48	2.24	3.84	2.28	2.32	2.30	.56*	.08
49+	3.08	3.36	3.64	3.08	3.10	.56*	.02
50+	3.63	3.24	3.84	3.76	3.72	.52*	.13
51+	3.61	4.48	4.12	4.02	3.90	.87*	.41+
52+	1.92	2.8	2.76	2.76	2.90	.98*	.98+
53	2.34	2.4	2.72	2.32	2.40	.38*	.06
54	2.94	3.04	2.52	3.14	2.90	.52*	.24
55	3.34	2.68	2.64	2.30	2.70	1.04*	1.04
56+	3.11	3.72	3.48	3.24	3.05	.67*	.19
57+	2.75	2.56	2.72	2.76	2.70	.20	.06
58	3.53	3.68	3.76	3.68	3.60	.23	.15
59+	4.28	4.04	4.16	4.28	4.25	.24	.03
60+	2.16	2.32	2.32	2.22	2.00	.32	.22
61+	2.13	1.88	1.96	1.94	1.95	.25	.19
62	2.56	3.40	3.4	3.40	3.70	1.14*	1.14
63	2.95	2.72	2.76	2.74	2.80	.23	.21
64+	3.31	3.76	3.24	3.60	3.40	.45*	.29+
65	3.16	3.56	3.08	3.62	3.30	.46*	.46
66+	3.64	3.52	4.0	3.60	3.27	.80*	.33
67	2.38	2.48	2.56	2.40	3.75	.47*	.47
68+	3.53	3.68	3.60	3.74	3.65	.21	.21
69+	2.58	2.68	2.04	2.56	2.55	.54*	.03
70+	3.65	3.92	3.52	3.74	3.85	.40*	.20
71+	3.32	3.08	2.76	3.36	2.80	.59*	.56+
72+	3.86	4.0	4.32	4.06	3.95	.20	.20+
73	3.84	3.52	3.28	3.54	3.15	.69*	.69
74	3.24	2.56	3.48	3.20	2.90	.92*	.34
75	2.53	2.28	2.16	2.62	3.0	.84*	.47
76+	3.53	2.94	2.92	2.92	3.50	.61*	.61+
77	3.75	3.92	3.44	3.74	3.35	.57*	.40
78	2.80	3.4	3.24	3.02	3.45	.65*	.65
79+	3.67	3.64	3.28	3.56	3.56	.29	.11
80	2.13	2.08	2.16	2.14	2.25	.17	.12
81	2.61	2.44	2.24	2.50	2.35	.35*	.26
82	3.50	3.60	3.28	3.60	3.60	.32	.10

A	B	C	D	E	F	G	H
83+	3.64	3.8	3.88	3.94	3.94	.30	.30+
84+	2.87	2.88	2.6	3.04	3.00	.44*	.17
85	2.77	2.2	2.6	3.60	2.75	1.4*	.85
86	3.12	2.88	3.08	3.10	2.90	.24	.22
87+	3.50	2.96	3.36	2.88	3.40	.62*	.62+
88	3.49	3.76	3.76	3.76	3.50	.27	.27
89+	3.01	3.32	2.88	3.40	3.15	.52*	.39+
90+	2.94	2.92	2.4	2.46	2.94	.50*	.48+
91	4.25	4.36	3.92	4.30	3.90	.46*	.40
92	3.91	3.76	3.92	3.60	3.60	.32	.31
93+	4.23	4.28	4.36	4.14	4.20	.22	.09
94+	3.23	3.08	3.04	3.04	3.00	.23	.27
95+	3.46	3.56	3.36	3.34	3.50	.22	.16
96	2.61	2.34	2.64	2.32	2.50	.32	.29
97	2.61	2.62	2.56	2.50	2.55	.12	.11
98+	3.61	3.24	3.28	3.40	3.45	.33*	.21
99	3.19	2.88	3.28	3.36	3.40	.69*	.21
100+	3.22	3.2	3.20	2.90	3.05	.32	.32+
101+	3.91	4.04	3.88	3.74	4.20	.46*	.46+
102	3.21	2.92	3.0	3.26	3.15	.34*	.11
103	3.84	3.56	3.76	3.88	3.90	.32	.12
104	4.05	3.8	3.92	3.98	3.9	.25	.15
105+	4.05	3.96	3.76	4.10	4.05	.29	.05
106	1.81	3.04	1.96	2.18	2.65	1.33*	.84
107	3.62	4.04	4.2	4.14	4.25	.63*	.63
108+	3.06	3.08	2.52	3.66	3.05	1.14*	.51+
109	4.11	4.24	-	-	-	-	-
110+	3.97	3.96	4.04	3.90	4.10	.20	.20
111	3.71	3.24	3.76	3.56	3.40	.52*	.31
112	3.50	3.6	3.36	3.74	3.70	.38*	.24
113+	2.70	2.96	2.52	2.92	2.8	.26	.22
114	3.42	3.56	3.40	3.52	3.65	.23	.23
115	4.11	4.4	-	-	-	-	-
116	3.43	2.64	2.92	3.44	2.8	.80*	.64
117	2.63	3.08	2.96	2.98	2.75	.45*	.35
118+	3.99	4.0	4.24	4.14	4.15	.25	.16
119	3.83	3.92	3.8	3.74	3.85	.18	.11
120+	3.86	3.64	4.06	3.84	3.85	.42*	.02
121	2.96	3.0	3.24	3.02	3.05	.28	.09
122+	3.72	3.72	3.5	3.90	3.75	.40*	.18
123+	2.79	3.12	4.04	2.54	3.00	1.50*	.96+
124	4.06	4.12	4.2	4.16	4.25	.19	.19
125+	3.34	3.48	3.0	3.56	3.40	.56*	.22
126+	2.81	3.24	2.72	2.68	2.80	.56*	.13
127+	3.74	3.76	3.8	3.9	3.75	.16	.16
128	3.44	2.88	3.36	3.5	3.25	.62*	.25
129	3.96	4.0	4.0	3.66	3.85	.34*	.30
130	3.40	3.32	3.2	3.24	3.45	.25	.25

A	B	C	D	E	F	G	H
131	2.80	2.4	2.68	2.70	2.50	.40*	.30
132	3.37	3.36	3.28	3.36	3.05	.32	.32
133	4.03	3.28	4.52	4.28	4.15	.49*	.25
134+	3.77	3.56	3.72	3.48	3.75	.29	.29+
135+	4.35	4.44	4.52	4.34	4.35	.18	.01
136+	3.97	4.08	3.6	3.92	3.94	.48*	.05
137	3.90	3.93	=	-	-	-	-
138	3.40	3.44	3.0	3.14	3.20	.44*	.26
139	3.20	3.32	3.4	3.64	3.40	.44*	.44
140	2.81	3.48	2.28	2.52	2.60	.50*	.29
141+	3.88	4.32	4.36	4.04	4.15	.48*	.27
142	3.48	3.68	3.96	4.24	3.9	.76*	.76
143*	3.59	4.04	4.24	4.24	3.80	.64*	.64+
144	2.65	3.6	2.64	3.04	2.9	.95*	.49
145	3.50	3.68	3.12	3.58	3.5	.56*	.08
146+	4.02	3.84	4.32	3.94	3.95	.48*	.08
147	3.27	3.6	3.32	3.48	3.50	.33*	.23
148+	3.88	4.0	4.6	4.20	4.20	.72*	.32+
149	2.48	1.84	2.08	2.58	2.55	.74*	.10
150	3.77	4.0	4.0	3.92	4.15	.38*	.38
151+	4.00	4.04	4.06	4.1	4.10	.10	.10
152+	3.85	3.80	3.8	3.62	3.80	.23	.23+
153+	4.17	4.24	4.12	4.18	4.15	.12	.03
154+	3.63	3.8	3.76	3.84	4.10	.47*	.47
155+	3.37	3.6	3.60	3.48	3.50	.23	.13
156+	3.59	3.92	4.04	3.64	3.65	.45*	.06
157+	3.32	2.72	2.64	3.04	3.00	.58*	.32
158	3.66	3.08	3.26	3.42	3.40	.40*	.26
159+	3.10	2.92	3.16	3.18	3.10	.26	.08
160	3.47	3.32	3.48	3.22	3.15	.33*	.32
161+	3.59	3.44	4.24	4.00	3.74	.80*	.41+
162+	3.71	4.0	3.72	3.64	3.64	.36*	.07
163	3.40	3.88	3.56	3.56	3.30	.58*	.26
164+	3.65	3.8	3.76	3.92	3.68	.27	.27+
165	2.72	2.68	2.52	2.54	2.85	.33*	.33
166	2.65	2.52	2.08	2.36	3.1	1.02*	.74
167	2.68	4.04	2.72	3.00	3.10	1.36*	.42
168+	3.74	4.12	3.96	3.80	3.8	.38*	.06
169+	4.00	4.0	3.88	4.04	4.00	.16	.04
170	2.51	2.68	2.32	2.48	2.40	.28	.11
171+	3.48	3.32	3.48	3.62	3.50	.30	.14
172+	3.45	3.48	3.72	3.62	3.80	.35*	.35
173+	3.96	4.2	4.16	4.12	4.10	.20	.16
174+	3.29	2.16	2.56	2.22	3.20	1.13*	1.07+
175	3.89	3.6	3.84	3.74	3.75	.29	.15
176+	4.01	4.12	4.2	4.06	4.08	.19	.07
177+	4.24	4.0	4.56	4.32	4.15	.32	.17
178+	3.34	3.0	3.24	3.60	3.60	.60*	.26+

A	B	C	D	E	F	G	H
179+	3.87	3.6	3.96	3.46	3.85	.5 *	.39
180	3.27	3.2	3.32	3.1	3.20	.22	.17
181	2.46	2.48	2.12	2.24	2.30	.36*	.22
182+	4.11	4.2	4.12	4.04	4.20	.16	.16
183	3.54	3.64	3.28	3.36	3.50	.36*	.18
184+	2.90	3.04	2.58	3.34	3.05	.46*	.44+
185+	4.30	3.84	4.0	4.24	4.30	.46*	.06
186+	4.29	4.12	4.48	4.06	4.30	.42*	.24
187	3.60	3.6	3.48	3.74	3.60	.26	.14
188	3.38	3.48	3.32	4.00	3.50	.65*	.62
189	3.00	3.36	3.52	3.28	3.20	.52*	.28
190	3.66	3.32	3.48	3.52	3.50	.34*	.16
191+	3.80	3.96	4.0	3.98	3.95	.20	.18
192	3.65	3.44	3.48	3.62	3.60	.21	.05
193	2.80	2.36	2.52	2.42	2.15	.65*	.65
194	3.76	3.88	3.84	3.9	3.9	.14	.14
195	3.37	3.2	2.96	3.34	3.65	.69*	.21
196+	3.55	3.68	3.76	3.5	3.50	.26	.05
197+	3.92	4.0	4.08	4.12	3.95	.20	.20
198+	2.51	3.04	2.76	2.92	3.10	.59*	.59
199	2.55	3.32	2.6	2.96	2.90	.72*	.41
200+	4.02	4.12	4.12	4.08	4.05	.10	.06
201+	3.62	4.02	3.76	3.44	3.50	.58*	.18
202+	4.00	3.8	3.72	4.06	4.00	.24	.06
203+	3.48	3.88	3.72	3.28	3.55	.60*	.27
204	2.54	2.32	2.2	2.42	2.40	.34*	.14
205	3.50	3.48	3.56	3.56	3.50	.18	.06
206	2.84	3.2	2.96	2.6	3.00	.60*	.40
207+	4.01	4.0	4.12	4.12	4.10	.12	.11
208+	3.48	3.6	3.36	3.48	3.50	.24	.02
209+	4.11	3.56	3.72	3.94	4.10	.55*	.17
210+	3.87	3.64	3.8	3.8	3.85	.23	.07
211	3.70	3.76	3.84	3.84	3.55	.29	.29
212	3.99	3.60	3.92	3.94	3.20	.79*	.79
213+	3.35	3.08	3.76	3.42	3.25	.68*	.17
214	3.79	3.42	3.6	3.68	3.75	.37*	.11
215	2.94	3.24	2.72	3.26	3.25	.44*	.31
216+	3.90	3.72	3.0	3.76	3.80	.90*	.14
217+	3.34	3.0	3.52	3.34	3.30	.52*	.04
218	3.07	3.16	2.92	3.38	2.80	.58*	.58
219	3.55	3.12	2.8	3.08	3.25	.75*	.47
220+	3.46	3.2	2.8	2.86	3.45	.66*	.66+
221	4.06	4.2	4.16	4.14	4.05	.15	.09
222	3.71	3.04	3.44	3.54	4.05	1.01*	.51
223+	3.90	3.68	3.96	3.92	3.85	.28	.07
224+	3.40	3.44	3.44	3.48	3.45	.08	.08
225	2.80	2.92	2.92	3.00	3.25	.45*	.45

A	B	C	D	E	F	G	H
226	3.41	3.52	3.48	3.22	3.60	.38*	.38
227	3.10	2.64	3.4	3.52	3.30	.88*	.42
228	3.87	3.96	3.6	3.68	4.00	.40*	.32
229	3.69	3.68	3.92	3.82	3.80	.23	.13
230+	3.97	3.92	3.68	3.88	3.90	.29	.09
231	3.71	3.52	3.72	3.72	3.70	.20	.02
232+	3.44	3.28	2.96	3.28	3.40	.48*	.16
233	3.23	2.64	3.08	3.62	3.0	.98*	.62
234+	3.49	3.36	3.56	3.28	3.60	.32	.32
235	3.08	3.24	3.64	3.24	3.30	.56*	.16
236	4.15	4.24	-	-	-	-	-
237+	3.32	3.16	3.68	2.96	3.20	.36*	.36+
238+	4.00	3.9	3.56	3.90	4.2	.64*	.30+
239	3.90	4.08	4.12	4.20	4.2	.30	.30
240.	1.91	4.24	2.16	1.84	1.80	2.44**	.36
241.	3.15	3.4	3.4	3.04	3.3	.36*	.29
242.	3.45	3.48	3.2	3.3	3.2	.28	.25
243+	3.35	3.32	3.32	3.4	3.10	.30	.30
244+	3.55	3.56	3.56	3.1	3.45	.46*	.43+
245+	2.90	2.68	2.68	2.78	2.90	.22	.12
246	3.36	3.0	3.64	2.34	3.1	1.30*	1.02
247+	3.44	3.6	3.84	3.7	3.75	.40*	.31+
248	2.79	2.64	2.84	2.76	3.1	.37*	.25
249+	3.67	3.68	3.6	3.6	3.65	.08	.07
250	3.00	2.6	3.28	2.9	2.95	.68*	.10
251+	3.40	3.76	3.48	3.42	3.60	.36*	.20
252	3.74	4.0	3.92	3.96	3.75	.22	.22
253	4.00	4.2	4.24	3.96	4.15	.24	.09
254+	4.10	3.84	4.04	4.04	4.15	.31	.11
255+	3.99	4.12	4.2	4.06	4.05	.13	.07
256	2.95	3.08	3.0	3.22	3.00	.27	.27
257	4.23	3.88	4.04	4.04	4.15	.35*	.19
258+	3.81	3.4	4.08	3.9	3.70	.68*	.20
259+	3.15	3.72	2.61	3.26	2.85	1.11*	.41
260	3.92	3.92	-	3.98	4.00	.08	.08
261	3.61	3.2	3.2	3.36	3.50	.41*	.25
262	3.88	3.2	3.84	3.72	4.05	.85*	.33
263	2.50	2.24	2.4	3.58	2.40	1.34*	1.08
264+	3.59	3.76	4.16	3.9	3.90	.57*	.31+
265+	3.56	3.4	3.68	3.7	3.58	.3	.24
266	3.80	3.68	3.44	3.98	3.80	.54*	.18
267+	3.04	2.52	2.28	3.00	2.95	.76*	.09
268+	3.18	2.88	2.12	3.56	3.50	1.44*	.38+
269+	3.55	3.48	3.24	3.44	3.25	.23	.10
270	3.66	3.52	3.72	3.68	3.75	.23	.09
271	3.41	4.04	3.8	3.92	4.15	.74*	.74
272	3.04	3.48	3.5	3.22	3.45	.46*	.41
273+	3.98	4.0	3.68	3.84	3.95	.32	.14
274+	4.01	3.88	4.36	4.30	4.55	.67*	.54+

A	B	C	D	E	F	G	H
275+	3.67	4.0	3.68	3.86	3.70	.33*	.19
276	2.52	2.16	1.92	2.34	2.55	.53*	.21
277	4.00	3.72	4.12	4.06	4.0	.40*	.06
278+	3.62	3.76	3.28	3.66	3.65	.48*	.04
279+	3.14	3.64	3.36	3.14	3.40	.50*	.26
280+	3.84	3.8	4.04	3.8	3.80	.24	0.0
281	2.94	2.96	2.8	2.94	3.0	.20	.06
282	2.94	2.68	2.72	2.84	2.80	.26	.14
283+	3.99	3.92	3.8	4.06	4.2	.4 *	.21
284	3.18	3.0	3.12	3.00	3.15	.18	.18
285+	4.01	3.96	4.04	3.92	4.05	.13	.13
286+	3.98	3.92	4.12	4.02	4.20	.28	.22
287+	3.69	3.68	2.96	3.6	3.85	.89+	.25
288+	3.68	3.64	3.92	3.88	3.70	.28	.20
289+	3.81	3.68	3.84	3.74	3.80	.16	.07
290	3.09	3.04	3.4	2.94	3.10	.16	.16
291	3.05	2.66	2.9	2.96	2.75	.39*	.30
292+	4.07	3.88	4.04	4.10	4.05	.22	.05
293+	3.46	3.52	3.4	3.42	3.45	.12	.04
294	3.65	3.72	3.56	3.66	3.70	.16	.05
295	3.07	3.44	3.32	3.04	3.30	.30	.26
296	3.18	2.4	3.0	3.26	2.70	.86*	.56
297+	4.34	3.92	4.36	4.26	4.34	.44*	.08
298	2.51	2.4	2.68	2.38	2.20	.48*	.31
299	3.95	3.84	3.84	3.98	3.95	.14	.03
300+	2.76	2.16	2.2	2.12	2.55	.64*	.64+
301	2.70	3.0	2.84	2.72	2.80	.30	.10
302+	3.08	3.4	3.16	3.50	3.05	.45*	.45+
303+	3.77	3.92	3.64	3.52	3.75	.40*	.25+
304+	3.12	3.22	3.24	3.42	3.10	.32	.32+
305+	3.74	3.68	4.04	3.9	3.75	.36*	.16

APPENDIX 6

INTER CORRELATIONS BETWEEN ALL VARIABLES FOR ALL YEARS TESTED

COMPARATIVE TABLE OF CORRELATIONS

N is never less than 130 therefore 5% level = .174* 1% level = .228**

N.B. School and College Achievement had to be worked later on small numbers and therefore significance given by the results.

1 = Intelligence
2 = B1N (Neurcticism)
3 = B2S (Self Sufficiency)
4 = B4D (Dominance)
5 = F2S (Social Adjustment)
6 = A (Work)
7 = B (Authority)
8 = C (One another)
9 = D (Children)
10 = E (Life)
11 = Soc. A
12 = Soc. B
13 = School Achievement
14 = College Achievement

* = 5% level ** = 1% level

		1st Issue			2nd Issue			3rd Issue	
	Try Out 3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	2nd Yr.	3rd Yr.
Intelligence 1									
2	.04	-.009	-.046	-.053					
3	.036	-.079	.024	.190*					
4	.02	-.061	-.049	.019					
5	.08	-.139	.107	.191*					
6	-.05	.075	.055	.050					
7	.13	.058	.134	.009					
8	-.07	.097	.043	.175*					
9	.09	.062	.095	.014					
10	.07	.066	.014	.05					
11	.03	-.187*	-.024	.147					
12	.06	-.192*	.0049	.139					
13									
14									
B1N 2									
3	-.48**	-.448**	-.348**	-.33**	-.383**	-.438**	-.563**	-.511**	-.248**
4	-.65**	-.787**	-.503**	-.696**	-.753**	-.723**	-.657**	-.690**	-.665**
5	.98**	.210*	.137	.218*	.050	.111	.116	.076	.277**
6	.12	-.039	-.079	.133	-.151	-.246**	-.031	-.043	-.038
7	.112	-.099	-.012	.037	-.174	-.005	-.086	-.009	-.119
8	.07	-.364**	-.086	.366**	-.419**	-.495**	-.111	-.403**	-.419**
9	.08	-.041	.036	.164	-.137	.027	-.019	.063	.094
10	-.008	.032	.098	.074	.0004	-.083	.079	.025	.037
11	.019	-.242**	.132	.33**		.139	-.073		
12	.14	-.075	-.035	.329**		-.0004	-.177		
13	-.08			-.183 insigt.			.40 (1%)		.276**
14	-.12			-.236 (5%)			-.245 (5%)		.101

		1st Issue			2nd Issue			3rd Issue	
	Try Out 3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	2nd Yr.	3rd Yr.
B2S	3								
4	.46**	.553**	.495**	.528**	.535**	.566**	.487**	.491**	.261**
5	.699*	.474**	.467**	.639**	.536**	.518**	.504**	.582**	
6	.213*	-.007	.063	.176*	.164	.075	.011	.048	.088
7	-.07	-.018	.136	.199*	-.005	-.057	-.159	-.194*	-.007
8	-.07	-.027	-.014	.142	.005	.065	-.162	-.065	.007
9	.221*	-.033	-.004	.210*	.081	-.045	.009	-.131	.077
10	-.12	-.260**	.014	.132	-.184*	-.042	-.171	-.188*	-.175*
11	-.014	.001	-.128	.13		.069	-.038		
12	-.005	.074	.068	.079		.127	.047		
13	-.01			-.247 insgft.			-.314 (5%)		-.073
14	.174*			.028 insgft.			.055		.097
B4D	4								
5	.24**	.083	.258**	.095	.218*	.255**	.151	.174*	-.033
6	-.02	.208*	.045	.019	.138	.165	.06	.106	.133
7	-.07	.122	.137	.053	.055	-.026	-.013	-.070	.073
8	.08	.428**	.203*	.295**	.353**	.432**	.209*	.321**	.479**
9	.02	.104	.005	.125	.123	-.013	-.057	-.034	-.023
10	.03	-.028	-.041	-.036	-.081	.007	-.044	-.135	.105
11	-.075	.254**	.048	.251**		.208*	.236**		
12	-.086	.184*	.088	.361**		.137	.265**		
13	.11			-.237 insgf.			-.46 (1%)		-.131 insgf.
14	.14			.189 insgf.			-.038		-.109 insgf.
F2S	5								
6	.26**	.011	.129	.065	.075	-.095	-.077	.104	.102
7	-.07	-.062	.152	.096	-.078	.017	-.092	-.045	.032
8	-.037	-.264**	-.023	.091	-.236**	-.136	-.198*	-.200*	-.190*
9	.26**	-.124	.039	.112	.043	-.008	-.073	.005	.165
10	-.08	-.259**	.111	.054	-.196*	-.119	-.075	-.176*	-.064
11	-.07	-.137	.005	.02		.033	-.093		
12	-.006	-.019	.052	.088		.119	-.121		
13	.06			-.357 insgf.			-.11		.009
14	.18*			.112 insgf.			-.035		-.007

		1st Issue			2nd Issue			3rd Issue	
	Try Out 3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	2nd Yr.	3rd Yr.
A 6									
7	.25**	.400**	.684**	.598**	.211*	.364**	.323**	.027	.188*
8	.25**	.463**	.663**	.622**	.282**	.491**	.316**	.216*	.339**
9	.19*	.316**	.786**	.529**	.358**	.439**	.196*	.389**	.191*
10	.185*	.370**	.750**	.834**	.247**	.481**	.355**	.203**	.243**
11	-.174*	.061	.113	.149		.127	.117		
12	-.20*	.128	.144	.006		-.002	.089		
13	.045			.106 insgf.			.16		.035
14	.224*			-.09			.192		.226*
B 7									
8	.33**	.441**	.619**	.310*	.289*	.356**	.233**	-.010	.196*
9	.24**	.441**	.724**	.705**	.130	.412**	.087	.097	.034
10	.07	.415**	.700**	.752**	.322**	.341**	.334**	.272**	.200*
11	.015	.150	-.003	.028		.143	.135		
12	-.06	.128	.175*	.048		.115	.155		
13	.115			.146 insgf.			.274 (1%)		-.102
14	.08			.317 (5%)			.121		-.048
C 8									
9	.207*	.386**	.697**	.30**	.249**	.307**	.300**	.196*	.367*
10	.28**	.501**	.666**	.502**	.356**	.424**	.39**	.159	.386**
11	.07	.260**	.168	.230**		.204*	.292**		
12	.221*	.084	.151	.197*		.031	.189		
13	.04			.141 insgf.			.10		-.109
14	-.047			-.346 (1%)			-.06		.0002
D 9									
10	.067	.557**	.707**	.643**	.119	.504**	.336**	.221*	.043
11	-.07	.115	.035	.157		.130	-.076		
12	.15	.192*	.071	.125		.062	-.123		
13	.092			.10 insgf.			.032		-.052
14	.06			.131 insgf.			-.184		.055

		1st Issue			2nd Issue			3rd Issue	
	Try Out 3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	1st Yr.	2nd Yr.	3rd Yr.	2nd Yr.	3rd Yr.
E 10									
11	.L5	.165	.084	.064		.032	.057		
12	.15	.165	.089	.017		-.037	.027		
13	.03			-.097 insgf.			.034		-.008
16	-.05			-.351 (1%)			.0139		.082
Soc. A 11									
12	.52**	.418**	.485**	.387**		.379**	.441**		
13	.141			.072 insgf.			.16		
14	-.23			.022 insgf.			.11		
Soc. B 12									
13	.03			.282 insgf.			-.236		
14	.08			-.289 (5%)			-.049		
Schl. Achvt. 13									
16	.28**			.059			.155 (5%)		.255**

APPENDIX 7

SECTION A

SIGNIFICANCE OF DIFFERENCES BETWEEN MEANS OF ALL VARIABLES FOR COMPONENT GROUPS OF THE SAMPLE (First Issue)

t ratio for Education Groups in 1st Issue 1st Year

(Using Formula $SD = \frac{(SD_1^2 \times N_1)+(SD_2^2 \times N_2)}{(N_1+N_2-2)}$ $SE_D = SD\left(\frac{N_1+N_2}{N_1 \times N_2}\right)$ $t = \frac{D}{SE_D}$)

1st Issue 1st Year

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
Gr. A with C	.22	.68	.53	1.72	.37	1.03	4.52*	2.88*	1.45	1.15	1.37
D	3.02*	6.06*	3.32*	2.71*	2.33*	1.00	.95	3.47*	3.13*	.16	.39
H	1.91	2.70*	1.94	.34	1.18	3.87*	.73	2.05	.63	4.00*	5.59*
J	1.37	1.14	.29	2.79*	.89	1.38	.77	2.66*	2.44*	3.41*	2.73*
Gr. C with D	1.16	5.09*	2.06*	.56	1.62	.77	1.28	.88	2.30*	3.39*	3.57*
H	1.57	2.92*	1.68	1.88	.35	0.00	.20	.70	.60	2.42*	3.56*
J	.95	.34	.19	.45	.77	0.00	.21	.67	.99	2.09*	1.38
Gr. D with H	2.82*	6.59*	3.54*	3.39*	1.88	.92	.97	1.42	2.61*	.22	.41
J	2.08*	1.76	1.47	.15	4.84*	.89	1.03	0.00	1.27	3.13*	1.86
Gr. H with J	.51	3.61*	2.08*	3.48*	1.92	0.00	0.00	1.12	1.45	1.24	1.67

1st Issue 2nd Year t ratio for Education Groups in 1st Issue 2nd Year

	B1N	B2S	B4D	F2S	A	B	C	D	E	SocA	Soc B
Gr. K with P	.54	.92	.90	1.19	0.00	.02	.09	.84	1.04	1.05	1.51
Q	.76	2.03	2.22*	2.57*	1.42	.40	.65	.42	1.12	1.04	.48
R	.55	.32	9.76*	1.45	1.15	.21	.14	.44	2.10*	.63	.73
Gr. Q with P	1.85	2.04	2.45*	1.18	1.50	1.64	.44	1.32	0.00	.32	1.07
R	1.87	1.68	1.52	1.00	.57	.70	.62	0.00	.99	.37	.24
Gr. P with R	0.00	.19	0.00	.21	1.28	.97	0.00	1.39	.90	.15	.90

t ratio for Education Groups in 1st Issue 3rd Year

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
Gr. V1 w.V2	.68	.49	.59	.05	1.35	1.07	.49	1.65	1.20	1.61	2.08*
Y2	1.43	.83	.43	1.84	1.17	.84	.66	2.06*	2.01	.82	.55
Gr. V2 w.Y2	.60	1.13	.21	1.82	.14	1.80	.43	19.86*	1.43	2.84*	3.36*

t ratio for D.S., P.E., and General Studies Group

All done on 1st Issue 2nd Year

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
DS with PE	1.00	.82	.69	.26	4.00*	1.48	1.04	1.57	2.05	.10	2.36*
General	.73	1.09	.70	.95	3.19*	.62	3.32*	2.30*	3.19*	1.55	.61
PE w.General	.42	.60	1.38	1.29	.25	1.29	1.07	.90	.96	1.39	1.70

t ratio for Men and Women

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
Men w.Women	.99	3.76*	1.58	3.70*	3.30*	.77	2.20*	3.86*	4.11*	2.23*	4.93*

t ratio for Students learning to teach in Secondary, Junior Secondary and Infant Schools

	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc B
Sec. with J.S	.59	.36	1.46	.87	.42	.81	.58	1.43	.79	.22	1.06
Infant	.29	1.28	.86	1.16	.39	0.00	1.52	.70	.22	.09	.95
J.Sec w.Infant	.62	.92	.66	.47	1.22	.65	.75	2.40*	.53	2.92*	0.00

t ratio for Students from Secondary Modern and Grammar Schools

	B1N	B2S	B4D	F2S	A	B	C	D	E		
Sec. Mod. w. Grammar	.44	1.13	.45	.43	.63	.37	1.19	1.40	.35		

High/Low Groups in Personality - 5% level = 2.10

	C.A.	I.Q.	B1N	B2S	B4D	F2S	A	B	C	D	E	Soc A	Soc
B1N	.40	.34	10.09*	5.09*	10.69*	2.05	1.24	.79	1.41	1.51	1.44	1.64	.39
B2S	1.45	1.65	3.06*	37.53*	3.82*	6.81*	.85	2.42*	.62	1.32	.45	2.56	.66
B4D	2.77*	.43	8.13*	4.86*	15.46*	2.21*	.25	1.52	3.02*	.76	1.26	1.46	1.25
F2S	.46	.76	2.16*	6.32*	.62	2.23*	.79	.89	.94	1.57	.23	.39	.48
High/Low in 2 or more variables													
	1.95	2.14*	.03	5.81*	2.49*	6.09*	2.93*	1.91*	2.15*	2.45*	1.89	1.68	2.64*
High/Low on Final College Grades													
		1.10	1.89	1.96	.27	.94	1.09	2.03*	1.13	.34	1.05	1.99	1.12

Significant Differences between Means of Constituent Groups in the Try Out Sample

Between Education Groups

t_c

	Personality					Attitude					Sociometri	
Group A	IQ	B1N	B2S	B4D	F2S	A	B	C	D	E	A	B
with B.	0.69	1.55	0.42	0.19	1.15	0.69	1.75	0.40	1.43	0.45	0.18	1.11
with C.	0.60	0.09	0.96	1.26	0.26	0.25	0.57	0.13	0.71	1.94	0.56	1.40
with D.	1.30	0.55	0.44	0.67	1.57	0.30	2.02*	0.14	0	0.92	0.98	2.70*
with E.	1.06	0.97	1.80	1.32	0	1.13	0	1.25	0.68	0.59	1.20	0.32
with F.	1.57	1.00	2.71*	1.80	1.54	0.77	0.68	0.33	0.44	2.15*	2.78*	3.03*
with G.	0.27	0.66	2.19*	1.67	1.73	0.31	1.03	0.19	1.85	0.29	2.30*	0.36
t_c Group B												
with C.	1.17	1.58	0.45	0.94	1.24	0.87	0.75	0.49	0.73	2.04*	0.63	0.51
with D.	1.89	0.92	0	0.43	0.08	1.00	3.12*	0.26	1.25	1.18	0.64	1.99
with E	1.65	2.42*	1.12	0.98	1.00	0.24	1.33	0.70	0.69	0.93	1.18	0.58
with F.	2.10*	2.49*	1.78	1.44	0.22	1.33	0.91	0.73	1.78	2.14*	2.16*	2.26*
with G.	0.51	2.19*	1.46	1.28	0.14	1.01	0.55	0.32	0.63	0.68	2.03*	1.43
t_c Group C												
with D.	0.56	0.62	0.46	0.23	1.62	0	2.23*	0.26	0.62	1.31	1.35	1.40
with E.	0.37	0.86	0.66	0	0.20	1.29	0.48	1.27	0	1.53	0.57	0.93
with F.	0.86	0.88	1.30	0.58	1.60	0.48	0	0.15	1.11	0.26	2.88*	1.54
with G.	0.87	0.54	1.02	0.32	1.28	0	0.28	0.32	1.25	1.74	1.39	1.66
t_c Group D												
with E.	0.20	1.44	1.16	0.48	1.27	1.61	1.81	1.06	0.60	0.33	1.92	2.18*
with F.	0.37	1.48	1.85	0.97	0.17	0.57	2.41*	0.47	0.39	1.38	1.70	0
with F.	1.66	1.17	1.51	0.77	0.27	0	2.64	0	1.67	0.63	3.00*	2.90*
t_c Group E												
with F.	0.54	0	0.63	0.60	1.31	1.86	0.54	1.80	1.06	1.65	3.40*	2.39*
with G.	1.39	0.35	0.38	0.34	0.98	1.63	0.82	1.49	1.21	0.30	0.73	0.61
t_c Group F												
with G.	1.90	0.36	0.20	0.30	0.40	0.58	0.32	0.69	2.15*	1.90	4.60*	3.23*

* = significant difference

Between Academic and Specialist Practical Subjects Groups

DS with PE	6.5*	1.08	.68	.51	1.7	1.3	0.0	.15	.25	.51	.57	4.3*
DS with Academ.	3.6*	1.86	2.3	1.4	.19	2.3*	1.03	.39	.28	.44	.36	1.3
PE with Academ.	.63	2.66*	2.12*	1.52	1.46	.26	.73	.63	0.0	.44	1.84	1.85

t. c.	Personality					Attitudes				Soc.		
	IQ	B1N	B2S	B4D	F2S	A	B	C	D	E	A	B
English												
with Frch.	.14	1.34	.07	1.37	1.08	.64	2.07*	.14	.68	0	.30	2.39*
with R.K.	.93	.43	.72	0	1.76	0	2.13*	.98	.99	.91	1.34	.32
with Geog.	.29	.23	.48	.24	.53	1.04	2.45*	1.88	1.21	1.28	0	1.03
with Maths.	.44	.36	1.41	.24	2.23*	.71	2.4*	1.61	.52	1.38	2.15*	1.18
with A.& C.	.83	.83	2.15*	.24	.99	0	1.13	0	.94	.92	.08	.47
French												
with R.K.	.91	1.78	.52	1.41	.56	.89	.87	1.05	1.37	.64	.75	.98
with Geog.	.17	1.48	.35	.95	.42	.60	.94	1.77	1.54	1.04	.28	.23
with Maths.	.68	.66	1.11	1.35	1.02	.23	.52	1.55	.14	.97	1.55	1.88
with A.& C.	.93	2.34*	1.88	1.05	.08	1.18	1.25	.13	1.02	.28	.38	3.71*
R.K.												
with Geog.	.79	.23	.15	.25	.95	1.42	0	.87	.35	1.72	1.24	1.00
with Maths.	1.8	.76	.69	.24	.49	.88	.51	.65	1.23	.38	.66	.34
with A.& C.	3.35*	.46	1.35	.25	.63	0	.46	.78	0	.27	0	.53
Geog.												
with Maths.	.92	.55	.79	.40	1.37	.22	.61	.17	1.39	2.02*	1.96	1.58
with A.& C.	.81	.62	1.59	0	.39	1.82	.66	1.7	.18	1.78	.08	.52
Maths												
with A.& C.	1.66	1.23	.79	.44	1.24	.99	1.06	1.47	1.28	0	2.02*	1.08

* = significant differences

APPENDIX 8

COMPARISON OF SIGNIFICANT STATEMENTS OBTAINED BY THURSTONE CHAVE AND BY LIKERT METHODS

Key: St.No. = Statement Number
LSN = Likert Statement Number (i.e. statement significant on Likert Test)
TCV = Thurstone Chave Value (i.e. statement significant on Thurstone Chave Test)

A Scale			B Scale			C Scale			D Scale			E. Scale		
St. No.	LSN	TCV	St. No.	LSN	TCV	St. No.	LSN	TCV	St. No.	LSN	TCV	St. No.	LSN	TCV
			4		1.5	3		1.5	7	7	8.4	5		2.0
11		7.3	23	23	7.7	8		3.6	12	12	9.8	10		8.5
20		5.2				13		8.4	18		6.4	15		9.3
25	25	3.3	71	71	8.6	22		2.0	26		7.2	24		1.7
30		8.5	76	76	5.6	29		3.8	31	31	8.8	34	34	
35		4.4	81		6.4	32	32	7.6	36		7.1	43		8.6
39	39	10.2	94	94	4.1	37	37	8.2	40	40	6.8	48		5.6
44	44	3.4	99		5.4	46	46	8.0	45		7.0	77		3.0
49	49	4.2	114		7.7	56	56	8.3	64	64	7.7	95	95	8.0
54		6.0	119		8.1	70	70	9.4	74		5.2	100	100	6.2
58		1.5	142		8.3	75		5.6	79	79	8.0	105	105	4.2
63		4.9	125	152	7.0	80		5.7	89	89	3.6	110	110	8.1
68	68	9.4	154		7.9	85		8.0	92		7.4	120	120	2.4
73		7.8	165		5.8	90	90	3.8	107		8.7	133		1.8
83	83	6.5	166		5.2	93	93	8.9	122	122	8.3	143	143	1.8
88		5.6	170		8.8	103		4.2	125	125	8.2	148	148	9.3
91		9.1				108	108	5.8	135	135	.8	153	153	9.7
96		4.5	182	182	9.8	113	113	7.0	150		7.8	161	161	8.4
			204		1.4	118	118	4.0	168	168	3.0	171	171	3.1
106		5.7	209	209	8.3	123	123	5.1	180		7.0	175		6.6
111		5.6	225		3.1	126	126	4.6	185	185	2.0	178	178	7.8
116		4.3	245	245	3.2	131		6.1	192		8.9	188		2.8
121		3.8	250		2.0	136	137	.9	197		8.0	195		6.3
124		9.0	255	255	9.7	141	141	1.8	202	202	1.8	199		2.3
129		1.2	261		2.5	146	146	8.8	207		8.3	200	200	3.1
134	134	1.7	280	280	8.0	151	151	8.3	212		8.1	205		4.3
			288	288	7.8	156	156	4.2	219		3.0	215		7.3
			290		8.4	164	164	6.4	223	223	3.1	221		2.3
162	162	2.9				169	169	1.3	228		8.3	224		3.5
167		2.7				173	173	2.2	238	238	1.8	226		3.6
174	174	7.2				176	176	8.6	253		9.7	246		4.8
179	179	3.8				181		4.8	258	258	1.7	251	251	3.0
184	184	4.6				186	186	2.2	259	259	2.4	256		5.6
191	191	9.4				190		4.1	262		1.3	263		5.8
196	196	2.1				193		6.6	266		1.1	304	304	3.8
						198	198	3.6	273	273	.5	305	305	1.7
206		4.1	293	293	1.6	203	203	4.4	274	274	2.1			

A Scale			B Scale			C Scale			D Scale			E Scale		
St. No.	LSN	TCV	St. No.	LSN	TCV	St. No.	LSN	TCV	St. No.	LSN	TCV	St. No.	LSN	TCV
211		1.6				208	208	8.6	278	278	2.1			
216	216	6.1				213	213	3.0	283	283	9.4			
218		2.5				213	217	7.7	286	286	9.8			
227		6.1				220	220	5.4	289	289	2.0			
232	232	2.9				229		7.6	297	297	9.8			
242		3.5				234	234	4.0	299		2.0			
247	247	2.6				239		8.3	301		4.8			
257		2.4				244	244	4.1						
264	264	3.8				249	249	3.0						
						254	254	10.2						
277		8.0				260	260	2.2						
281		8.8				271		8.6						
285	285	9.0				275	275	8.2						
295		9.0				279	279	8.6						
296		4.4				302	302	3.1						

Statements significant by Likert method but not by Thurstone Chave method

1	28	18	2	72
101	177	51	50	87
154	33	60	84	197
157	52	98	59	207
201	57	159	155	210
268	61	224	243	
300	66		265	
	127		269	
	230		287	
	267		292	
	303			