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PARTICIPATION IN VOCATIONAL FURTHER EDUCATION: A STUDY OF FACTORS INFLUENCING ENTRY INTO COMMERCIAL, CONSTRUCTION AND ENGINEERING TRAINING IN INNER LONDON.

PAMELA MARY SAMMONS.

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ABSTRACT

PARTICIPATION IN VOCATIONAL FURTHER EDUCATION: A STUDY OF FACTORS INFLUENCING ENTRY INTO COMMERCIAL, CONSTRUCTION AND ENGINEERING TRAINING IN INNER LONDON.

PAMELA MARY SAMMONS.

The study has focused on student entry into low-level vocational further education/training. The aims were: 1) to identify patterns of participation in three types of vocational training within inner London; 2) to compare the characteristics of students undertaking different courses; and 3) to establish the relative importance of a variety of factors (socio-structural, attitudinal and 'area' influences) in accounting for participation in different kinds of training. A number of hypotheses about the contribution of these potentially influential factors have been tested. Attention has been paid to vocational preferences and job ambitions, due to their close links with training choices. The study adopted an inter-disciplinary approach.

Analyses of the spatial patterns of entry into the three types of training (from maps of students' home addresses) revealed significant differences. These spatial patterns of student over- and under-representation were found to be related to socio-economic characteristics of neighbourhoods, and provided evidence of possible 'area' influences. Socio-structural factors, particularly social class, were strongly related to participation in all three types of training. Other factors (sex, parents'/siblings' employment fields, and vocational subjects studied at school), however, were important in accounting for students' particular choices of course. Job ambitions and attitudes towards employment were also closely related to entry. Marked differences in attitudes and ambitions were identified between male and female students, and there was evidence of sex-stereotyping in perceptions of particular kinds of employment. Attitudes, however, were not associated with area differences in student over- or under-representation.

Explanatory analyses indicated that parents'/siblings' employment fields, and the subjects students had studied at school, were of major importance in accounting for particular training choices. Influences related to residential area were significant only for construction training. These results support the view that socio-structural factors are major determinants of low-level vocational training choices.

ACKNOWLEDGEMENTs

It would not have been possible to undertake this research programme without the cooperation of the many students and the staff of the colleges involved. I offer my thanks for the time they gave and their interest in the study.

In addition, thanks are due to the External Research Section of the Research and Statistics Branch , ILEA, especially to Mrs. E Jay and Dr. C. Mabey for the support provided to this application. I also wish to thank my supervisors - Dr. C. White, Head of Sociology at the City of London Polytechnic and Dr. B. S. Morgan of the Geography Department, King's College - for their support and helpful advice throughout the programme. Thanks are also due to Dr. K. J. Panton of the Geography Department at the City of London Polytechnic.

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Finally, but not least, my husband David has remained consistently cheerful and encouraging throughout the long process of writing-up.

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CHAPTER 1

INTRODUCTION

1. Background

A considerable number of studies in the fields of sociology and education have considered the issues of social mobility and its determinants and, in particular, have focused on the links between educational and occupational achievement. However, at the time the present study was designed, in the late nineteen seventies, the transition made by young people from school into employment was a topic which had received little attention from researchers in these two disciplines. Although the extent of social mobility, and the determinants of occupational achievement, are closely related to the decision about when to leave school and the subsequent educational, training and vocational choices made by young people, the strength of these interrelationships has generally not been explicitly investigated in most studies of social mobility and occupational achievement.(1) Moreover, those studies which have explored the processes affecting young people as they leave school and enter the world of work have concentrated, almost exclusively, upon the experiences of male school leavers (see, for example, Douglas, 1968; Swift, 1973; Brannen, 1975; or Weir and Nolan, 1978).

A number of developments during the mid-seventies, however, combined to focus greater attention upon the transition to work. These included the the experience of 'skill shortages' in certain industries and, in 1974, the establishment of the Manpower Services Commission. In addition, after the raising of the school-leaving age to 16, in 1973, there was growing concern about the quality of the vocational preparation received by less academic pupils at school, and about the relevance of the secondary school curricula to pupils' needs. Perhaps most importantly, during the mid-seventies a gradual realisation that youth unemployment rates were rising rapidly, and would continue to rise into the nineteen eighties, was accompanied by increasing government intervention in industrial training. Thus, in 1975 the Training Services Agency identified young entrants into work as a priority group of special national importance and, in 1977, the Manpower Services Commission put forward proposals for the establishment of the Youth Opportunities Programme.(2)

Since the commencement of this study other developments have taken place. For example, during the period covered by the study, the EEC launched an European Community Action Programme to assist in the evaluation and development of national policies concerned with facilitating the transition from school to adult life. Within the United Kingdom a number of projects were instituted which provided bridging courses for selected school pupils (see Little and Varlaam, 1983). In addition, the institution of Youth Training Schemes (YTS) to provide training and work experience for unemployed school leavers, has had a marked impact upon the structure of opportunities available to young people in the 16 to 19 age group. (The introduction of YTS was in large part due to the very high levels of youth unemployment in evidence since 1980.)

These various developments have begun to draw both government and academic attention to the educational, vocational training and employment opportunities available to young people who do not continue in full-time education after the age of sixteen.

Historically, in the United Kingdom, the further education and training requirements of young people (with the exception of those of high academic ability) were, and to a lesser extent continue to be, neglected areas. Such provision as exists is made through a variety of agencies, including some employers, schools, sixth-form colleges, Local Authority maintained further education colleges and adult education institutes. This pattern of provision is complex (see Locke and Bloomfield, 1982) and largely uncoordinated, as the comments made in the Macfarlane Report in 1980 and, more recently, by Packwood and Whitaker (1985) indicate. There is still no nationally agreed and administered system of post-school provision designed to meet the needs of those in the 16 to 19 age range.

This situation continues despite the commitment, made in the 1944 Education Act, to institute compulsory attendance at college for the equivalent of one day a week for all school leavers not in full-time education. The intention of the Act was to provide such youngsters with a system of appropriate further education, including physical, practical and vocational training. This commitment, however, has never been realised, because the relevant legislation was not enforced. Similarly, the 1956 Crowther Report also recommended that part-time further education to the age of 18 years should be provided for all, but these recommendations, like that of the 1944 Education Act, were not implemented. Rather, priority was given to the expansion of higher education (following the publication of the Robbins Report in 1963) and, in the Henniker-Heaton Report (1964), the principle of compulsory day-release was rejected. This report proposed instead that such a system of day-release should, as soon as national resources permitted, be granted to all persons under 18, subject to the availability of courses appropriate to all individuals and employers.

The 1964 Industrial Training Act recognised that the industrial training of young people between the ages of 16 and 19 should not be left to the voluntary arrangements of employers. Following this Act, a set of industrial training boards (ITBs) was instituted. These boards required firms to pay a levy towards the training of young people in their own industry, and gave allowances to those firms which did provide training for their employees. However, although this system improved the educational and training opportunities of young people who obtained craft level apprenticeships in particular industries, it did nothing for the majority of school leavers and, given the sorts of industries involved, in the main tended to benefit young male entrants into skilled manual occupations.

The post-school education and training of young people within the United Kingdom was, therefore, patchy and fragmented. It was provided by a variety of institutions, and received variable degrees of financial support during the period in which this study was designed and carried out. Some young people received full-time education (whether at school or college), while others received training, usually on a part-time day basis. The majority, however, received neither education nor training after leaving school. Moreover, it appeared that the opportunities which were available were not distributed equally throughout society. Figures collected as part of the General Household Survey (1978) provided considerable evidence that social class background was associated with the take up of further and higher education on a full-time basis, and many research studies have demonstrated a close link between social class and both staying on rates at school and entry into higher education (see, for example, the reviews of such work by Rutter and Madge, 1976; Marjoribanks, 1979).

The provision made within the United Kingdom for the education and training of the majority of the 16 to 19 age group (with the exception of the academically able who entered higher education), compares unfavourably with that available in most other western European countries, particularly with Denmark, France, Sweden and West Germany. For example, in 1977, between 40 and 50 per cent of youngsters who had reached the minimum school leaving age, entered jobs which provided little or no systematic training, other than that acquired 'on the job'. The equivalent figure in France was 19 per cent, while in West Germany it was only six per cent.(3)

Overall, of those who entered employment at age 16, only just over a quarter received any vocational further education. These opportunities were very unequally distributed between the sexes, with nearly 40 per cent of males, but only 14 per cent of girls in employment receiving sponsored vocational further education as part of their job.(4)

2. The Focus of the Study

As noted previously, when the present investigation was planned, relatively little attention had been paid to the study of the experiences of young people during the transition from school to work, and to the determinants of participation in further, rather than higher, education. In terms of the investment of national resources, the extent of government policy and provision, and also with respect to the amount of academic investigation, low-level vocational further education/training could be considered the 'Cinderella' of the educational and careers field.(5)

Prior to the commencement of this study, the only aspect of such vocational education and training provision which had aroused much research interest was the impact made by receipt of part-time vocational further education upon the extent of later occupational mobility. Here, however, the focus lay not on the factors which affected participation in such training. Rather, studies of this type concentrated upon the exploration of whether part-time further education provided an 'alternative route' for social mobility (see, for example work by Lee and Hordley, 1966; Raffe, 1979; 1983; Blackburn et al, 1980; Stewart et al, 1980). Such studies also dealt exclusively with the occupational mobility and vocational further education of young men, and the way this was related to the father's occupational status.

It was, therefore, determined that the present investigation would focus upon the relatively unexplored field of low-level vocational further education. Both male and female school leavers would be included, so that comparisons could be made between their experiences.

The present study, therefore, breaks new ground by concentrating on the determinants of participation in specific types of vocational training, and by including both sexes' choices within its remit.

Its particular concern is to provide a detailed analysis by social and educational background of the young people who entered certain types of low-level training in 1979. In addition, the study attempts to identify the factors which influenced students' participation in these low-level vocational courses. In focusing upon entry into particular kinds of vocational training it is necessary also to consider occupational choices, because the two are intimately linked. These links are especially strong for sponsored students, whose entry into training is dependent upon obtaining a job which provides specific training opportunities.

It is recognised that 'choice' is a problematic concept, and it is treated as such in this study.(6) It is acknowledged that circumstances often beyond the individual school leaver's control, such as the occupational structure, labour-market forces, training provision, ability, educational achievements at school, family influences (and, for sponsored students, employers' methods of selection), operate to curtail, or widen, the effective range within which 'choices' can be exercised. One of the major purposes of this study was to investigate the ways in which these factors interrelate and operate in determining the level of vocational training entered by students, and the ultimate choice of particular kinds of employment and associated training opportunities. It is hoped by this method to establish the extent to which vocational training 'choices' can be explained, and thus to contribute a more complete understanding of patterns of vocational training entry.

The courses included in this study related to three major types of employment - commercial, construction and engineering. These areas were chosen because the construction and engineering industries have traditionally provided sponsored craft level training for very considerable numbers of young entrants (nearly all males) at colleges of further education, through study for particular City and Guilds qualifications. As noted earlier, there is evidence that a much smaller proportion of girls receive sponsored vocational training, but a substantial minority enter full-time courses at further education colleges. In particular, female school leavers frequently take commercial courses of a clerical/secretarial nature before they enter commercial work (see Rauta and Hunt, 1975). The commercial field was, therefore, included in the study so that consideration could be given to females' vocational training choices of a similar level to those of male school leavers.(7)

3. The Inter-disciplinary Approach

An inter-disciplinary approach was adopted for the investigation of participation in low-level vocational training, because this topic clearly spans several fields and, in identifying the factors most likely to have had an impact, it was necessary to draw upon a variety of evidence and to employ a number of different perspectives. Literature and research methods from the fields of education, geography, psychology and sociology have proved relevant to the purposes of the present study.

Using this inter-disciplinary approach, it has been possible to examine in detail three broad groups of factors which reviews of previous research had indicated were probable variables in any study of the determinants of vocational training and occupational choices. These broad groups cover socio-structural, attitudinal and 'area' or 'neighbourhood' influences.(8)

Having identified the three fields of potential importance, it was necessary to examine the interrelationships amongst factors relevant to each field, and to establish their impact on students' training choices. A method of analysis was required which would allow the measurement and control of different types of influences, so that their relative importance could be ascertained. Quantitative techniques, therefore, were considered to provide the most appropriate methodology for the present investigation.

4. The Contribution of the Study

It has already been demonstrated that, in many ways, the field of low-level vocational further education/training was a neglected area when the present study was instituted. Yet, for the majority of the 16 to 19 age group, this aspect of educational provision is of vital importance. Throughout the last 15 years there has been a steady and well documented decline in the availability of semi- and unskilled jobs throughout the United Kingdom (see Holland, 1979). This decline has proved particularly serious in inner city areas, where unskilled workers tend to form a higher proportion of the workforce than is the case in other areas (see GLC Policy and Resources Committee Paper, 1980).

In general, occupations in decline are those which demand least training and occupations which are expanding tend to be those which require more training. Increasingly it seems that employers require young entrants to possess general skills of practical problem solving, numeracy and communication. However, the majority of employers are apparently not prepared to provide much in the way of training, and do not see training as of importance to their company (see Jackson, 1985). Such training as is given tends to be highly specific on-the-job training which does not promote flexibility and transferability of skills

Work by the Manpower Services Commission, however, has demonstrated that school leavers put the chance to acquire vocational skills top on their list, when asked what kinds of help they needed most. As Holland (1979) noted *"The mismatch is between provision for the majority of the age group and the expected demands of late twentieth century industrial or post-industrial society"* (p.150). This conclusion has been supported by the recent report on vocational training produced by Coopers and Lybrand (see, Jackson, 1985).

A detailed investigation of student participation in three major fields for which low-level vocational further education/training has traditionally been required, is likely to prove of some value to policy makers, educationalists, and careers advisors alike. If the factors which help to influence access to the types of training included in this study can be determined, it may also be possible to identify, prior to their leaving school, those youngsters who are likely to be 'at risk' of not receiving any vocational further education (see Lavercombe and Fleming, 1981). It is hoped that the results of the present study will indicate the ways in which different factors (socio-structural, attitudinal, and 'area' influences) affect school leavers' chances of entering certain kinds of vocational further education/training.

Moreover, by examining the determinants of participation in particular kinds of vocational training, it may prove possible to suggest ways in which the present structure of opportunities could be made more accessible to those school leavers most 'at risk' of unemployment during the transition process. If, as has been noted in the context of entry into higher education, specific groups of school leavers are found to be the major beneficiaries of particular types of vocational training opportunities, the study will provide evidence of the need to institute specific policies to promote equal opportunities in this, as in other areas of education.

NOTES

Chapter 1

(1) See, for example, Douglas et al, 1968; Weir and Nolan, 1978; Goldthorpe et al, 1980; Stewart et al, 1980; Ryrie, 1983.

(2) See: Five Year Plan, Training Services Agency, London: Department of Employment, 1975; Young People and Work , London: Manpower Services Commission, May 1977.

(3) Source: 16 - 19: Learning for Life
The Labour Party, London: Macdermott & Chant, 1982.

(4) Source: 16 - 19 Education and training for 16 - 18 year olds
Secretaries of State for Education and Science, for Employment and for Wales, London: DES, 1979.

(5) Marked changes in the sorts of post-school training opportunities available to school leavers have occurred since 1979. This was due to sharp increases in youth unemployment, and the institution of special schemes such as Unified Vocational Preparation, Youth Opportunities Projects (YOPs) and most recently by the Youth Training Scheme (YTS).

(6) The terms 'job choice' and 'training choice' are used in this study to cover the process of entering a particular job or course, rather than in the sense of implying actual job or vocational training preferences. Such preferences have, however, also been explored by means of questions about students' job ambitions on leaving school. In addition, students' ratings of particular jobs in terms of a construct ('jobs I'd like v jobs I wouldn't like') also provided information about preferences. (The term 'construct' is defined in Chapter 2 in the context of a discussion of the methodology of the repertory grid technique.) In this way it has been possible to investigate the links between preferences and job and training choices.

(7) Further details of the basis for the choice of courses and colleges are provided in Chapter 2.

(8) 'Area' influences are those which are related to the characteristics of the home area in which young people lived. Briefly, it has been argued that the socio-econonmic characteristics of the neighbourhood (or residential environment) may have an impact upon educational and occupational outcomes. A full discussion of literature relating to the operation of potential 'area' influences is provided in Chapter 4.

CHAPTER 2

THE COLLECTION AND CHARACTERISTICS OF DATA USED IN THE STUDY

1. The Selection of Colleges and Courses

(i) Choice of area

The first step in designing this study of participation in low-level vocational further education was to select a suitable area in which to conduct the investigation. Clearly, participation in vocational training will be affected by the provision of suitable courses, and such provision varies between local education authorities (LEAs). It was decided to concentrate the study upon only one LEA area because of differences in the availability of vocational courses. The LEA chosen was the Inner London Education Authority.

The Inner London Education Authority (ILEA) area was selected for a variety of reasons. Previous research has shown that the inner London boroughs display distinctive educational and socio-economic characteristics, and bear a closer resemblance to each other than do boroughs of the suburban fringe (see Shepherd, Westaway & Lee, 1974). At the time of the study, the inner London area was experiencing relatively lower rates of youth unemployment in comparison with many other areas, and offered a fairly wide range of job opportunities to school leavers with average qualifications.(1)

The inner London boroughs are also comparable because they relate to a single governing body. The ILEA, in contrast to some other LEAs, provides relatively generous finance for vocational further education. Finally, and most importantly, the inner London area contains a very large number of institutions providing a wide variety of further education opportunities. This allowed the selection of a number of similar establishments offering various combinations of low-level vocational courses. In addition, the co-operation of the administering ILEA was crucial in obtaining access to colleges offering low-level vocational courses. Without such cooperation it would not have been possible to undertake this investigation.

These inner city educational institutions did not serve local inhabitants alone. Sizeable numbers of people living in Greater London, in addition to many overseas students (who probably chose to study in London because it is the capital and most widely known British city), attended institutions located in the inner London area.(2) Two ILEA publications, which were designed to inform potential students about further and adult education opportunities within the Authority - 'Floodlight' and 'The Further and Higher Education Handbook' - indicated the wide variety of local authority controlled institutions which provided courses during the period covered by the study. At the start of this investigation (in 1978) these publications listed five polytechnics, three university colleges, 26 colleges of further education, five literary establishments, four theatre and drama/art centres, 77 youth centres and five community education centres.

In addition to ILEA funded institutions, a large number of privately-run colleges and educational bodies offered particular types of further education (chiefly commercial, language and secretarial training) within the inner London area. For example, twenty private secretarial colleges were listed in the Central London Yellow Pages alone in 1978.

(ii) Choice of educational institutions

For the purposes of this study it was necessary to select particular institutions and courses from the plethora of further education opportunities available within the ILEA area. This was required in order to give a basis for comparability, and to keep the project to proportions manageable for an individual researcher. Private institutions were eliminated from the study, for a number of reasons. Without the cooperation of a single governing body, such as the ILEA, it would have been very time-consuming to obtain access to such establishments, because each one would have required an individual approach. Moreover, permission to collect confidential information about private students might not have been given by all such institutions. Most importantly, the cost of attending private courses would inevitably have discouraged many potential inner city school leavers from considering these courses and even more would have found the cost prohibitive.(3) (It seems likely that a high proportion of students attending private colleges in inner London would be young adults with savings to finance their studies.) In addition, such establishments attracted large numbers of overseas students whose educational experience would not have been comparable with that of students who had been educated in British schools.

Polytechnics and university colleges (which tended to offer high level studies) were also excluded from the present survey because the focus of interest lay in participation in low-level vocational training.

(iii) Choice of courses

These restrictions, however, still left a number of institutions offering a wide range of courses available in various modes (full time; part-time day; block-release; evenings-only) for consideration. Non-vocational courses, and those run on an evenings-only basis, were eliminated. The former step was necessary in order to preserve the vocational basis of the study, and the latter reflected the researcher's interest in the opportunities available to school leavers. The inclusion of evening courses would have added large numbers of young adults and mature students to the study. (Recent work by Hunter (1985) has shown that 73 per cent of students attending evening courses in 1982/83 - the first year for which figures were available - were over 19 years of age.) In addition, although some 'evenings-only' students would have had a vocational motive for their studies, many would have been interested in their chosen subject as a hobby alone.

A wide variety of low-level vocational courses remained, ranging from Art and Asphalting to Wigmaking and Woodcutting. In order to obtain a basis for comparability, very specialised courses, and institutions offering only specialised courses (which would, therefore, be expected to draw students from a very wide geographical area), were excluded from further consideration. These specialist institutions included the College for the Distributive Trades, the London College of Fashion, the London College of Furniture, the London College of Printing and the Merchant Navy College.

It was decided to focus the study on participation in specific types of low-level training provided for entrants with minimal to average qualifications (those who had obtained CSE grades of 3 in the main), and run on a part-time day, full-time day or block-release basis. In order to increase the general applicability of the study, courses were selected which were available on a national basis. The courses were, therefore, chosen from three of the most important fields (commercial, construction and engineering) for which low-level vocational training was organised on a national basis and widely available. The construction and engineering industries had arranged training for young, less academic entrants through Industrial Training Boards around City and Guilds craft level examinations. The courses selected for this study included the City and Guilds engineering courses number 200, 224, 236 and 380, and the equivalent level construction courses number 585, 588, 590, 594 and 596. These covered, for construction, craft level training in brickwork, carpentry and joinery, painting and decorating, plastering and plumbing; and, for engineering, basic engineering craft processes and mechanical craft processes, motor vehicle mechanics, electrical installation, and electronics' servicing.

Low-level commercial courses were included in the survey to cover one of the major areas of further education entered by female school leavers with average levels of qualifications. The courses included those under the jurisdiction of the Business Education Council (BEC), for which BEC national and general certificates were taken, and basic clerical, typing and low-level secretarial courses for which Royal Society of Arts (RSA) examinations were taken.

(iv) <u>The final choice</u>

Only those further education colleges within the ILEA area which offered a number of the chosen range of courses were approached. Of seven colleges shortlisted, five (Hackney, Paddington, South East London, Vauxhall and Woolwich) agreed to cooperate in the research. These five colleges provided a reasonably wide geographical coverage of the ILEA area.(4)

Three of the five colleges offered the construction courses included in the survey. Four provided the engineering and all offered the selected low-level commercial and secretarial courses investigated in this study. Although the chosen courses included a larger number traditionally entered by males (only just over a third of the first year students involved in the survey in 1978 and 1979 were female) this is fairly representative of the uptake of vocational further education by the two sexes. Figures abstracted from a contemporary DES report on Non-Advanced Further Education (1978) indicated that females were much less likely than males to have entered non-advanced further education of a vocational nature. This was mainly due to female under-representation on part-time day courses. Only around seven per cent of women between the ages of 16 and 18 (who were not unemployed or in full-time education) received day or block-release training from work in 1976/77. The equivalent figure for their male counterparts was nearly 29 per cent.

2. Spatial Analysis of Student Intake to Selected Institutions and Courses

Given the intention, firstly, to establish patterns of participation in vocational further education and, secondly, to analyse the determinants of vocational training choices and the resulting spatial patterns of participation, it was decided to concentrate the investigation upon first year student intakes to the selected courses. The vast majority of first year students had just left school and entered vocational courses. The problems of recalling information about their vocational choices would be less marked for this group, because they would have had only a short period of time (around two months) in which rationalisation of their choices could have occurred. Second or third year students, in contrast, might well have had greater difficulty in recalling information about entering their selected courses.

The first step in obtaining an accurate picture of the spatial distribution of the three student groups involved collecting the home addresses of all first year students entering the selected commercial, construction and engineering courses. Data were obtained for two successive years (1978 and 1979) so that the issue of the stability of the spatial patterns could be examined (see Chapter 5).

Collecting the addresses proved to be a laborious and time consuming process because it was necessary to obtain copies of the relevant registers for each course and then to examine individual records of home addresses held by each college. Problems were encountered in obtaining information for students whose names appeared on the class lists but for whom no registration forms were held. In most cases these students had dropped out of their courses before registration was completed. The number of students for whom registration forms were unavailable was very low (only 41 students, 1.9% of the 2146 first years attending the selected courses in 1978). Therefore, these unrecorded students were excluded from the remainder of the study.

It is possible that a small number of students moved away from their parents' home between the date they left school and the date they started college. Although it was not possible to quantify all such moves, it seemed likely that only a tiny percentage of the group would have been financially able to afford to rent accommodation in inner London when they first left school. According to the college records, fewer than three per cent of the 1978 first year intakes were living

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It was important to establish whether most students were still living at home because it was necessary to useinformation about students' addresses to obtain a record of the home areas which produced vocational students. From college records it appeared that most students stil lived with their parents. It seems likely, therefore, that the use of current address would provide a good indication of home area for the vast majority of students.

3. Students' Home Areas: Social-Structural Analysis

(i) Choice of spatial units

An examination of the socio-economic structure of students' home areas was conducted, in order to establish a framework for the investigation of possible relationships between area characteristics and participation in vocational training. Information about a variety of social and economic indicators was required for this task and the source used was the 1971 Census (the most recent data available for the same spatial units, due to cancellation of the 1976 sample census). Since the commencement of the study, information from the 1981 Census has become available. Nonetheless, it was likely that information relating to home areas obtained when the students were younger (aged between nine and eleven) would be more useful than that away from their parental home, a reflection of the age and low income of the group concerned.

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The 1971 Census data are available at a number of spatial scales in urban areas - viz: the borough, the ward and the enumeration district (ED). The small size of the latter (populations within a range of 700 to 1000) meant that such units would be unlikely to contain many youngsters in the 16 to 19 age group and, although more than four thousand students were included in the survey, it was unlikely that many EDs would have contained more than two or three survey students. (Using the ED as a basis for the analysis of student distributions would have posed analytical problems because of the small number of students likely to have been living in the majority of EDs.)

In contrast, the twelve inner London boroughs comprising the ILEA area contained populations, which in 1971 ranged from around 165 to over 307 thousand, living in a wide variety of different social, economic and environmental conditions. In the borough of Greenwich, for example, there were marked contrasts between inner city dockland neighbourhoods around Woolwich and wealthy suburban areas such as Eltham on the outskirts. Similarly, in Lambeth, there were significant differences in conditions between districts in the Brixton area and those around Dulwich, for example. Borough units were thus considered to be too large, hetergeneous and complex for the purposes of the study, because they would not enable comparisons of student distributions at a sufficiently fine spatial scale.

The ward is a spatial unit between the borough and the enumeration district. Each borough comprised, on average, twenty wards, and each ward consisted of around twenty enumeration districts. In 1971, ward populations varied between eight and fifteen thousand. Given the total number of wards and of students, each might be expected to contain around seven students in one year (around fourteen if the 1978 and 1979 intakes were considered in combination). In each of those years, however, student numbers varied from nil in some wards, to 26 in others. This suggested that, at the ward level, it would be possible to identify differences in student distributions. The spatial net of ward boundaries was, therefore, selected as the basis on which to map students' home addresses for the subsequent analysis of relationships between student patterns and the socio-economic characteristics of home areas.(6)

(ii) Mapping procedures

It was possible to locate the majority of the 2105 first year students for whom addresses were obtained in 1978 in their appropriate wards, using a street map of London and a map of 1971 ward boundaries. A number of students, however, lived in roads which were split between two or more wards because of the configuration of boundaries in the locality. Using Kelly's Post Office Directory, and the electoral registers for 1971, and with reference to house numbers, it was usually possible to successfully map the locations of most of these students' addresses. Only a small number of addresses, 74 in toto - representing 3.5 per cent of the 1978 intake - could not be traced or assigned to a ward because the student lived in a housing development constructed since the 1971 ward boundaries were drawn. A similar percentage of addresses (4.4%) for the 1979 intake could not be located.

It was decided to concentrate analysis on student patterns within inner London, because colleges which offered similar combinations of vocational courses outside the ILEA's jurisdiction were not included in the study. Also, because the majority of students (around 70 per cent in 1978 and 1979) were located within the inner city, it was decided to concentrate analysis on student patterns within inner London. When the map of student distributions was examined it was apparent that wards in the boroughs of Kensington and Chelsea, and Hammersmith, contained very few students included in this survey. Only 45 students (2.1% of the total in 1978) were located within these two boroughs in 1978 and a similar number in 1979. Because of the low numbers and the likelihood that students living in these boroughs were undertaking vocational courses at Hammersmith or South Thames colleges (the two institutions which refused to participate in the study), it was decided to exclude wards in these two boroughs from the analysis of the characteristics of home areas. A total of 209 wards in the remaining ten boroughs remained for inclusion in further analyses of spatial patterns of student participation in the selected courses.(7)

4. Student Characteristics: the Questionnaire Survey

In order to obtain a picture of the type of school leavers who opted into the three types of vocational training, and to investigate the many factors which may have influenced or affected their decisions, it was necessary to obtain information about individual students.(8) A review of relevant educational, sociological and psychological research literature suggested that a variety of factors - socio-economic, cultural, attitudinal and labour-market opportunities - might play a part in determining participation in vocational training.(9)

A questionnaire survey was therefore undertaken to collect relevant information regarding each student's sex, educational qualifications, parental occupations and elder siblings' occupations. In addition, questions were asked about the students' employment ambitions and expectations for the future.

(i) Design of the pilot questionnaire

The many possible sources of error which may be encountered through the use of questionnaire techniques in social science research may be reduced by testing the proposed questionnaire via a pilot survey.(10)

In order to minimise any problems which school leavers (with only average to below average educational qualifications undertaking the selected vocational courses might have in completing the questionnaire) a simple format was chosen. This employed closed questions (which required ticks in the appropriate answer boxes) wherever possible, and the number of questions requiring a written answer was kept to a minimum. The phraseology of the questions and words used were short and simple (see Appendix 2.1).

Problems of response bias seemed likely to be a less important source of error in a questionnaire designed primarily to obtain factual information rather than in one designed to elicit attitudes or opinions. Students were told that the purpose of the investigation was to obtain information about school leavers and vocational training opportunities, and it was emphasised that the results would remain confidential. It was felt that problems of recall would be more important than those of response bias at the time of the pilot (the pilot was administered seven months after students enrolled at college). In the main survey, which took place two to three months after students entered college, recall problems were likely to have been infrequent.

The easiest and least controversial questions were presented at the beginning of the form to ensure a high response rate. (There is evidence that respondents are more likely to answer sensitive questions if these are presented at the end of a questionnaire).(11)

A number of factors greatly curtailed the times at which it was possible to either interview or administer questionnaires to students).(12) Given these problems, it was considered feasible to conduct only one pilot exercise at one of the five colleges, Vauxhall. This was conducted with a sample of the 1978 student intake, prior to administering the main survey in the autumn of 1979 to that year's student intake.

The pilot questionnaires were administered in April 1979 to 116 first year students attending Vauxhall College and undertaking courses on a full-time, part-time day and block-release basis. Vauxhall College was selected because of its willingness to allow a pilot to be administered during teaching time. The courses included in the pilot covered traditionally female and male oriented vocational studies and both sponsored and non-sponsored students were involved.

The researcher administered the questionnaires to ensure that interviewer bias would be kept to a minimum and be consistent across the sample. This also ensured that respondents would receive a standard interpretation of any questions they queried. The vast majority of students had no objections to filling in the form. All questions had over a 95 per cent response rate. When the purpose of including questions on parental occupation and name was explained, most students were willing to provide this information (only five of the 116 students - 4.3% - failed to reply to one or other of these two questions).

Discussions were held with each group of students involved in the pilot study after they had completed the questionnaire. This enabled a record to be made of questions students had found ambiguous, irrelevant or difficult to understand. It also gave the researcher the opportunity to establish whether any factors which students felt were important had been omitted. Following the pilot survey a number of minor amendments to the questionnaire were made, to facilitate administration and clarify questions which had caused a number of queries (see Appendix 2.1.b).

(ii) The main questionnaire survey

The amended version of the questionnaire (see Appendix 2.2) was administered to the 1979 student intake as early as possible in the autumn term. Given the number of departments at the five colleges, the time taken to arrange visits, the number of students involved (2173 in 1979), and the availability of only one researcher to administer the questionnaires, it was impossible to conduct the survey with all students in a one or two week period (the ideal solution). The survey, in fact, took two months to complete. The use of a single administrator did, however, have the advantage of ensuring standard conditions and procedures for all students. The time lag involved in the survey was not thought likely to have had a great effect on respondents' reactions to the questions, because the instrument included mainly simple factual items. Thus, responses of students in different colleges should have been comparable even through obtained at slightly different dates.

Sampling problems were largely avoided because all first years undertaking the selected courses at the five colleges were included in the questionnaire survey.(13) The names of individual students who were absent on the day the survey took place, and the names of a few block-release students out of college during the survey period were recorded and their addresses obtained from registration forms. In all, a total of 1884 questionnaires were completed, giving coverage of 86.8 per cent of the intake. The mapping procedure used to identify home areas for the 1978 intake was also adopted for the identification of home areas for the 1979 intake to enable comparisons of the two distributions. The locations of only a small minority (95) of the 2173 first year students undertaking courses in 1979 could not be mapped on a ward basis, either because their address was not traceable or they failed to complete their address on the questionnaire. This represented 4.4 per cent of the total intake. The 194 (8.9%) students who were absent or out of college during the questionnaire survey were included in the mapping process. This ensured comparability with maps of the 1978 intake and enabled analysis of the stability of student patterns.

Although it has been suggested that, amongst school pupils, the characteristics of absent students may be different from those of non-absentees (see results reported by Fogelman, 1978, conducted as part of the National Child Development Study), this is most likely to be the case for persistent absentees. Only if a non-random pattern was apparent in the spatial distribution of the 194 missing students would their absence from the questionnaire survey be likely to have a significant impact upon the interpretation of the results of spatial analyses of student distributions. In fact these missing students appeared to be randomly distributed throughout the college catchments and were not concentrated in particular areas. Unfortunately, it was not posible to establish whether absent students were different (in terms of educational qualifications or social class backgrounds) from those who completed the questionnaires. However, the small proportion of absentees (less than 1 in 12) is unlikely to distort the results of analyses of the characteristics of the student groups.

Response rate

The response rate for individual items on the main questionnaire survey was very high. Fewer than 7.5 per cent of students failed give any reply to questions about their father's occupation and 8.9 per cent to questions about elder siblings' occupations (the most sensitive items in the survey). Full details of the response rate for each question have been given in Appendix 2.3. Overall, out of 49 variables derived from the questionnaire survey, the majority (more than two thirds) had a response rate in excess of 95 per cent, and 29 per cent a response rate of 98 per cent or more (the total number of students in the survey was 1884). This high response rate was, in part, a function of the administration of the form by the researcher, but was primarily due to the cooperation of the colleges involved. Groups of students were available in classrooms for periods of 30 to 45 minutes and this undoubtedly ensured students were more likely to fill in the form than if they were expected to complete it in their own time or if a postal version had been employed.

5. Students' Attitudes Towards Employment: The Repertory Grid Survey

It was hypothesised that school leavers' attitudes towards employment would be one factor influencing their decisions to enter particular types of job and vocational training. (A discussion of the relevant literature which led to the decision to investigate the impact of attitudes upon vocational choices is provided in Chapter 8.)

In order to establish whether students undertaking different types of vocational courses possessed different attitudes towards employment, and to investigate spatial variations in such attitudes (to examine the way these might link with possible 'area' effects as discussed in Chapter 4), it was necessary to collect information from individual students. A suitable method of measuring students' attitudes towards employment was required which would not make excessive demands upon respondents' writing abilities. (A minority of students had difficulty in completing written material of more than a few lines unless provided with assistance and around 20 per cent had obtained no qualifications while at school, hence it was important to ensure that the attitude measure was easy to complete.)

(i) Repertory grid techniques

Unlike other methods of attitude measurement, the repertory grid technique was developed within a particular philosophical and theoretical framework - Personal Construct Theory (see Kelly, 1955). Kelly viewed man as an active, thinking being, a 'scientist' who looked upon the world through patterns he himself created and into which he attempted to fit reality. The repertory grid technique was originally designed to measure personality in terms of constructs (ways in which a person classified things as similar or dissimilar) produced by individuals themselves in response to given stimuli. However, it has been expanded to a form comparable to a two dimensional semantic differential scale (Bannister and Mair, 1968). The latter method uses adjective scales (for example polar opposites of "sweet" and "sour") and searches for universal dimensions such as "evaluation", "potency" and "activity" (see Osgood, Suci and Tannenbaum, 1957). Within the Kelly system, however, it was not expected that there would be universal constructs - rather constructs were expected to be used by individuals to bring order into their personal view of the world and would be applicable only for the evaluation of the particular sets of objects or fields of interest for which they were developed.

The repertory grid method is not a single test but a highly flexible technique which can be adapted to meet the particular needs of a specific investigation (Duckworth and Entwistle, 1974). As these authors noted, in a study of pupils' attitudes towards school, the *"advantage offered by this approach is the comparison of attitudes ..... in a neat format, which can be completed simply and quickly by school pupils"* (p.76).

In addition, unlike many traditional scaling methods of attitude measurement, the repertory grid technique allows investigation of the perceptions of groups as well as of individuals. It has been successfully employed in a number of studies covering a wide variety of fields. For example, the method was employed by Chetwynd (1978) to examine sex differences in stereotyping the roles of wife and mother; Hudson (1974) used the techniques in his analyses of images of the retailing environment, and Edmonds (1979) applied personal construct theory and grid techniques in occupational guidance. Townsend (1976) utilized the method in a study of the perceived worlds of colonists of tropical rain forests, and Warren (1966) employed the techniques to study the cognitive structures of middle-class and working-class male students in school and college.

(ii) <u>The pilot repertory grid survey</u>

The repertory grid technique is a sorting task which requires little writing so it was considered to be suitable for use with the students involved in this study. The individual form of the repertory grid technique does not present the respondent with attitude statements with which he or she must agree but rather elicits ways in which the respondent classifies the field under investigation. This procedure has the advantage that the possibility of introducing the investigator's own ideas or bias into the study is reduced. In the context of this study it seemed an advantage to use a method which did not constrain the respondent's replies. In this way the results should represent more accurately his or her way of construing employment (the field under investigation) and would, therefore, be of greater relevance to a study of participation in vocational training.

The assumption that it is possible to infer the way a person "sees" the world (or a certain aspect of it) from patterns of associations between constructs and elements underlies the use of personal construct theory. Each construct represents the ways in which a set of elements (which are objects, things or ideas chosen to represent the field under investigation) are seen to be similar or dissimilar.

The "triad sort" method was developed by Kelly (1955) and has most commonly been employed in studies which have used repertory grid methods to elicit constructs relevant to the field of interest. In this study, for the purposes of the pilot study, individual repertory grid methods were adopted. Students involved in the pilot were presented with three elements (randomly chosen from the set used to represent the field of employment), and asked to name a way in which any two of the elements were alike and the third different. For example, presented with three job titles a respondent might say two were well paid and one poorly paid. A very clear exposition of the technique has been given by Bannister and Mair (1968).

In the pilot study photographs were used to represent the field of interest - employment. Photographs were considered to be easier to sort than written labels and being more immediate than the written word, it was thought their use might make the process of eliciting constructs easier. The disadvantage of using pictures was the possibility that the scenes depicted in picture form might influence the student's replies more than a written label, and to minimise this problem the photographs chosen for inclusion in the pilot were all of a similar size and taken in black and white. (The job titles covered by the photographs are given in Appendix 2.4.)

Consideration of students' patience and concentration, as well as the time made available by colleges, constrained the size of the grids developed. In selecting photographs to be used as elements in the employment grid it was necessary to choose a small number of jobs from the very wide range available. A group of 27 male students (half of whom were undertaking construction and half engineering courses) and 21 female students (all of whom were taking commercial courses) was asked to fill in a sheet listing the first ten jobs they could think of in a five minute period (see Appendix 2.5). There were some marked differences between the two sexes in the most frequently named jobs as can be seen from figures in Table 2.1.

Nineteen photographs were then selected in an attempt to cover a range of jobs which did not require high levels of educational qualifications. The selection of photographs was, however, constrained by the requirement to include some jobs from each of the three fields of employment - commercial, construction and engineering - forming the focus of this study. In addition, an attempt was made to include roughly equal numbers of jobs traditionally entered by males or by females, as well as those entered by both sexes. Most of the 'glamorous' occupations, such as model, beauty therapist or airline pilot, were not included in the final list.(14)

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The photographs used to elicit grids for the pilot study were originally randomly sorted. Triads were then chosen in order and recorded. The same sets of photographic triads were presented to each of the students involved in the pilots in a given sequence. Constructs were elicited from each student on a 'one to one' basis and each student's replies recorded in writing by the researcher. The process continued until the respondent ran out of ideas (defined as the point when he or she could not name a construct for three consecutive triads) or time (a maximum of 75 minutes was available for each individual interview).

It was possible to interview only sixteen students in the pilot survey because grids were so time consuming to administer. Of the respondents who completed the grids eight were male and eight female. A third were on full-time and two-thirds on block-release courses.

Each student was given a large diagram showing an example of a construct. This was explained and the student was then asked to rate all the jobs shown by the photographs on another construct - "A job I would like to do v A job I wouldn't like to do" - using a five point scale. An uneven number of categories was required so that a neutral mid-point option was available for students to rate jobs to which they felt any construct did not apply. A five point scale was selected because evidence suggests seven points might be too refined for some individuals to differentiate while three points might be too coarse a classification (Oppenheim, 1968).

An Example of a Construct Produced in the Pilot Survey

1	2	3	4	5
Very well paid	Quite well paid	Neither well nor poorly paid	Quite poorly paid	Very poorly paid

In each case the 'emergent pole' of the construct (the first distinction made by the respondent between the three elements) was scored 1 or 2, while the 'implicit pole' (the opposite of the emergent pole) scored 4 or 5. So, for example, if the student distinguished a triad of jobs on the basis that two were 'dirty' jobs and one 'clean', he or she would be asked to rate all dirty jobs 1 or 2 and all clean jobs 4 or 5. Jobs perceived as neither dirty or clean (or about which he or she was undecided) would be rated 3.

The average number of constructs produced for the pilot employment grids was 8.2. In all, 131 constructs were elicited from the sixteen students (see Appendix 2.6). These constructs could be grouped on the basis of similarities in the verbal labels (transcribed by the researcher) into a total of 46 categories. Of these, twelve were used by four or more of the respondents (see Table 2.2).

Kelly (1955) argued that each person's constructs are personal and that individuals assign their own meanings to the words they use to describe the ways in which elements are similar or dissimlar. The problem of the subjective and personal interpretations of words, however, is common to all attempts to understand what any individual means when he or she tries to communicate with other people. It seemed likely that students on similar courses, and of similar age and educational attainment would apply similar, though not necessarily identical, meanings or interpretations to words produced by their contemporaries. For this reason, grouping of constructs on the basis of similarities in their verbal labels was felt to be justified.

The extent of congruity in students' uses of constructs with similar verbal labels identified in this pilot study conforms to results reported by Edmonds (1979) in an analysis of occupational guidance which employed repertory grid techniques. He concluded that "... *the implication for the theory of personal constructs is perhaps that while each person's perceptions of the world are unique, none of us lives in a social vacuum, so there is a tendency for people to have constructs which are related to a general perceptual consensus*"(p.227). Moreover, in his 'communality corollary', Kelly (1955) had acknowledged that similarity between individuals' constructions or personal views of their world might be important, and it was suggested that cultural similarities could be accounted for in this way.

(iii) <u>The main repertory grid survey</u>

It was necessary to ensure that the attitude measure used with students in the main survey was standard so that comparisons could be problem of the subjective and personal interpretations of words, however, is common to all attempts to understand what any individual means when he or she tries to communicate with other people. It seemed likely that students on similar courses, and of similar age and educational attainment would apply similar, though not necessarily identical, meanings or interpretations to words produced by their contemporaries. For this reason, grouping of constructs on the basis of similarities in their verbal labels was felt to be justified.

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(iii) <u>The main repertory grid survey</u>

It was necessary to ensure that the attitude measure used with students in the main survey was standard so that comparisons could be made between the attitudes of different groups of students. To achieve this end a common set of constructs, upon which a common set of elements were to be rated, was required. Thus, unlike the individual grids produced for the pilot survey (where only the elements were common), for the main survey a standard group grid with common constructs and common elements was adopted.

Practical considerations of students' powers of concentration, and the time available for students to participate in the survey, constrained the size of the grid used. Categories of construct elicited in the pilot by several students were chosen, in addition to others which were of particular interest to the present investigation.(15) For example, the distinction between high-class and working-class jobs was made by only one student in the pilot but seemed likely to be of importance given the strong relationship between social class background and young people's job entries (see the discussion in Chapter 7). In all cases the students' own words were used to describe the chosen constructs.

The main employment grid consisted of forms with twenty constructs printed as five point scales on which the names of 23 jobs were to be rated (see Appendix 2.7). It was possible to include a greater number of constructs and of jobs on the standard grid than on the pilots because the standard grid took far less time to complete than the pilots (generally less than 30 minutes for the main survey, compared with around 75 minutes for the pilot). The 23 jobs were chosen with made between the attitudes of different groups of students. To achieve this end a common set of constructs, upon which a common set of elements were to be rated, was required. Thus, unlike the individual grids produced for the pilot survey (where only the elements were common), for the main survey a standard group grid with common constructs and common elements was adopted.

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(iv) Choice of respondents

Due to the limits of time and the fact that the researcher administered the attitude survey to all groups, it was not possible to include all students in this part of the study. Just under 30 per cent of the 1979 student intake were involved in the main repertory grid survey (a total of 616 students).

Ideally, it would have been appropriate to choose students randomly from the total names on roll. In practice this was not possible because colleges preferred all or none of the students undertaking particular courses to be involved. The extraction of particular students would have been inconvenient to the college staff, especially in practical subjects. Furthermore, some students on block-release courses were out of college at the time of the attitude survey and therefore not available. In addition, some courses had lost substantial numbers of students over the year (mainly certain full-time commercial courses, where students were encouraged to leave if they obtained a job).

For the purposes of the main group grid survey, therefore, it was decided to include students in college at the time of the survey and to select courses which still retained a sizeable proportion of their reference to commonly named jobs listed by students during the pilot survey (see Appendix 2.3).

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For the purposes of the main group grid survey, therefore, it was decided to include students in college at the time of the survey and to select courses which still retained a sizeable proportion of their original students. Moreover, sufficient courses were included from the three fields of interest to this study to give approximately representative numbers of the three student groups. Again, college cooperation influenced the choice of courses - where staff were unwilling to make a student group available for a half hour period during teaching time it was not possible to include the group in the attitude survey.

Overall, the repertory grid sample proved to be representative of the total intake in terms of the proportions of commercial, construction and engineering students involved (see Table 2.3). Moreover, the sample also proved to be representative in terms of social class background and area of residence (points which are discussed in further detail in Chapter 8 and Chapter 9). Given that the student sample was representative of the main intake (in terms of course, sex and social class), and because nearly a third of the 1979 intake was included, it seems likely that the results would provide a reasonably accurate picture of the attitudes of the students undertaking the three types of vocational course. Nonetheless, because the sample was not randomly drawn it is not, strictly speaking, possible to generalise on the basis of the results.

(v) Response rate

The response rate for the main repertory grid sample was very good. Only 7.8 per cent of the total sample failed to complete their grid. In most of these cases students missed out one item , or part of an item only. Very few students had any queries about the method of completing the repertory grids and most found the task simple and enjoyable to complete.

SUMMARY

A variety of data was collected for the purposes of investigating the spatial distribution and the characteristics of vocational students and the factors which may have played a part in accounting for participation in different types of vocational training.

Spatial data relating to students' home areas were obtained by collecting their addresses and mapping them at the ward level. This information is analysed in Chapter 5. Data about the socio-economic characteristics of home areas were extracted from the 1971 Census and these are used to investigate the characteristics of areas which over- and under-produced vocational students as a whole, and for the three groups separately.

The relationships between student distributions and the socio-economic characteristics of home areas are explored in Chapter 5 and in Chapter 6. These spatial data are analysed to produce clusters of 'like' wards so that the relationships between student characteristics, student distributions and neighbourhood type can be investigated.

Information about individual students' family and educational backgrounds was obtained for more than 86 per cent of the 1979 student intake by means of a questionnaire survey. Analyses of the relationships between these individual characteristics and participation in vocational training are reported in Chapter 7, which concentrates on the impact of structural factors.

Data concerned with students' attitudes towards different types of employment were obtained for 30 per cent of the 1979 intake using repertory grid techniques. These data have been related to information about students' backgrounds collected as part of the questionnaire survey.

Relationships between attitudes and participation in particular types of vocational training are explored in Chapter 8. In Chapter 9 variations in students' attitudes by type of home area are investigated to establish whether to variations in attitudes between neighbourhoods can be identified, and, if so, whether variations in attitude between areas are related to spatial variations in participation.

In the next chapter the research design and methods of analysis employed in this study are discussed. Particular attention has been paid to the ways in which the characteristics of the different data sets described in this chapter affected the choice of statistical techniques used in their analysis.

NOTES

Chapter 2

(1) The unemployment figure for those aged between 16 and 19 years in July 1978 was five per cent in the inner London area (Figures on unemployment derived from ILEA Job Centres and expressed as a percentage of the total age group. Source: Research & Statistics Branch ILEA) At the time of the study's inception, therefore, the study area was not characterised by very high levels of youth unemployment, in contrast to the present situation.

(2) Over 29% of students attending the five colleges included in this survey lived outside the ILEA area.

(3) In 1978 nearly 25% of inner London school children were eligible for free school meals, a proportion almost twice the national average. Clearly such young people would generally not be in a financial position to consider undertaking private further education courses.

(4) Two colleges, South Thames and Hammersmith, did not agree to cooperate in the study. For this reason, coverage in the western quarter of the ILEA was poorer than elsewhere.

(5) It was thought that the characteristics of home areas when young people were growing up would be more closely related to any possible 'area' effects - a focus of interest in the present investigation.(see Chapter 4).

(6) The choice of census indicators to include in analyses of students' home areas was made following reference to previous studies of the socio-economic characteristics of urban sub-areas (see Daly, 1971; Herbert, 1975; Panton, 1980, 1982) and is discussed in further detail in Chapter 5.

(7) In all, 2789 of the 4109 students (combined 1978 and 1979 first year intake total) lived within the study area.

(8) In all cases where reference is made to students' vocational and training choices the term is used for convenience only. It is not intended to imply that, in reality, such choices are necessarily freely made. In further sections of the thesis attention is paid to the factors which may have limited or determined such choices.

(9) The relevant literature is discussed in the appropriate chapters when considering each set of influences.

(10) Possible errors include faults in the design of a survey, sampling error, bias resulting from question wording or order in a given instrument, interviewer bias, respondent unreliability or ignorance, errors in coding or recording answers and computational errors in the analysis of results. It is clear that some sources of error (coding or statistical, for example) are more under the control of the researcher than others (such as respondent unreliability). In designing the questionnaire survey the aim was to minimise possible sources of error and texts on survey design by Moser & Kalton (1974); Oppenheim (1976); and Dixon and Leach (1978) were consulted.

(11) See Oppenheim (1976) p.37.

(12) When permission to conduct a survey of low-level vocational students was granted an agreement was made to contact students at college premises alone. Access to full-time students was only possible during term time. Block-release students were available in college for only a period of between two and eight weeks, and day-release students could be contacted only on one day a week during term time. In addition, given considerations of college convenience and examination and teaching commitments, the times at which students were available to participate in the study were, in reality, very limited.

(13) It must be remembered that the original sample of colleges and courses was not selected randomly but was chosen to provide coverage of commercial, construction and engineering training within one geographical area. The implications of this selection procedure have been discussed in Chapter 3 in connection with research design and methodology.

(14) Although one glamorous job (that of disc jockey) was included in the pilot as one of the elements, it was perceived in stereotyped terms and students tended to rate it at the mid-point (not applicable) point of most constructs. Therefore, it was not used in the main grid.

(15) Each pilot grid was analysed using the INGRID method developed by Slater (undated). From the analyses it was possible to establish for each student which constructs were most important for distinguishing different kinds of jobs. Constructs which proved useful to differentiate different types of jobs were included in the standard group grid used in the main survey.

CHAPTER 3

RESEARCH METHODOLOGY

1. Research Design

It is necessary to untangle the complex interrelationships between socio-structural, attitudinal and 'area' influences in order to explain student participation in particular types of vocational training. The present investigation required a research design which enabled the measurement and separation of different types of influencef and this approach was facilitated by the use of a quantitative methodology (see Johnston, 1980, pp. 402-412)

Labovitz (1972) has argued that "to grasp the social and physical world, to be able to understand its parts and the way it works, man (the scientist) needs to reduce it to some comprehensible levels" (p.15). This argument is similar to that propounded by Kelly (1955). The general process of reduction enables the world to be conceptualized, thus any variable or concept is an abstraction adopted to aid understanding. Measurement and statistical techniques provide the researcher with powerful tools for this process of abstraction and allow the investigation and manipulation of concepts, and facilitate the communication of findings if they are based on an appropriate theoretical basis. This is not to deny the value of qualitative methods in studying and understanding social processes. However, in order to make generalisations about the field of interest in this study, a large scale quantitative approach was considered most appropriate.

An ecological methodology was selected for the first stage of the study of student participation in vocational training. This stressed the importance of identifying patterns of participation in the selected courses and the factors associated with student distributions. Ecological techniques have been found useful in research from a variety of disciplines (for example, in geography, social medicine, and criminology) for the analysis of phenomena about whose prevalence and incidence little is known. Gold (1970) thus argued that the understanding of a phenomenon usually depends first on an accurate description, including when and where it most often occurs. Relatively little is known about the factors influencing the uptake of different kinds of vocational training, therefore an ecological approach was particularly appropriate for preliminary analyses in the first stage of the present study.

The use of quantitative methods has the advantage that it facilitates the comparison of the results of this investigation with those from past studies. In this way it has been possible to establish whether relationships (such as those concerning the impact of social class, for example) identified in previous research in sociology, education and geography, were also present among the student sample in this study. If such well-established relationships are replicated, greater confidence can be placed in the general applicability of results of analyses of other relationships which have received much less attention in past studies (particularly the effects of area of residence and of attitudes). In this way the present quantitative investigation can add to existing knowledge about the determinants of educational and occupational achievement.

2. Statistical Issues

The choice of techniques for analysis was determined by the characteristics and limitations of the data available and by the nature of the research problem selected for investigation.(1) It is acknowledged that the use of statistical tests does not, of itself, provide objective, value-free results. As in all social science research, the judgement of the researcher has been involved in making decisions as to the suitability of selected analyses for particular data and research purposes, and these decisions influence the nature and interpretations of the results of the present investigation. Issues of particular relevance to the analyses of data employed in this study have, therefore, been discussed in general terms before a description of the methods chosen for use in different stages of the research.

(i) The sample

It was not feasible to collect data about all inner London school leavers in order to establish the total population from which those entering the three types of vocational training considered were drawn. Nor was permission obtained to investigate the characteristics of school leavers attending schools in particular areas.(2) Because of this it has not possible to compare the characteristics of those who did and those who did not enter the selected vocational courses, although a description of the characteristics of the whole student body can be made.

The data used in the present study were collected from students attending five colleges. All students forming the intakes to the chosen courses and colleges in two years (1978 and 1979) and living within the study area have been included in analyses of the spatial distributions of the three vocational groups. It is possible to treat this student body as a total population in statistical calculations. If this is done, tests of the significance of any findings are not required because any differences within the population must be significant (see Labovitz, 1972, p.31). It is also valid, however, to treat students in the two years as a sample of the total distribution of students undertaking the selected courses in the inner London area over time. In this case, tests of the significance of findings are appropriate, if it is intended that the results of the study should be used to test hypotheses about the influence of various factors upon patterns of participation in general.(3)

(ii) Missing data

Decisions about the treatment of missing data in statistical analyses similarly call for the exercise of the researcher's judgement. Social science research is particularly susceptible to the problem of incomplete data sets and the present study is no exception. Thus, 169 (4%) of the 4278 students (1978 and 1979 combined total of intakes) could not be allocated to a ward during the mapping process for a variety of reasons. These students, therefore, could not be ascribed information relating to their home area. Similarly, for the questionnaire group, 141 (7.5% of the 1884 respondents) provided no information relating to their father's occupation. Moreover, addresses were available for 194 students (8.9% of the total 1979 intake) who were absent from college when the questionnaire surveys were administered. For these students, therefore, it has been possible to ascribe information relating to area of residence, but not information about factors derived from the questionnaire.

Additional problems beset the analysis of attitudinal data, since these were collected for only a proportion of the student intakes. Information about home area was missing for 4.9 per cent of the 569 students for whom full repertory grid data were obtained. In all, for 17.7 per cent of this group no questionnaire data were available because of absence during the survey or because information regarding home address (the linking variable for the two data sets) had not been given. For these students, therefore, no information about family and social background factors was obtained.

Thus, a variety of data were missing for some members of the student body included in the present study and a method of dealing with the problem of missing data was required. The high response rate for the questionnaire survey, and the relatively small number for whom home address was unavailable reduced the problem of missing information in analyses of the impact of the characteristics of area of residence and of home, family and educational background. For the attitude survey, however, data were available only for a sub-group who were not necessarily representative of the larger student body.(4)

A strict approach to the problem of missing data is the exclusion of all cases for which any item was not available. This would result, however, in a large reduction in the number of students included in the analyses, provide only a limited picture of the characteristics of the student body as a whole, and prove wasteful of information, because for many students only one item of data was missing. Another method is to assign the mean value for a given item to any missing cases. This solution, however, is not possible for all items, and may prove misleading in analyses of causal relationships (students for whom certain data were missing might not be representative of the total population and, therefore, to ascribe to them an average characteristic could distort the results).

The approach chosen in this study makes maximum use of all the information available about each case in the sample. Thus, for all analyses the total of cases for which all the necessary information was present have been included. Where possible (in analysis of variance and in loglinear modelling, for example), cases have been included for which some data were missing for specific factors, because with such techniques the missing code can be treated as a separate category. This strategy ensures that, for each analysis, the number of cases included was maximised, but also means that the numbers in particular analyses usually differed. For this reason, the total of cases involved in particular calculations has been given in the appropriate tables and, where the number is lower than the total number of students in the survey, results may not necessarily be true for the whole student body.

(iii) Ecological analyses

Robinson (1950) has described the problem of the 'ecological fallacy' which involves the mistake of attempting to generalise the results of analyses conducted at one level (the area) to another level (the individual). Such generalisations can prove misleading, as was demonstrated by Robinson in his examination of correlations of illiteracy and race at two levels, individual and territorial. In the present study, an ecological approach has been adopted as a first stage in the investigation. Correlation and multiple regression analyses have been used to examine the relationships between student distributions and the characteristics of residential areas (the latter derived from 1971 Census information). It is possible to make ecological inferences about students on the basis of such correlations. For example, a positive association between the distribution of students and that of skilled manual workers might suggest that students were of skilled manual backgrounds. Such an interpretation could, however, be erroneous because the area data obtained from the 1971 Census was collected about a different group at a different time from that obtained about student distributions.

In the present study, therefore, inferences about individual students have not been made on the basis of the ecological analyses. Information has been collected about students' social, family, educational and attitudinal characteristics at the individual level, and analyses of these data have been used to establish the relationships between individual characteristics and participation in particular types of vocational training. Ecological investigations of relationships between areally based information and student distributions have been interpreted in terms of the possible effects of social and economic composition upon the attitudes and expectations of residents as a whole (a matter discussed in Chapter 4). It is suggested that the characteristics of the home area may in some way have had an impact upon local youngsters' occupational expectations and perceptions, over and above the influences of individual social, family and educational factors.

The ecological analyses, therefore, have been used to provide a description of the student distribution and guidance as to the existence of possible 'area' effects. These analyses have then been followed by more detailed, aspatial investigations of information about individual students. In the final section of the study, information about the areas and about individual students living in different types of neighbourhood has been combined to establish the extent of evidence for any 'area' effects upon local students. The intention of such analyses has been to establish the relative importance of social and family, educational, attitudinal and 'area' influences in the explanation of participation in different types of vocational training.

(iv) Levels of measurement and choice of tests

The choice of appropriate statistical techniques was also determined by research judgement, the purposes of the study and the nature of the various data sets. As Johnston (1982) has argued, data manipulations serve as "...an aid to, rather than a part of explanation" (p.125) because they enable the organisation of information and "can be used to eliminate 'egregiously misguided generalisations' presented as parts of potential explanations" (ibid).

Non-parametric or distribution-free statistics (which make no assumptions about the nature of the population from which samples are drawn) have traditionally been used in geographical research where data of an ordinal or nominal level of measurement are available. Rules developed by Stevens (1946), linking scales of measurement with the use of specific types of statistical test, have been accepted in the majority of texts on quantitative geographical analysis, and many researchers in sociology and psychology have also tended to accept the use of the 'measurement statistics rule' (as described by Seigel, 1956). More recently, however, researchers in sociology, psychology and education (and, to a lesser extent, geography) have adopted more sophisticated and powerful parametric tests (traditionally reserved for use only with interval or ratio level data) in analyses of lower level data. Such use of parametric tests has become particularly popular for analysis of data forming ordinal scales (see Sewell and Orenstein, 1965; Sewell and Armer, 1966; Baker, 1966; Labovitz, 1970; and 1972). In geography, the move to adopt parametric analyses for the analyses of data which do not strictly fulfil the necessary conditions occurred somewhat later than in other fields. Generally, however, the greater versatility and power of such methods in comparison with non-parametric tests has been seen to outweigh the disadvantages of breaking the 'measurement statistics rule' (see the discussions by Hubbard, 1978; Doering and Hubbard, 1979).

(v) Normality of data

The ordinal - interval controversy has important implications for social science research practice. Those in education, sociology, psychology and geography who consider it legitimate to use parametric tests on interval level data adopt a 'pragmatic' rather than a 'purist' approach. Labovitz (1970) argued the advantages of using parametric rather than non-parametric tests on ordinal data and suggested that many parametric techniques are robust with respect to violations in the parametric assumptions, particularly that of normality in the data. A number of authors have demonstrated, for example, that the Pearson product moment correlation can be used on non-normal and on ordinal data with little distortion of results (see Labovitz, 1970, Baker et al 1966, Boneau, 1960).

Gaito (1959) indicated that the results of analysis of variance were relatively insensitive to deviatons both from normality and from homogeneity of variance. Moser and Scott (1961) also found that the transformation of data to obtain a normal distribution did not affect the interpretation of results of a principal components solution. Roff (1977) investigated 44 variables from the 1971 census, almost half of which were non-normally distributed. He found that, after transforming the data, the correlation matrix obtained from the transformed data was virtually identical to that obtained from the same analysis on the raw data set.

Thus, although it is possible to transform data to ensure normality there is doubt as to the value of this practice, since many parametric tests (analysis of variance, product moment correlation and regression) are relatively robust to violations of the normality assumption. The major disadvantage of the use of transformed data is that the results of any tests used apply to the transformed and not to the original data. Thus, interpretations and conclusions drawn from the results can refer only to the transformed data. Moreoever, blanket transformations of all variables are required in order to preserve the original patterns of relationships within the raw data. Yet, if this is done, the effect can be to adversely affect the distributions of as many variables as have their distributions improved.

Although a 'pragmatic' approach to statistical investigations may be riskier than a 'purist' approach, Doering and Hubbard argue that it can prove more fruitful. Nie et al (1976) note that although

"...statistical purists disagree with some or all of the pragmatists' suggestions ... more and more data analysts are following them, especially when research is exploratory or heuristic in nature" (p.6). Because participation in low-level vocational training is a relatively unexplored field lacking a developed theoretical base the present research is inevitably exploratory and intended to provide broad generalisations about relationships between potentially important factors. For this reason a 'purist' approach was considered less appropriate.

The use of data transformations to correct for non-normality would have been necessary for the distribution of students at the ward level, and for many of the census-based variables descriptive of residential area characteristics, if the 'purist' approach was adopted. Yet results which applied only to transformed distributions would be much less interpretable and less meaningful than those applicable to the raw data. Tests have been chosen on the basis of the characteristics of data and the nature of the relationships to be investigated, but parametric tests robust to violations of their assumptions have been adopted where they provided more powerful methods of analysis. Wherever possible, however, parametric methods have been employed in conjunction with non-parametric techniques so that relationships could be tested by more than one method.

3. Choice of Statistical Tests

The statistical techniques employed in the data analyses can be divided into three broad groups - (i) measures of association and of difference (both parametric and non-parametric), (ii) methods of classification and data reduction, and (iii) methods of statistical explanation. These techniques are described fully in the majority of statistical texts used in social science research. For this reason only brief descriptions of the most commonly used tests, with their assumptions and interpretations, are outlined. Illustrations of the particular data sets on which different tests have been used are also provided. The major method of analysing information obtained from the attitude survey was developed specifically for use with repertory grid data. As group repertory grid analyses are rather less commonly used than other methods in educational, sociological and geographical research, a more detailed discussion of these methods is given.

(i) Non-parametric tests of association

The chi-square and related tests of association make only minimal assumptions about the form of the data under study and are commonly used in analyses of categorical information. These classical tests of association fulfil a diagnostic role and are of great utility in the preliminary and descriptive stages of research. The chi-square test of association is very simple and probably one of the most frequently used of statistical tests in social science research. Both the one-sample and the two-sample test have been employed in this project.

The one-sample test compares the frequency distribution of an observed sample to that of a specified theoretical population and assesses the 'fit' between the two distributions. It is based on the summed differences between the sample and the expected distribution (see Seigel, 1956; or Nie et al 1976 for a description of the test and its assumptions).(5)

An example of the way the one-sample test has been used in the present study was for comparison of the social class background of the student sample with that of the population of economically active males within the inner London area. The latter formed the expected distribution. The analysis has been used to establish whether the social class profile of the student sample was significantly different from that of the population as a whole (see Chapter 7).

The two-sample chi-square test is similar to the one-sample test. In this case, however, the comparison is made between two or more independent samples. The samples consist of absolute frequency data and each sample is split into the same number of mutually exclusive categories. By comparing the sample frequencies in each category, the probability that the samples were drawn from the same or from different populations can be determined. In this study the two-sample test has been used to compare the three vocational student groups in terms of a variety of key characteristics (for example, in terms of their sex, social class backgrounds or level of educational qualifications) to establish whether the groups' characteristics were similar (drawn from the same population) or significantly different.

Chi-square methods have been adopted mainly in the analysis of the questionnaire data, the majority of which is not suited to parametric analysis (being in the most part categorical or nominal in form).

(ii) Parametric tests of association and differences

(a) Tests of association

The Pearson product moment correlation coefficient is the most powerful and generally used parametric measure of association. It forms the basic ingredient in the majority of multivariate techniques. Pearson's r is a standardized measure of linear covariance, a value of r=+1.0 indicating perfect positive correlation, with r=-1.0 representing perfect negative association. A value of zero indicates that two variables are statistically independent.(6) As Norcliff (1977) has noted "Although correlation coefficients should be treated with care in 'explaining' the real world, they provide a very simple measure of statistical explanation. The square of the correlation coefficient (which is known as the coefficient of determination (R2)) is a direct measure of the proportion of the variance in a bivariate distribution explained by a linear correlation coefficient " (p.176).

A slightly more sophisticated measure of association is given by the partial correlation coefficient. This provides a measure of the relationship between two variables, while controlling (statistically) for the impact of one or more additional variables which are related to the two variables under consideration. This method thus partials out the impact of factors which might affect the strength of the zero order relationship. It is a useful tool for clarifying relationships between three or more related variables and can prove helpful in the identification of spurious relationships.(7)

As noted in the preceding discussion of statistical issues, evidence suggests that the effects of violations of the assumptions of normality and level of measurement on the Pearson's r are small, especially for large samples (Norcliffe, 1977, p.180).

Pearson's r (zero order) and partial correlation analysis have been used to investigate the relationships between student distributions at the ward level and the various socio-economic characteristics of students' areas of residence. As noted in Chapter 2, the socio-economic measures were derived from 1971 Census data measured at the ward level. Although many of these variables were not normally distributed (the distribution of professional non-manual workers, or of New Commonwealth immigrants for example), the large sample size (N=209) and the robustness of correlation methods mitigate the problems associated with non-normal distributions. As an additional check, scatterplots have been examined to establish the extent to which outliers influence the relationships identified.

Correlation methods have also been used in the classification of types of area of residence in cluster analysis (discussed below) and in some of the attitudinal analyses. Partial correlations aid the interpretation of regression results (as discussed in the section on explanatory analyses below).

(b) Tests of difference

The analysis of means can be used to discover and evaluate differences between the effects of specific variables which differentiate two groups. The intention of such tests is to establish whether the means of two independent samples are statistically significantly different, or whether the two-samples are in all probability drawn from the same population. The Student's t test can be calculated to describe the nature of the relationship between two sample means. The null hypothesis of the test is that there is no statistically significant difference between the sample means.

Here, analysis of means has been used in the analysis of attitudes for comparisons of the repertory grid responses of members of the three student groups. The mean score accorded a particular job, or a particular employment field, by different groups of students has been calculated for each construct included in the attitude survey. A comparison of these mean scores has then been used to establish whether the members of different student groups had similar or dissimilar perceptions of specific jobs or employment fields in terms of a given construct.

For analyses where the direction of any difference between the means was not predicted on the basis of hypotheses, the two-tailed test has been employed.(8) However, where the direction of difference was predicted as part of a hypothesis, the one tailed test has been adopted.

(c) Loglinear Analysis

A major focus of interest in the present study was the explanation of participation in particular kinds of vocational training. A method of analysis was required which could be used to explore, simultaneously, the relationships between entry into a given course and a variety of factors identified (by other methods) as of potential importance, in order to isolate their separate contributions, and to establish their relative importance in accounting for vocational training choices.

Loglinear analysis is a general statistical procedure which can be used for model fitting, hypothesis testing and parameter estimation for any model that has categorical variables as its main components (see Nie et al, 1983). It provides powerful, systematic and precise statistical methods for measuring the complex interactions arising in multidimensional tables. Unlike most statistical methods, loglinear analysis deals only with categories or groups of observations. The unit of analysis is cell probibilities or functions of cell probibilities. The dependent variable in loglinear analysis is a cell probability 'p' that a randomly selected member of a population has a particular combination of characteristics. The aim of the analysis is to produce a model (or equation) that accounts for the variation in cell probibilities (see Reynolds, 1977).

Loglinear methods of analysis are becoming increasing popular in sociological, educational and geographical research because they are particularly suited to testing hypotheses about data obtained by survey techniques. For example, these methods have been used (by Rutter et al, 1979) for the analysis of relationships between educational outcomes, background factors and school attended, and Breen (1984) has employed loglinear methods in the analysis of the effects of sex and class on youth unemployment. Wrigley (1981) has discussed the use of loglinear methods in the analysis of geographical data.

Logit models are a special form of loglinear analysis (see Nie et al, 1983). They can be used to predict a particular categorical dependent variable by means of one or more categorical independent variables. It is also possible to include non-categorical independent variables as covariates in logit models. Entry into a particular course can be treated as a categorical variable and formed the focus of interest in this study. Logit models were, therefore, suited to the prediction of participation in commercial, construction and engineering training. They have been used to test hypotheses about distributions among a set of categorical variables and covariates which preliminary analyses had indicated were related to course entry. The intention of the logit analyses was to ascertain the relative importance of different factors (for example sex, qualifications, parents' jobs or area of residence) in accounting for training choice.

A number of different models were tested using different sets of independent variables to establish which model gave the best and most economical fit to the data. The aim was to account for the variation in cell probibilities by the most parsimonious model, using as few variables as possible.

Measures of the goodness of fit of a particular model are given by the likelihood ratio chi-square and the Pearson chi-square statistic. If a model provides a good fit to the data being analysed the chi-square statistics will not be statistically significant. Small values relative to the degrees of freedom indicate a satisfactory fit, while larger values suggest that the model is inadequate.

An indication of the association between a given set of independent variables and a categorical dependent variable is given by proportional reduction in error measures. By examining these it was possible to see the extent to which a particular model enabled the prediction of entry into a specific type of vocational training. Using logit models it was also possible to obtain parameter estimates relating to the logarithm of the odds for particular categories of independent variables. Thus, for example, it was possible to establish the odds that a student with a parent/sibling in the construction industry would have entered construction, rather than commercial or engineering training, while taking account of the impact other factors.(9)

Details of the use of logit models in the explanation of participation in particular kinds of vocational training are given in Chapter 10.

(iii) Parametric methods of classification

Relationships identified between the various socio-economic characteristics of students' home areas (based on standardised correlations) have been used in the technique of cluster analysis to group the 209 inner London wards into similar types of areas. (The various methods of cluster analysis have been fully described by Everitt (1974), and examples of their use in the classification of wards using census-based data have been provided by Daly, 1971; Webber,1977; and Yeomans, 1979).

For the purposes of grouping wards into similar clusters on the basis of their socio-economic characteristics Ward's (1963) hierarchical method has been adopted. This technique joined groups (consisting in the present study initially of 209 separate wards) according to the distance between individuals on 13 selected census-based measures simultaneously.(10) At each step of the cluster program, the process of fusion decreased the number of clusters by one. The process of union continued until all wards were contained in one group, thus forming a dendogram or hierarchical tree of linkages. Ward (1963) argued that, at any stage of analysis, the loss of information which resulted from the grouping of individual units into clusters could be measured by the total sum of squared deviations (error sum of squares) of every point from the mean of the cluster to which it belonged. At each step in the analysis, the union of every possible pair of clusters has been considered and the two clusters whose fusion resulted in the smallest increase in error sum of squares were combined, thus providing minimum variance clusters.

The researcher selected a suitable "cut off" point in the linkage tree which provided a useful number of clusters before a point where further fusion caused a significant reduction in within cluster similarity and between cluster differences. This point was chosen by reference to the size of the fusion coefficient and judgement of the most practical number of categories for this particular investigation.

Cluster analysis is dependent upon the nature of the variables used to describe the units to be classified. In the present study the set of variables was selected on the basis of potential importance in differentiating urban sub-areas (see Chapter 2 and Chapter 5). The value of a particular cluster solution was judged according to the extent to which it provided a classification which was interpretable and suitable for the research purpose. Here, cluster analysis was employed to distinguish eight clusters of 'like' wards. This number formed the most useful solution for the present study (see Chapter 6). These distinctive types of home area have been used in further analyses which investigated the spatial distribution of students, the extent of student under- and over- production , and the existence of 'area' effects. The cluster solution has also been used in analyses which related variations in attitudes between respondents to the residential area in which they lived.

(iv) Methods of statistical explanation

Three methods of statistical explanation have been employed in the present study - multiple regression, analysis of variance and loglinear analysis.

(a) Multiple regression

Multiple regression is a general statistical technique which can be used to investigate the relationship between a dependent variable and a set of independent (predictor) variables. It can be used both for descriptive purposes (by which the linear dependence of one variable on others is summarised and decomposed), and for inferential purposes (by which the relationships in the population are evaluated from the examination of sample data). The method is descibed fully by Nie et al (1976).

In this study, multiple regression has been used as a descriptive tool. The technique has been used in the analysis of student distributions, firstly to identify the best linear prediction equation and so to establish what proportion of the variance in the distributions of students, on a ward basis, could be explained (in a statistical sense) by the socio-economic characteristics of home areas. Secondly, the technique enabled the control of particular confounding variables (for example the number of young people present in a ward), so that it was possible to evaluate the contributions of particular variables in explaining variations in the distribution of students. Thirdly, the results of multiple regression analyses have been used to establish whether specific wards under- or over-produced students from a particular vocational student group.

In this study the distributions of students (total, commercial, construction, engineering) at the ward level formed the dependent variables. In each analysis the same set of independent variables has been used. The general form of the multiple regression equation is described in many texts (see Blalock, 1972; Cole and King, 1968; Nie et al,1976).(11)

The overall level of explanation of the regression equation is given by the adjusted R2 value. Partial correlations between each of the independent variables and the dependent variable illustrate the strength of their relationships, controlling for the influence of other variables in the equation. This is particularly useful when many of the independent variables are intercorrelated, as was the case with most of the socio-economic characteristics of wards employed in the present study.

The existence of spatial autocorrelation amongst the residuals derived from multiple regression analyses is interpreted in terms of the existence of possible 'area' effects. The residuals derived from various regression analyses have been mapped on a ward basis to investigate variations in the spatial patterns of positive and negative residuals. Clusters of positive residuals indicated areas of student over-production, and those of negative residuals areas of student under-production.

(b) Analysis of variance

In analysis of variance a dependent (criterion) variable is explained, in a statistical sense, by a set of independent variables. Any categorical independent variables (sex, for example) are treated as factors: any metric variables are treated as covariates. The most usual form of the model is to assume all factors are fixed rather than random (see Iversen and Norpoth, 1976; Nie et al, 1976).

The basis of analysis of variance is the decomposition of variation (sums of squares) in the dependent variable due to particular independent variables. The effects of a given factor A are expressed as the portion of the sum of squares in the dependent variable Y that is due to variation in the means of the dependent variable (Yi) by categories of factor A. Where more than one factor is used to explain variation in the dependent variable, the analysis can also examine interaction between factors in their effects on Y.(12)

The adjusted deviations in the dependent variable Y due to a particular category of any factor can be found from analysis of variance while the effects of all other factors are controlled simultaneously. Thus in analyses of the effects of type of course, and area of residence upon attitudes to a particular employment field, it has been possible to establish the significance and size of the effects of each factor, their interactions (if any), and the effects attributable to a particular category of any factor.

Analysis of variance forms the basis of much of the output of the 'SERIES' program which has been used for more detailed investigation of the structure of students' attitudes towards employment (discussed below).

(v) Repertory grid analysis

Repertory grid techniques have been employed in an increasing variety of research studies due to the availability of more sophisticated programs and the development and extension of personal construct theory (originally propounded by Kelly, 1955). Thorough reviews of the ways in which repertory grids have been used are provided by Bannister (1970) and Bannister and Mair (1968). Fransella and Bannister (1977) give a detailed discussion of grid techniques and Slater (1972, 1976) describes the major methods of analysing and interpreting repertory grid data.

The majority of investigations have involved the analysis of grids produced by individual respondents. However, a few recent studies have adapted grid techniques for the comparison of the responses of groups of individuals. As Watson (1970) noted, whenever such techniques are used there is *"...an underlying assumption that the informant's use of the constructs, to compare and rate the elements,* *expresses aspects of himself such as his attitudes, feelings or ways of construing"* (p.310).

In this study, repertory grid methods have been used to investigate students' attitudes towards different jobs and fields of employment. In particular, analyses have been conducted to establish whether differences in attitude were related to the type of training in which students were engaged, their social class background, their sex and their area of residence.

Watson (1970) states that the interpretation of grid results assumes that the statistical relationship between scores given for the same elements on two constructs is a measure of the psychological relationship between the constructs - *"Psychological inferences can .... be made from the statistical relationship between scores given for the same elements on identical constructs by different subjects"* (p.311). These relationships can also be examined in the responses of groups of subjects if the grids completed consist of a common set of constructs and elements (standard grids). (Full details of the development of the constructs and elements used in the study are given in Chapter 2.)

Slater (1972, 1974) has produced the most widely used programs for the analysis of individual grids and of groups of grids. The 'SERIES' program was developed specially for the analysis of groups of standard grids. In this study, the 'SERIES' program has been used for the analysis of attitudes towards employment, measured by groups of students' responses to a standard grid.

Chetwynd (1974) has described the statistical principles underlying the analysis of group grids and the output produced by the 'SERIES' program. She analysed groups of grids, using this program, in a study of sex differences in stereotyping the roles of wife and mother (Chetwynd, 1978). Townsend (1977) has also used these methods in an investigation of the perceived worlds of the colonists of tropical rain forests in Columbia. Her work provides a thorough exposition of the technique and its application to the investigation of area variations in perceptions.

The 'SERIES' program has been used to produce an analysis of variance for each construct. The technique attributed variation in the construct to (i) differences between respondents which represent the unique or personal part of the construction system of a student group; (ii) differences between elements (in this case jobs) which have been interpreted as perceptions held in common by the group; and (iii) interaction between the unique and the common perceptions.(13)

The relationships (similarity or dissimilarity) between elements (the job titles) are given by the covariation between each element pair on each construct. For example, using a construct concerned with the 'friendliness' of jobs, it has been possible to establish the extent to which group members perceived a pair of jobs as similar with respect to 'friendliness'.

The importance of the various constructs for differentiating elements (jobs) has been identified by calculating the total variance of each construct over all elements. Comparisons of the size of the variance totals for each construct have been used to show whether some groups placed greater importance than other groups on particular characteristics of jobs. The larger the variance total, the more important the construct.(14)

SUMMARY

A quantitative methodology has been adopted for the investigation of student participation in vocational education, with an ecological analysis of student patterns forming the first stage of the study. A number of statistical issues have affected the choice of techniques employed - in particular, the nature of the sample, the approach to the problem of missing data, the interpretation of ecological correlations, the level of measurement of different data sets, and the normality of data. A 'pragmatic' approach has been adopted using non-parametric tests as well as parametric techniques which are robust to violation of the assumptions of normality and level of measurement. These have included both parametric and non-parametric tests of association and of dissimilarity. In addition, parametric methods of classification and of statistical explanation and repertory grid techniques have been employed. Examples of some of the analyses undertaken as part of the present study have been given to illustrate the ways in which particular techniques have been used.

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NOTES

Chapter 3

(1) Thorough descriptions of the majority of the tests used in this study are provided in Seigel, 1956; Blalock, 1972; Nie et al, 1976; Johnston, 1978.

(2) Permission to enter schools to obtain information from fifth year pupils about training and job intentions was not granted at the time the study commenced.

(3) Because the sample of students was not randomly chosen, tests of statistical significance do not strictly apply. Nonetheless, as in many other educational, sociological, and geographical studies which have not employed randomly chosen samples, it is helpful to employ tests of statistical significance to illustrate the size of differences identified between particular groups and as useful guides in considering the importance of specific findings. There are many studies which have adopt such a strategy despite the absence of a random sample (for example see Little and Mabey, 1973; Panton, 1982; Moulden, 1984).

(4) The repertory grid sample proved to be representative of the student body living in inner London in terms of spatial distribution and social class background.

(5) The formula used to calculate the chi-square statistic is as follows:

$$\chi^2 = \sum_{K}^{n} \frac{(Oi - Ei)^2}{Ei}$$

where
Oi = Observed number of cases in category i
Ei = Expected number of cases in category i
K = The number of categories

It is possible to apply a correction (Yeates') to the computed chi-square value to correct for continuity (because the theoretical distribution assumes continuous values, whereas observations occur as integers). However, Croxton et al (1968) have pointed out that Yeates' correcton over-corrects, so that the corrected chi-square value may be as far from the true value as the uncorrected figure. For this reason the chi-square figures reported in this text have not been corrected.

(6) The assumptions underlying the use of the Pearson correlation are provided in Yeates, 1968; Blalock, 1972. The formula for calculating the coefficient is as follows:

$$r = \sum_{i=1}^{N} \frac{(x_i - \bar{x})(y_i - \bar{y})}{\left[\left[\sum_{i=1}^{N}(x_i - \bar{x})^2\right]\left[\sum_{i=1}^{N}(y_i - \bar{y})^2\right]\right]}$$

where:
Xi = ith observation of variable X
Yi = ith observation of variable Y
N = number of observations
X = mean of variable X
Y = mean of variable y

(7) The formula for computing the partial correlation coefficient is

$$r_{ij \cdot k} = \frac{r_{ij} - (r_{ik})(r_{jk})}{\sqrt{1 - r_{ik}^2}\ \sqrt{1 - r_{jk}^2}}$$

where:
k = the control variable
i = the independent variable
j = the independent variable

(8) The formula for the Student's t test adopted in this study is as follows:

$$t = \frac{(x_i - x_2)}{\frac{S^2}{n_1} + \frac{S^2}{n_2}}$$

and

$$S^2 = \frac{(n_i - 1)s_1^2 + (n_2 - 1)s_2^2}{(n_1 - 1) + (n_2 - 1)}$$

where:
n1 = size of sample 1
n2 = size of sample 2
x1 = mean of sample 1
x2 = mean of sample 2
s1 = standard deviation of sample 1
s2 = standard deviation of sample 2

(9) The output from a logit model (using SPSSX procedures) can be converted into odds by multiplying the parameter estimates by 2 then calculating the anti-log (see Nie et al 1983, p.551).

(10) The normal practice in cluster analysis is to standardise all variables prior to analysis. This ensures that each variable is treated equally. Because the majority of the socio-economic variables included in the study had unequal variances standardisation was necessary to avoid over-weighting any one variable in the final solution (see Chapter 6)

(11) The general form is:

$$Y' = A + B_1X_1 + B_2X_2 + \ldots\ldots. + B_kX_k$$

where
Y = estimated value of Y
A = the intercept
B = regression coefficients
X = independent variables, k = number of independent variables

The A and B coefficients are calculated to minimise the sum of squared residuals. The residuals are the difference between the observed and the estimated values of the dependent variable (Y-Yi). The partial regression coefficients represent the expected change in Y with a change of one unit in a dependent variable (Xi) when the effects of other independent variables are controlled.

(12) The equation used in an analysis based on two factors is:

SSY = SSA + SSB + SSAB + SSerror

where

SSY = sums of squares corrected for the mean of Y
SSA = portion of sums of squares in Y due to variation within each of the categories of A
SSB = portion of sums of squares in Y due to variation within each of the categories of B
SSAB = portion of sums of squares in Y due to interaction between factors A and B
SSerror = the sums of squares in Y not accounted for by factors A and B

(13) Analysis of variance is described in the section headed 'Methods of statistical explanation'.

(14) The variance represents the sum of the deviations from the overall construct mean of each element on that construct, for a given group of respondents.

CHAPTER 4

'AREA' OR 'NEIGHBOURHOOD' EFFECTS AND EDUCATIONAL AND OCCUPATIONAL ACHIEVEMENT - A REVIEW OF PREVIOUS RESEARCH

INTRODUCTION

Most studies seeking to explain variations between individuals in educational and occupational achievement have been primarily concerned with the influences of the home, individual characteristics (sex or self concept, for example) or societal bases of inequality, rather than with the possible contributions of more contextual factors, such as the characteristics of the school or the neighbourhood environment. Thus, the relationships between educational achievements and background factors such as social class background, family size and structure, income, housing, parental or peer group attitudes, and sex have received considerable attention in educational and sociological research. (See, for example, the reviews of the impact of such factors by Miller, 1971; Rutter and Madge, 1976; Marjoribanks, 1979; Mortimore and Blackstone, 1982; the accounts of research undertaken as part of the National Child Development Study (NCDS) reported by Hutchison, Prosser and Wedge, 1979; Essen and Wedge, 1982; or the results of educational priority research on the cumulative effects of background factors described by Sammons, Kysel and Mortimore, 1983.) Similarly, research into the determinants of occupational status has concentrated on the influences of many of the factors listed above.

(See, for example, Glass, 1954; Goldthorpe et al, 1980; Stewart et al, 1980; or Ryrie, 1983.)(1)

Though the effects of contextual factors upon educational or occupational achievements have received relatively less attention than those of home background, the influences of school membership (which can be conceived of as a series of contextual variables) upon pupils' educational achievements, and upon their behaviour and attendance, have become the focus of a number of studies following the publication of the Coleman report (1966) and research by Jencks et al (1972). The significance (both statistical and educational) of the effects of schooling has been extensively debated. Some studies have indicated that schools can have important effects as a result of a positive ethos, good attitudes and high expectations (see Rutter et al, 1979; Rutter, 1980; Madeaus et al, 1979; Brookover et al, 1976; Edmonds et al, 1978; Goodlad et al, 1979). A number of these have been criticised on methodological grounds (see Tizard et al, 1980; Goldstein, 1980; Radical Education Statistics Group, 1982). Thus there is, as yet, no agreement about the importance of contextual variables related to the influence of school processes and the school environment. However, recent work amongst junior schools is pointing to large and significant school effects upon pupils' progress in cognitive areas and upon the social outcomes of education (see Mortimore et al, forthcoming).

By comparison with research into the effects of contextual factors related to the school environment or processes, however, very little attention has been paid to the possible influences upon educational outcomes of other contextual variables, particularly influences related to area of residence (variously termed 'neighbourhood', 'community' or 'area' effects). Moreover, only one or two studies have examined the influences of area of residence upon occupational choices or ambitions. This is in spite of the findings, reported by a number of authors, identifying significant spatial variations in educational opportunities and attainment. For example, work by Lee (1973) or by Byrne et al (1975) has identified area differences in various kinds of educational opportunities. Charlton, Rawstron and Rees' (1979) analysis has shown regional variations in 'A' level pass rates, Davie et al's (1972) has described regional differences in children's educational attainments at seven years of age and Ryba (1976) has analysed territorial differences in educational phenomena at the international scale). There is also strong evidence that employment opportunities and unemployment rates varied both between regions and within urban areas. For examples of work on employment opportunities see maps of the distributions of workers in different industries produced by Shepherd, Westaway and Lee (1974), or the analysis of spatial variations in unemployment rates by Gillespie and Owen (1981).

Some research has, however, provided evidence, either directly or indirectly, of the potential importance of 'area' or 'neighbourhood' effects. The majority of these studies have considered the contribution of 'neighbourhood effects' in accounting for variations in educational rather than occupational attainments or ambitions, but, because educational and occupational outcomes have been shown to be closely related, it is likely that the factors which influence one are also related to the other.

In this chapter, therefore, a review of relevant literature is provided as a background to the development of hypotheses about the possible contribution of neighbourhood influences in the context of the present study. In the first section, a brief description of several studies which have produced findings suggestive of 'area' influences, while not directly testing for their presence, is presented. In the second section, a more detailed review of those studies designed to test explicitly the contribution of neighbourhood influences is given.(2) The final section discusses some of the similarities and differences between the studies reviewed, and consider ways in which the potential contribution of 'area' effects, to an explanation of participation in different kinds of vocational training, may be identified.

SECTION 1

Studies Providing Indirect Evidence Of 'Area ' or 'Neighbourhood' Effects

The research undertaken by Coleman et al (1966) to establish the relative importance of school versus home background factors, produced the finding that the home background characteristics of students were the prime determinants of attainment. The Coleman study also demonstrated, however, that the characteristics of the student body (in terms of educational aspirations and parents' educational backgrounds) were also of significance. These data (relating to composition of the student body) are likely to have reflected the characteristics of the neighbourhood or community from which a school's intake was drawn, as much as they reflect school characteristics themselves. Therefore, it can be argued that part of the relationship between student composition and attainment may have been due to the influence of neighbourhood or area characteristics rather than to school composition in isolation.

The apparent effects of school composition may merely reflect the impact of values and attitudes prevalent in the neighbourhood which serves as catchment to the school. Similar findings (on the importance of the composition of the student body) have been reported by Wilson (1956) in a study of residential segregation and the aspirations of high school boys.

Little and Mabey (1973), in an analysis of the relationship between reading attainment and the social and ethnic mix in London primary schools, produced results which indicated that the social class composition of school attended was significantly related to pupils' reading attainments. This finding was in line with that reported by Coleman et al (discussed above) and has been supported by the results of later American studies (see Burstein, 1980).

Little and Mabey's work indicated that both working class and middle-class pupils did better in schools which contained above-average proportions of middle-class pupils, the effects being greatest for middle-class pupils. *"In general, attainment of all children is higher if they are in schools with a high middle-class or low working-class composition. However, the attainment of working-class children is much less affected by the social composition of the school than is the attainment of middle-class children".* These authors also noted, however, that the effect due to social class composition was less important than the extent to which the school population experienced a multiplicity of depriving factors (as measured by the ILEA Educational Priority Index). Thus, other aspects of pupil composition, in addition to social class proportions, were also found to be influential.

Although Little and Mabey did not examine directly differences in the reading attainments of pupils living in areas with different levels of social mix, it seems possible that, if the social mix of the school environment is of importance, the social mix of the home area may also have an influence on pupil attainment. Little and Mabey did note that the social composition of the area around a school and of the school itself could differ markedly - *"...whatever the social or ethnic composition of an area, schools in that area do not necessarily have a similar social or ethnic population".* This, they argued, might reflect parental choice and perceptions of schools. Little and Mabey did not, however, have the data to establish whether the social composition (or other characteristics) of pupils' residential environments had had an impact on attainment over and above that due to individual social class background and the pupil composition of the school attended.

Work by Cherry (1974) also found significant school effects related to student composition. This study reported that children from working-class homes in schools with mainly working-class pupils, appeared to have less interest in breaking with working-class occupational traditions than did similar children in other schools where they mixed with pupils from more varied backgrounds. Again, it is possible that such contextual effects associated with school composition might also reflect 'area' or 'neighbourhood' influences.

As demonstrated in the Coleman study, contextual variables related to the neighbourhood have sometimes entered investigations indirectly and have often lacked either precision or consistency in the way in which they are defined (see the discussion by Herbert, 1976, p.124, or the comments of Filkin and Weir, 1972 pp.107-108). For example, Jackson and Marsden (1970), in a study of the factors which influenced the educational success of children from working-class families, found that the majority of successful working-class children lived in certain types of neighbourhoods *"...very many of these families came from districts where the social classes were mixed, and where there was an important minority of middle-class children attending the local primary school"* (p.93). Although these results were suggestive of the existence of a 'neighbourhood' effect (associated with social composition of local home area) upon educational performance, no attempt was made to clarify the possible contribution of area of residence to pupil success.

Similarly, Douglas (1964) outlined the importance of family background variables upon chidren's attainments (in particular the influence of home and social class circumstances). However, Douglas also suggested that general environmental circumstances, including neighbourhood and school values, were significant, especially for middle-class pupils. *"The middle-class children .... tend to work hard even when their parents lack interest. This may reflect the high educational aspirations of the neighbouring middle-class families from which they draw their friends or the relatively high academic level of the primary schools they attend"* (p.90). Thus, Douglas's work suggested that neighbourhood and/or school effects related to social composition might operate through their influence upon residents' attitudes and aspirations. This hypothesis was not, however, tested as part of his research.

1. Distinguishing 'Neighbourhood' Effects From Those Due to Structural Factors

Filkin and Weir (1972), in a review of studies which introduced locality or area as a key sociological variable, argued that sociologists should not ignore the area factor since *"...it is a truism that all social behaviour occurs in space"* (p.107). They suggested that a more systematic approach was required *"...if the* *objective is to understand both the circumstances and the manner in which the spatial groupings of individuals may have a bearing on their behaviour and relationships"* (p.107).

A number of geographical studies of urban areas, particularly those of the incidence of urban deprivation, have emphasised the difference between spatial patterns which merely reflect structural (or societal) variations and those which reflect a specific 'place' or 'area' effect. Kirby (1981) has argued that it is important to differentiate between the existence of those deprived in the market place (people-poverty) and those deprived in situ (place-poverty), because the two types of poverty require different remedies. However, these two types of poverty are closely-knit and Kirby suggests that "..... *one of the major problems in this field lies in the difficulty of empirically differentiating between these different types of deprivation"* (p.177). Similar difficulties are encountered in attempts to disentangle area from structural effects upon educational or occupational outcomes. In research on educational and occupational achievement, for example, it is well known that social class is strongly related to achievement (the impact of social class in the context of the present study is discussed in greater detail in Chapter 7). Given that particular social classes are concentrated in different areas of the city, one would expect educational achievement and occupational achievement to vary in different areas, in line with the differential distribution of the social classes. If, however, when account is taken of the relationship between individual social class background and such achievements, consistent area differences in educational or occupational achievements remain, one can conjecture that such differences are not merely a reflection of structural variations, but are suggestive of a specific 'area' or 'neighbourhood' effect. (This approach is similar in principle to that adopted by Little and Mabey (1973) in assessing the impact of the social composition of the school, while controlling for the social class of individual pupils.)

Herbert (1975) also noted that the incidence of deprivation was not evenly distributed over society as a whole, but was specific to sections of the population. Spatial segregation of both social class and ethnic groups occurs in most urban areas (see Clark and Gleave, 1973; Harvey, 1973; or Shepherd, Westaway and Lee, 1974) and it is a corollary that there will be marked spatial concentrations of deprivation in those parts of the city in which the different sections of society live. This *"mirror image effect' of societal distributions in geographical space is one spatial quality"* (Herbert, 1975, p.363).

However, Herbert went on to suggest that, in the context of behavioural manifestations of deprivation, such as crime and delinquency, other spatial qualities might be involved. In particular, he argued the existence of a neighbourhood effect upon individuals in areas, such that *"...sets of values and associated forms of behaviour which exist within a given 'territory' may be transmitted to individuals who live there; there is a contagion or contaminating effect"* (p.363). As with Douglas's work, therefore, Herbert suggested that 'neighbourhood' or 'area' effects might operate through the impact of the attitudes and values prevalent in particular places.(3) A similar argument has been put forward by Hamnett (1979). He suggested that *"Area effects ... may, through the spatial concentration and proximity of certain social groups, exert a not inconsiderable influence over and above, though not perhaps entirely independently of, the social structure"* (p.251)

It is,therefore, important to try to distinguish the possible effects of area from differences between groups in their spatial setting. In the next section attention is focused on those studies which have attempted to test the existence of 'neighbourhood' or 'area' effects on educational or occupational attainments.

SECTION 2

Studies Testing The Existence Of 'Area' or 'Neighbourhood' Effects

Although explicit studies of the impact of 'area' or 'neighbourhood' effects in investigations of educational and occupational achievements are rare, Rogoff's (1965) study is an exception. In an attempt to investigate the way in which young people were allocated to positions in the class structure, and the part played by education in the allocation process, she examined three different interpretations of the well-established correlation between social class and educational and occupational achievements (namely, individual family differences in motivation, and differences in residential community and in school environments).

Rogoff argued that, because communities vary in the average social class affiliation of their residents, "*...such structural differences may set in motion .... informal mechanisms, such as normative climates or modal levels of social aspirations, which are likely to affect all members of the community to some extent - parents and children, upper, middle and working-classes* "(p.243). For thatreason she suggested that studies which examined academic or occupational achievements aspatially may lead to erroneous conclusions about causes of educational success because "*...one of the sources of social mobility may be hidden from view; for it is possible that the formal arrangements and informal norms of the community set both a floor and a ceiling on the ultimate achievements in educational and social class status of their young residents*" (p.243).

Despite this exposition, Rogoff's method of examining such area or community effects was very crude (as she was the first to admit) being limited to an analysis of students' performance in schools located in communities of different population size, while controlling for their social class and level of ability. In this way it was intended to test the hypothesis that residential community size could affect students' achievement.

Rogoff's findings indicated that "*...the suburbs stand out as most conducive to pronounced scholastic achievement... From those at the* *top to those at the bottom of the social-class hierarchy, all students attending large suburban schools emerge ... better equipped in academic skills"* (pp.249-250). However, because the school was the unit of analysis rather than the community, Rogoff's analyses did not take into account either the social mix or composition of the different community environments which she had suggested would have an impact upon local youngsters' social and educational aspirations. Moreover, the proposition that students' attitudes and aspirations varied between residential communities with differing characteristics in a consistent manner, was not investigated.

Sewell and Orenstein (1965), in a study of the influence of community of residence on occupational intentions, tested the hypothesis that there was no relationship between community of residence and such occupational intentions (when the influences of student sex, intelligence and socio-economic status were controlled). These authors followed a similar method of analysis to that employed by Rogoff. As in Rogoff's work, however, little attempt was made to distinguish between different types of community (for example, in terms of socio-economic composition) other than with respect to population size. Nevertheless, the authors found that the control of factors such as sex, intelligence and socio-economic status did not eliminate community-of-residence differences in occupational intention.

Sewell and Orenstein concluded that their analysis *"... shows that boys, but not girls, from rural areas and smaller communities have* *lower occupational aspirations than those from larger urban areas - independent of intelligence and socio-economic differences*"(p. 560) and suggested that "... *there are differences in the direct personal knowledge youth have about high-status positions, and these differences are related to both residence and status*" (pp. 561-562). In particular it was argued that the aspirations of high-status youth in small residential communities were depressed compared to those of their counterparts in urban areas, and that this was a reflection of a more restricted range of occupational opportunities in communities of a small size and less direct contact with, or knowledge of, occupants of high-status positions. *"Also working against the higher-status youth in the small community is the restricted interactional situation in the school and community in which he lives. This forces him to associate with many low-aspiring peers who may have a depressing influence on his aspirations. On the other hand, the high-status youth in the larger community is likely to interact mainly with high-status peers who reinforce his high occupational aspirations"* (p. 562).

Thus, although Sewell and Orenstein did not suggest directly, as Rogoff did, that the social composition of an area may influence the attitudes and aspirations of all residents, irrespective of their social class, the notion was implicit in their account of the factors responsible for differences in boys' aspirations in residential communities of different sizes.

Sewell and Orenstein found that the occupational aspirations of girls in large urban and small sized residential communities were accounted for when socio-economic status and intelligence were controlled. This, they suggested, was because the occupational alternatives for girls in rural communities were so severely limited that girls looked to the urban labour market. There "... *the job restrictions generally encountered by women force them to consider essentially the same limited set of occupational alternatives as urban girls....*" (p. 563). It was thus suggested that, for girls, the influence of sex, operating through attitudes (which seem to reflect the sex-stereotyping of occupations) may have eliminated the possibility of differences in aspiration due to community of residence. For boys, in contrast, differences were identified which were suggestive of a neighbourhood effect.

However, in a later study of educational aspirations, Sewell and Armer (1966) produced rather different conclusions. They researched the relationship between neighbourhood context and high school seniors' plans to enrol at college. The authors attempted to assess the relative importance of neighbourhood context in explaining college plans, when three factors known to be strongly associated with educational aspirations (student sex, intelligence and socio-economic status) were controlled. It was predicted "... *that informal mechanisms, such as normative climates or model levels of aspiration, would emerge and would have some pervasive influence on the aspirations of all youth residing in the neighbourhood, regardless of the socio-economic status or ability levels of the youth*" (p.162).

The authors concluded that, when sex, socio-economic status and intelligence were taken into account, the relationship between neighbourhood context and educational aspirations was much reduced. They concluded that *"past claims for the importance of neighbourhood context in the development of educational aspirations may have been considerably overstated"* (p.168).

In all, results from Sewell and Armer's study suggested that the inclusion of neighbourhood status as a predictor variable resulted in an absolute increase of only 1.8 per cent in the explained variance of college plans, beyond the effects of sex, socio-economic status and intelligence. Despite this, Sewell and Armer suggested that even this small contribution was important because the traditional variables of sex, socio-economic status and intelligence leave a large proportion of the variance unexplained (in all these three factors only accounted for 22.9 per cent of the variance).

The Sewell and Armer Study, however, used only one indicator of neighbourhood status - the percentage of males of fourteen years and older living in the area and employed in white-collar occupations - and neighbourhoods were divided into three groups: high, middle and low. Although the authors noted that these areas were also distinct from each other in terms of other relevant criteria (such as the percentage of adults with one or more years of college education, the average value of homes, and the percentage of non-whites) these variables were not included in their analyses. Also, it was claimed that *"the distinctions are not exaggerated in this study, as in much* *previous research, by purposefully selecting only neighbourhoods which differ widely in socio-economic status"* (p.162). However, it is quite possible that it is only in widely different types of neighbourhoods that 'neighbourhood' effects are likely to explain a significant proportion of the variance in students' educational, aspirations. Thus, it is perhaps not surprising that, overall, the results of Sewell and Armer's indicated that neighbourhood context had only a small effect.

In addition, as Sewell and Armer themselves admitted, the effect of neighbourhood context was considerably more important for some sub-populations than for others - a finding that is not revealed by their multiple correlation analyses (p.168). Thus, for some groups but not others, neighbourhood context may be an important factor which should be taken into account. It also seems likely that the occupational ambitions of high school seniors not intending to go on to college and living in certain types of neighbourhood may have been influenced by the socio-economic composition of their home area (through its impact upon the attitudes and norms of prevalent amongst local residents). However, any such effects would not be identified in the Sewell and Armer study because it was solely concerned with educational aspirations, and did not investigate area differences in attitudes.

Despite the limitations of their crude methods of differentiating communities of residence, Rogoff's study and the studies by Sewell and colleagues were important because of their attempts to distinguish between those differences in occupational or educational achievements (or aspirations) which reflected the influences of structural factors, and those which were related to a n effect related to area of residence.

In contrast to these early studies, more recent sociological work has, on the whole, tended to ignore or discount area influences. This may be due to a misinterpretation of the way in which 'area' effects may operate. For example, Cornelius and Cockburn (1978) examined differences in the examination achievements of pupils living in different types of enumeration districts (EDs). They found that those from the most deprived EDs performed consistently less well in examinations than those in less deprived EDs. The authors claimed that this indicated a strong association between academic achievement and home background. In fact, these results do not provide such evidence. The data used to represent home background measured the characteristics of the neighbourhoods rather than individual pupils' homes.

It may be that pupils in deprived areas do less well than pupils in non-deprived areas because they come from deprived homes. However, some pupils in deprived areas certainly will not come from deprived homes (see Holterman, (1975), or Barnes and Lucas, (1974), for analyses of the incidence of area concentrations of disadvantage). If these pupils still perform less well than similar pupils in other less disadvantaged areas, the results could be interpreted as evidence of a 'neighbourhood' or 'area' effect. It may be that the educational aspirations and motivations of pupils living in areas containing a concentration of disadvantaged families are influenced by the norms of their communities, even if they themselves are not members of disadvantaged families.

However, although the majority of sociological studies have given little systematic attention to 'area' effects in educational or occupational research, work by Barron-Mays (1974) and by Eggleston (1970) is the exception to the general lack of concern about 'area' effects demonstrated by recent sociological research.

Barron-Mays was concerned to establish the impact of neighbourhood values upon students' attitudes towards education, through a detailed study of schools and their local environment. The study was set in one of the older and least favoured parts of residential Liverpool. Barron-Mays explored the relationships between the norms and values held by the local residents and the institutional values of formal education prevalent in schools. He argued that the discrepancy between such norms and values led to educational under-achievement by youngsters in disadvantaged communities. However, the study did not examine the influence of local attitudes upon pupils' achievements directly. Therefore, it was not possible to establish whether a 'neighbourhood' effect was operating through local attitudes, nor its relative importance in comparison with other factors.

Eggleston's study also concentrated upon the community environment of the school. He noted that *"In modern Britain, the incidence of* *social class and urbanisation has led to geographical groupings which are by no means randomly ordered. We find local areas of housing where inhabitants have much in common in their way of life."* (p.93) Eggleston examined the 'community-context theory' (which he described in similar ways to the theories of 'area' and 'neighbourhood' effects discussed earlier). He noted *"It is a popular thesis, however, that distinctive values, attitudes and behaviour - in short a distinctive sub-culture can arise .... such a sub-culture is often held to influence the educational aspirations of young people in the community"* (p.106)

Eggleston tested the influence of 'community-context' by following Rogoff's work, but studied the effects in a British setting. He examined the transfer to upper school of middle-class and working-class pupils in Leicester, according to the social class composition of their home areas. As might be expected, he found that social class had a major impact upon decisions to transfer to a school offering extended education. However, the results demonstrated that the social class composition of the local community also had an impact *" Though in all areas the transfer rate of non-manual workers' children was higher than that of the manual workers' children, the manual workers' rate was highest in the most middle-class community and lowest in the most working-class community"* (p.107).

Although it was suggested that these findings might reflect the influence of different neighbourhood attitudes and values, Eggleston's study did not examine local residents' attitudes and values directly.

Therefore, it was not possible to conclude that such factors were actually responsible for the observed differences in transfer rates.

A few geographical studies, however, have attempted to distinguish between spatial variations in educational achievement and attitudes which reflect structural, and those which reflect 'neighbourhood' or 'area' influences by means of more sophisticated analyses.

In an analysis of variations in parental attitudes towards their sons' education in Sunderland, Robson (1969) found, as might be expected, that social class was an important predictor of parental attitudes. However, spatial analyses of these attitudes indicated that "... *no matter what the area, the attitudes of individual families are more familiar to those prevailing around them than to those of the objective social class*" (p.244). Thus, Robson suggested that "*The neighbourhood, or immediate physical and social environment in which people live, is an important source of some these common forces which influence the development of attitudes towards education* " (p.199). Robson pointed out (in line with Rogoff's (1966) proposition, discussed earlier) that educational studies which only consider class or class structure "... *tend to abstract the individual from the social setting in which his attitudes are largely formed*" (p.199). In his study, therefore, Robson examined both class and areal variations in attitude and the forces which could operate through the characteristics of residential environment to influence the development of attitudes towards education. He concluded that 'neighbourhood' effects played a role over and above that of social class.

Two recent geographical studies have also provided sophisticated investigations of the impact of residential environment. These are an analysis of reading attainment amongst primary age pupils in inner London, conducted by Panton (1982), and a study in inner city Manchester of secondary pupils' attainments and occupational aspirations and expectations by Moulden and Bradford (1984).

Moulden's and Bradford's work was unusual in that it tested the impact of residential environment upon the educational attainment and occupational aspirations of pupils in their second and fourth year at secondary school. This study took into account individual pupils' characteristics (sex, social class, intelligence, family size), as well as characteristics of the residential environment. The authors found "... *a relationship between residential environment and educational attainment which cannot be explained simply in terms of the social class of its residents*" (p.58).

However, in contrast to previous studies, which had suggested that 'neighbourhood' effects operated through an impact upon local residents' attitudes and expectations, Moulden and Bradford concluded that residential environment was more important than individual pupils' attitudes to education, and that the impact of residential environment did not operate in an indirect way through attitudes to education. It was concluded that "*Although these results strongly* *suggest that the residential environment influences education attainment, the processes whereby this influence is exerted are still unclear*"(p.63).

Although Moulden and Bradford's study indicated that residential environment was important in the explanation of educational attainment they found that occupational aspirations were less satisfactorily explained. Occupational expectations, attainment, social class and position in the family were more closely related to aspirations than was residential environment, which was not found to be important.

The study also concluded (in contrast to Sewell and Orenstein's (1966) work) that girls' educational attainment was more closely related to background factors, particularly residential environment, than was boys' attainment. (It should be noted that Sewell and Orenstein's study focused on occupational aspirations rather than on educational attainment.)

The Moulden and Bradford study is of interest, mainly because of its major conclusion on the effects of residential environment "...*These results suggest that its contribution to the explanation of educational attainment has been seriously underrated*" (p.58). However, the absence of a relationship between residential environment and attitudes to education is in contrast to the hypotheses generated by all previous studies. Moreover, no adequate explanation of the way in which residential environment influenced attainment was proposed.

It is possible that the influence may have operated through parental attitudes to education (which were not tested in the study).

The absence of a relationship between residential environment and occupational aspirations may have been due to the unsuitability of the measure of occupational aspiration to a sample of school pupils. It seems probable that any influence of residential environment would be more strongly related to occupational attainment than to aspirations (which, especially for 12 to 14 year-olds may not have been fully formed).

In addition, Moulden and Bradford's use of scores of the characteristics of residential environments on one major (socio-economic) dimension, may not have been the best method of distinguishing residential areas. It is possible that the identification of clusters of 'like' areas on selected measures of the socio-economic environment might have produced different results. Furthermore, Moulden and Bradford's use of school stream as the only measure of attainment in their study may well have influenced the results. This is because, if teachers are affected (possibly unconsciously) by factors other than cognitive attainment in their judgements of children (as has been suggested by Rosenthall and Jacobson, 1968; or Keddie, 1971), it is possible that the sort of neighbourhood in which a child lived could have had an indirect impact upon the stream to which they were assigned.

Nonetheless, the Moulden and Bradford study made an important contribution to the analysis of 'area' influences through the separation of effects due to structural factors and those due to residential environment. Moreover, the study was exceptional in its attempt to establish whether the effects of residential environment operated through an impact upon pupils' attitudes. The treatment of occupational aspirations was, however, more problematic. A better test of 'area' influences on occupational outcomes would be provided by an investigation of the attitudes of older students which concentrated upon their perceptions of different types of employment in relation to the occupations they had chosen to enter. This strategy would enable a more adequate investigation of the hypothesis that 'area' effects on occupational choice operate through differences between areas in residents' attitudes towards employment.

Panton's (1982) study of literacy in London tested the hypothesis that area-based characteristics had an impact upon reading performance over and above that due to children's social class background. As with Moulden and Bradford's work, census information was used to obtain measures of the residential environment. However, rather than use loadings derived from principle components analysis to characterise the residential environment, Panton retained information about specific aspects of home areas (social class composition, tenure and so on) in his study of 'area' effects and reading performance).

As a result of analyses of reading scores in 21 different wards, Panton concluded that area-based characteristics were important -

"... middle-class children living in middle-class areas are more literate than middle-class children living in working-class areas. Working class children living in working-class areas are less literate than working-class children living in middle-class areas" (p.245). Panton, in contrast to Moulden and Bradford, argued that the *"characteristics of the areas themselves help to produce spatial variations in the performance of individual socio-economic groups. These area effects operate partly through the effect of attitudinal norms on parents and on children, partly through the depressing effect of low living standards on educational standards"*.(p.245)

Panton thus reached a similar conclusion about the importance of the socio-economic characteristics of the residential environment to the Moulden and Bradford study. However, his work drew different conclusions about the importance of attitudes in the operation of 'neighbourhood' or 'area' effects. Panton's work did not, unfortunately, analyse data at the level of the individual and his information about attitudes was based on teachers' assessments (which, as he noted, may have been biased). Moulden and Bradford's work used rather more sophisticated techniques of analysis. The measure of educational attainment used in Moulden and Bradford's study, however, was very crude (as discussed above). Moreover, the use of loadings on one socio-economic dimension (derived from principle components analysis to describe residential environment) may have obscured some important differences between areas which were taken into account in Panton's work.

Nonetheless, these two studies have made an important contribution to the analysis of 'area' effects. They both suggested that educational attainment was affected by residential environment, over and above the effects of pupils' social class backgrounds. This evidence of contextual effects, due to social composition, support the findings of school-based research noted earlier.

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SECTION 3

Implications of Previous Research for the Present Study

The evidence of previous research (educational, sociological and geographical), has suggested that pupils' educational and occupational aspirations and achievements may not only be influenced by structural factors, such as social class or sex, but may also be affected by 'neighbourhood' or 'area' effects. These are believed to operate through the norms and attitudes prevalent in their home area. Nonetheless, a detailed examination of the few studies which have considered such contextual variables (directly or indirectly), indicates that comparatively little attention has been paid to establishing the relative contributions of structural factors (background characteristics of individuals such as sex or social class origin), and those which may affect particular individuals living in certain types of neighbourhoods (possible 'contextual' or 'area' effects related to neighbourhood characteristics). Only the work by Panton (1982) and by Moulden and Bradford (1984) has adequately tested the impact of residential environment, and both studies concluded that 'neighbourhood' or 'area' effects did influence educational attainment.

Although little work has been undertaken to analyse the possible contributions of neighbourhood or area factors as influences upon educational performance, even less attention has been paid to the question of such factors as influences upon occupational achievements and aspirations. Yet, it seems likely that the factors which have been found to be predictive of educational achievement would also be related to occupational achievement because of the close relationship between educational success and occupational achievements (see Halsey et al, 1980; Ryrie, 1983).

Moreover, no study has investigated neighbourhood influences upon occupational attainment. The studies by Sewell and Orenstein (1968) and Moulden and Bradford (1984) considered aspirations, which may not always be closely related to later occupational outcomes.

There is considerable evidence that particular social class groups tend to live in different areas, such that concentrations of, for example, non-manual or of unskilled-manual groups can be identified in different parts of urban areas (see Shepherd, Westaway & Lee 1974). Census data also provide evidence that there are concentrations of people working in particular kinds of employment, in particular areas. Such spatial differences in the distribution of people in specific kinds of employment, or of people of a particular social class, might be expected to have an impact upon the development of images of, and attitudes towards, different jobs held by local residents. This impact may be especially strong for youngsters born and raised in the neighbourhood.

The present investigation, after examining the influence of structural factors upon participation in different types of vocational training (see Chapter 7), makes an attempt to explore further the possible influences of 'area' effects. This is done, firstly, through a consideration of relationships between spatial patterns of participation in vocational training and characteristics of the residential environment and, secondly, through analyses of students' attitudes. These analyses were undertaken because the majority of studies which noted the possible contributions of 'neighbourhood' or 'area' effects have argued these operated through local residents' attitudes and values. These attitudes and values, in turn, are held to be related to aspects of the socio-economic composition of the neighbourhood.

Previous studies have, however, generally failed to explore these supposed interrelationships. Few have made adequate study of the socio-economic characteristics of neighbourhoods to establish whether the attitudes held by residents in different kinds of areas differed in the directions predicted by the hypothesised 'area' effect. Moreover, all studies have examined either achievement or educational or occupational aspirations. None have examined occupational or training entry, and none have paid particular attention to school-leavers with average levels of qualifications.

The distribution of students participating in different kinds of low-level vocational training (related to three major employment fields) has, therefore, been investigated to establish whether areal variations in participation could be identified. In addition, the influence of structural factors has been considered, using information obtained from individual students. In this way account is taken of the contributions of sex, social class and achievement identified in previous studies. An attempt has been made to extend previous research by analyses of students' attitudes towards, and perceptions of, employment. These are designed to establish whether attitudes are related in a consistent way to participation in particular kinds of training. If students' attitudes are found to be related to training choices, and if such attitudes vary between neighbourhoods, in line with spatial differences in participation in different types of vocational training, evidence for the operation of 'area' effects will be provided.

NOTES

Chapter 4

(1) A more detailed discussion of the impact of structural factors (such as social class, sex or educational qualifications) upon vocational training choices is provided in Chapter 7.

(2) Reviews of the possible influences of other factors are included in Chapter 7 (which considers the contribution of structural factors) and Chapter 8, (which focuses upon attitudes to employment).

(3) This work builds on that undertaken by Morris (1957) which described the nature of 'criminal areas'.

CHAPTER 5

THE DISTRIBUTION OF STUDENTS: RELATIONSHIPS BETWEEN SPATIAL PATTERNS OF PARTICIPATION IN VOCATIONAL TRAINING AND THE SOCIO-ECONOMIC CHARACTERISTICS OF HOME AREAS

INTRODUCTION

The present study aims to assess the relative importance of a variety of factors, including possible 'area' on 'neighbourhood' effects, which may have influenced an individual student's choice of vocational training. If spatial differences in patterns of participation in vocational training cannot be identified, it is extremely unlikely that 'area' effects could have influenced students' decisions to enter the three types of vocational training which form the focus of this project. For this reason, the study begins with an examination of the spatial distributions of commercial, construction and engineering students.

Many geographical studies have investigated the structure of urban social areas (for a review, see Herbert and Johnston, 1978). Timms (1978) has suggested that *"..... the urban mosaic is differentiated in terms of the social, demographic and economic characteristics of its residents but also in terms of their perceived behaviours"* (p.38). Significant spatial variations in the distributions of many social phenomena, including crime and delinquency, psychiatric disorders, educational achievement and aspirations, and social stratification, have been identified, and these distributions have been found to be related to particular characteristics of the urban environment. Thus, in considering the incidence of delinquents and delinquency within the city, Herbert (1978) noted that patterns were rarely random or haphazard but took the form of well defined clusters and, when distributions were examined in detail, they were found to *"....show consistent associations with particular attributes of the socio-spatial environment"* (p.219/220).

An ecological investigation of participation in vocational training has been used to establish whether spatial patterns of entry into selected courses were non-random and, if so, whether vocational student distributions were associated with particular characteristics of the socio-spatial environments of the inner city. Statistical analyses of data about student distributions and area characteristics, using aggregated data available at the ward level, can be used as the basis for probabilistic statements about individual behaviour (see Herbert, 1978, p.221 for a discussion of the role of ecological inference). For example, if it were found that participation in low-level vocational training was higher in skilled manual neighbourhoods, it would be possible to conclude that individual school leavers in such areas were more likely than those in other areas to enter such training, even though the reasons for such higher rates of participation may not be clear.

However, although such ecological investigations provide a necessary background to a study of factors which influence the individual's participation in particular types of vocational training, they cannot provide more than circumstantial evidence of a 'neighbourhood' or 'area' effect. For, as Johnson and Herbert (1978) have noted, much more research, including analyses of influences upon individuals, is required. (Such analyses, which investigate the possible link between students' attitudes and 'area' effects, are presented in Chapter 9.)

In this chapter an ecological approach has been adopted. First, the spatial distributions of students undertaking commercial, construction and engineering training in two years (1978 and 1979) are described and compared. Ecological analyses are then used to explore possible associations between selected socio-economic indicators of the characteristics of residential environments and the observed spatial patterns of participation in vocational training.

SECTION 1

The Spatial Distribution of Students

1. The College Catchment Areas

The first stage of the project identified the catchment areas of the five colleges included in the study in 1978. The addresses of all first year students undertaking the selected commercial, construction or engineering courses were mapped on a ward basis. The numbers of students attending each college and included in the survey varied, from 592 at Hackney College to 256 at Woolwich, reflecting differences in the size of the colleges and the range of selected courses offered by particular institutions (see Table 5.1).

Visual examination of the student distributions (see Figure 5.1) reveals some differences between the five colleges in the catchment area patterns identified. For example, the dispersed distribution of students attending Woolwich College contrasts with the concentrated pattern around Paddington College. Variations in the percentages of students living in areas immediately surrounding the college they attend seem to reflect the types of courses undertaken. It was found that commercial students were more likely than their construction or engineering counterparts to attend a centre near their home. For example, over 50 per cent of students attending the Stoke Newington annexe of Hackney College, which only offered commercial courses, lived within two miles of the annexe and only 8.5 per cent came from homes more than four miles away. By contrast, 43 per cent of engineering students attending the Paddington Green Centre of Paddington College, and 40 per cent of construction students attending the Lower Sydenham annexe of South-East London College, lived more than four miles from their centres.

These patterns probably reflect the greater number of centres in inner London which offer the selected commercial courses compared with the numbers offering the engineering or construction courses, included in this study. The potential commercial student thus had a greater chance of finding a local centre providing a suitable course. Commercial students were also much less likely than their construction or engineering counterparts to be sponsored by an employer and therefore may have had a greater degree of choice about which college to attend.(1) Their lack of financial sponsorship was also likely to have limited their ability to travel to more distant colleges.

The degree of mix and overlap of the college catchment areas also varied, being greater south of the Thames. North of the river, student distributions were more clearly separated, with an area of very low student production in Camden separating the catchments of Hackney and Paddington Colleges. However, although each catchment was unique, the student distributions exhibited many common features. It is clear that student movement in both directions between north and south London was very limited, particularly for the commercial group.(2)

In south London, however, the river did not appear to mark the limits of student distributions to the same extent as in the north. Thus, although the number of students who crossed the river from the south to attend Hackney or Paddington College in the north was relatively low (72 or 8% of the first years attending the two colleges), it was higher than the number of north London students attending colleges in the south (51 in all or 4.5% of north London students). The river, therefore, appears to have been perceived as a greater barrier by north than by south London residents. This finding is suggestive of an 'area' effect.

The distribution of the student intakes (within inner London) is illustrated on a ward basis in Figure 5.2. It provides clear evidence that student patterns were not random, nor were students evenly spread within the greater London area - rather, there were clusters of students in some places and not in others.

Some of the gaps in the distributions on the map simply reflected the distribution of open spaces, industrial complexes and other non-residential land uses within inner London.(3) However, social factors probably exerted more important effects upon the spatial distribution of students. Thus, few of the sample of construction or engineering students lived in high-status middle-class residential areas such as the Blackheath and Lewisham Village, Dulwich, Norwood and St Mildred Lee districts south of the Thames, or in the Hampstead, Highgate and Muswell Hill districts of north London. (A key to the location of named wards is provided in Figure 5.3. Appendix 5.1 lists ward names by borough.) In contrast to such middle-class districts, traditional working-class areas appeared to produce clusters of students. For example, student distributions were concentrated in parts of Vauxhall, Kennington, Stockwell, Ladywell and Plumstead in the south, while parts of Whitechapel, Dalston, Stoke Newington, Highbury and Holloway in the north also contained clusters of students.

During the process of mapping the students' addresses on a ward basis it was noted that groups of students were frequently drawn from particular roads and housing estates. For example, clusters of construction students were found in the North Peckham Estate in Peckham. Six students attending South-East London College lived in Lethbridge Close, SE13, while three lived in Foxberry Road, SE4.

At a higher spatial scale than that of individual roads, it was also found that particular courses tended to draw students from specific areas. Thus, for example, eight of the 24 students studying BEC courses at Paddington College lived in the ward of Wembley Central and a cluster of eight students studying Painting and Decorating at Vauxhall College came from the South Norwood ward in Lambeth. These patterns may represent common sources or types of careers advice available in these localities, or the importance of informal communication networks, or the example of school and neighbourhood friends and contemporaries. In the case of sponsored students, it is possible that local employment opportunities may also have been of some importance.(4)

2. Correspondence Between Student Distributions Over Time

It is possible that the spatial patterns of the 1978 intake of students were exceptional. Catchment area maps were therefore produced for the equivalent student intake in 1979 to see how much student distributions varied from year to year. The numbers of students included in the 1979 survey are given, by college, in Table 5.1. Unfortunately, a few courses which were included in the 1978 survey were not run in 1979, and others had been expanded. This resulted in the inclusion of slightly higher numbers of commercial and slightly lower numbers of engineering students in the 1979 survey (see Table 5.2). However, these changes produced little difference between the total numbers of students included in the two surveys.

Over two-thirds of the 1979 student intake lived within inner London, a proportion very similar to that of the 1978 sample (see Table 5.3). In addition, the percentages of students located in outer London (26.1% and 27.0% in 1978 and 1979 respectively) remained constant over the two year period. A rather higher percentage of commercial than either construction or engineering students lived within the inner city in both 1978 and 1979. The 1979 pattern corresponded closely to that of 1978, indicating that the distributions of commercial students attending the five colleges were more concentrated than those of construction or engineering students.

The catchments of the five colleges seem to have been relatively stable, at least in the short term. For example, in 1979 catchment area overlap was again quite marked south of the river and, in the north, the catchments of Paddington and Hackney Colleges were separated by an area of low student production in Camden. Very few of the 1979 student intake living in north London attended colleges in the south, and few students in south London attend colleges in the north, confirming the patterns of the 1978 student intake.

The distribution of the 1979 student intake at the ward level is shown in Figure 5.4. A visual comparison of student patterns in 1978 and 1979 revealed similarities in the patterns of concentration of students in particular areas in both years. To test the strength of the visual association between student distributions in 1978 and 1979, product moment correlation coefficients were calculated using data on the numbers of vocational craft students located in 209 inner London wards in each year.(5) The results were indicative of a strong, highly significant positive association between the distributions of students as a whole in 1978 and 1979 ($r=0.71$, $p < 0.0001$). Wards which produced high numbers of students in 1978 tended to produce high numbers the following year. Similarly, wards containing few students in 1978 contained few in 1979.

Figuresin Appendix 5.2 show the variation in the concentration of students at the ward level for 1978 and 1979 combined totals. It is clear that high numbers of students were located in some wards, whereas in others the numbers were low. For example, nearly a quarter of the 209 wards contained more than 22 students, and a quarter fewer than six.

3. Variations in the Distributions of the Three Student Groups

When the distributions of commercial, construction and engineering students were examined separately, it was also found that wards which produced high numbers of one student group in 1978 tended to produce high numbers in 1979, and those which had produced low numbers in 1978 produced low numbers the following year. The correlations for the engineering and commercial groups were 0.61 and 0.65 ($p<0.0001$) respectively.

However, although the association between the spatial distribution of construction students in 1978 and 1979 was both positive and highly significant ($r=0.51$, $p<0.0001$), the coefficient was lower than that obtained for commercial or engineering groups, indicating that the spatial distributions of engineering and commercial students were more stable over time than those of construction students. This is possibly a reflection of the lower numbers and less concentrated distribution of construction students in the two years under consideration.

It is possible that areas which contained high numbers of one student group also tended to contain high numbers of other types of student. However, it is equally likely that school leavers in some areas may have been more likely to opt into a particular type of training than were their counterparts in other areas. Variation in the numbers of the three student groups at the ward level are illustrated in Figures 5.5, 5.6 and 5.7 (showing the commercial, construction and engineering groups, respectively). Visual examination suggests some differences in the distributions of the three groups. The results of correlation analysis, presented in Table 5.4, indicate that the distributions of construction and engineering students were very weakly associated at the ward level in both 1978 and in 1979 ($r=0.16$ for combined totals in both years). Similarly, the distributions of commercial and construction students were only weakly positively correlated ($r=0.26$, $p.<0.05$). These results contrast with the strong positive associations between the distributions of the different student groups over time. However, commercial and engineering student distributions were much more strongly correlated at the ward level ($r= 0.56$, $p <0.00001$ for combined totals in 1978 and 1979).

In order to establish whether the observed distributions of the three student groups differed significantly from the patterns which would be expected if there were no differences in the spatial distributions of commercial, construction and engineering students, chi-square analysis was used. The chi-square statistic, based on the differences between the observed and the expected frequencies of each student group in different areas, was used to see whether certain places were over- or under-producing particular types of student.(6) The results, a chi-square value of 297.4 in 1978 and 289.0 in 1979, were statistically significant ($p <0.05$) indicating that the three student groups were not evenly spread within the inner city in either year - certain areas over- or under-produced students on particular courses.

To test the possibility that the spatial distribution of one student group might differ so much from expected that it alone was responsible for such high chi-square values, separate statistics were calculated for each student group. The results confirmed that, for the inner London area, the spatial distributions of all three student groups differed significantly from expected patterns. Particular groups of wards thus contained higher numbers of commercial students than predicted, whereas other ward groups produced higher numbers of engineering or fewer construction students than expected (see Table 5.5).

SECTION 2

Relationships Between Student Distributions and Socio-economic Characteristics of Home Areas

1. Choice of Census Indicators of Socio-Economic Structure

Robson (1969) has suggested that one of the purposes of urban social geography is to show how inter-connections between spatial distributions, social structure and social attitudes can be examined to aid the understanding of urban life. He argued that spatial patterns are a reflection of social processes which are "*...at once highlighted and better understood by the identification of the spatial distributions and the spatial associations*" (p.33). Pronounced areal differences in the distributions of vocational students, generally and by group, have here been identified and described for both 1978 and 1979. Relationships between these student patterns and selected socio-economic indicators of areal structure will now be examined.

Many studies have indicated that urban areas are sharply differentiated in terms of the distributions of particular social and ethnic groups, measures of housing quality and tenure, and educational achievement (see, for example, the series of maps of social distributions in London produced by Shepherd, Westaway and Lee, 1974). Physical space is unlikely to have acted as an independent causal factor in producing the spatial distribution of vocational students (except, perhaps, through a 'distance decay' effect). It is likely, however, that the identification of the factors spatially associated with the distribution of students will play a part in developing explanations for these spatial patterns and will enable the identification of the types of area which tend to over- or under-produce school leavers entering the three types of vocational courses included in this study.

Social indicators have become increasingly employed in geographical and sociological investigations, particularly in analyses of urban areas.(7) The census has been widely used in such studies because it is the only source for which information is available about a variety of social and economic characteristics for the same areal units.(8) Census-based measures of social class, housing conditions and tenure, ethnicity and levels of educational attainment have been found to be useful variables for differentiating urban sub-areas, and have been employed in numerous urban studies. For example, both Herbert (1978) and Baldwin and Bottoms (1976) used census-based measures in their ecological analyses of the incidence of urban delinquency and crime. Panton (1980) used a variety of census-based measures, including those of social class, tenure, housing conditions and levels of educational attainment, in analyses of variations in literacy levels in inner London. Both Robson (1969) and Moulden (1980) similarly employed census based variables when respectively investigating parental attitudes towards education and levels of attainment.

2. Hypotheses

Thirteen census variables were selected to delineate neighbourhoods in terms of their social class composition and stability, the educational background of the population, and their ethnic composition (see Appendix 5.3). Drawing upon ecological, educational and sociological research literature a number of hypotheses about the possible relationships between student numbers and the selected socio-economic measures were constituted as follows:

Hypothesis 1

'The number of youngsters participating in low-level vocational courses is inversely related to the spatial distribution of professional and other non-manual workers in an area, and positively related to the distribution of skilled manual workers.'

Such ecological relationships would represent the combined results of both structural and 'area' effects. The structural effects would represent the 'mirror image' relationship (the spatial distribution of vocational students would be expected to reflect the spatial distribution of the social class group from which they were predominantly drawn).(9) However, an 'area' effect, related to the social class composition of neighbourhoods, might also be of importance. As Hamnett (1979) has suggested, the spatial concentration and proximity of particular social groups may exert an influence over and above that of the social structure.

Thus, in predominantly non-manual areas, it would be expected that non-manual types of employment would be more highly valued and that the employment ambitions and expectations of young people would tend to favour non-manual work or academic training, rather than vocational courses leading to low-level clerical work or the skilled manual trades. However, in mainly skilled manual areas, vocational training for the skilled trades would be expected to be more popular because of postive attitudes towards skilled work in such areas (10). It seems likely that structural and 'area' effects of social composition would both influence patterns of participation in vocational training.

Hypothesis 2

'Student numbers are negatively related to the spatial distribution of measures of the value placed on educational achievement'.

Work by Moulden (1980) suggested that youngsters' attainments and occupational ambitions were related to characteristics of their home areas, such that those living in areas characterised by a higher than average proportion of qualified people obtained higher attainments, and had higher occupational ambitions, than youngsters in areas where a smaller than average percentage of the adult population were qualified. In areas where a high percentage of the adult population had obtained degrees or 'A'-levels, it would, therefore, be expected that, overall, school leavers would place a higher value on academic attainment and non-manual work. If this was the case, relatively few school leavers in such areas would be expected to have entered low-level vocational courses, because such training would probably be less socially acceptable than in more disadvantaged areas. In addition, a wider range of training and employment opportunities might have been available to school leavers in more socially advantaged areas.

Hypothesis 3

'Student numbers are negatively related to the proportion of privately rented housing in an area'.

Baldwin and Bottoms (1976) argued that the proportion of privately rented housing is a good indicator of an area's social stability - high levels of instability being associated with high proportions of privately rented accommodation. Work by Herbert (1976) also showed that delinquency was positively related to the proportion of privately rented housing in the neighbourhood. It would be expected, that in socially 'unstable' areas school leavers would be less likely to have entered vocational training because a lower value would be placed upon planning for the future.

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3. Testing the Hypotheses

Thirteen measures of socio-economic characteristics were obtained from 1971 Census data. This source was chosen in preference to the 1981 Census because, although seven years out of date at the start of this study, it was felt that the characteristics of wards at the time school leavers were growing up were likely to be of more relevance in a study of ecological influences, than was data available for 1981. By this year students had already entered, and in most cases, completed, their vocational courses.

Product moment correlation coefficients were calculated to establish whether the numbers of students in a ward and the ward's rating on the various census measures were associated. The results, presented in Table 5.6, indicate that spatial variations in the percentage of economically active males in different social class groups were reflected in areal variations in participation in low-level vocational training. In particular, in wards which contained a high percentage of skilled manual workers were more likely than other areas to contain low-level vocational students ($r=0.42$ $p<0.001$). In contrast, where a high percentage of workers was in non-manual or professional work, school leavers were apparently less likely to have entered low-level vocational training ($r=-0.37$ $p<0.01$). These ecological analyses suggest, therefore, that the social class composition of area of residence was related to school leavers' job and training choices and provides support for the first of the hypotheses presented earlier.

A number of educational studies have suggested that, at the individual level, measures of parental education are positively correlated with parents' interest in their child's educational success (see Douglas, 1964, or Rutter and Madge, 1976, for example). At the area level it was hypothesised that, in neighbourhoods where high academic achievements and expectations were the norm, school leavers would be less likely to opt into low-level vocational training than would school leavers in areas where academic achievements and expectations were lower. Correlation analyses indicated that area-based measures of academic attainment (the percentages of the adult population with 'A' levels or degrees were chosen as indicators of the value placed on education), were significantly negatively associated with student distributions ($r=-0.43$ $p<0.001$), supporting the second hypothesis. This result suggests that a concentration of adults with good academic backgrounds did have a depressing effect on youngsters' participation in low-level vocational training at the ward level. It was probable that this, in turn, was another reflection of the higher value placed on academic education and non-manual employment by school leavers in more middle-class areas and the strong associations between the distributions of social groups and the measures of academic attainment.

The number of vocational students was also significantly negatively correlated with the percentage of population living in privately rented accommodation ($r=-0.30$, $p<0.001$), as hypothesis three suggested. It is possible that school leavers in these 'socially unstable' areas were less future-oriented and thus put a lower value on vocational training than did their counterparts in stable, skilled manual neighbourhoods. This, in turn, would be expected to influence the numbers participating in vocational training in such areas.

Because the thirteen census measures were highly inter-correlated at the ward level (see Table 5.7), further analyses were undertaken to establish the relative contributions of particular variables in accounting for spatial variations in the numerical distribution of vocational students. In addition, although variations in the distribution of vocational students appeared to be related to measures of social class structure, educational attainment and tenure at the ward level, it is also possible that they merely reflected the influence of ward size in terms of population numbers. In particular, one explanation which should be considered is that the student pattern was a function of the number of sixteen to eighteen year olds living in different areas.

Figures on the numbers of people aged between five and fifteen years of age were used as a crude measure of the possible population of school leavers at the ward level in 1978/79.(11) Correlation analysis indicated that the relationship between the size of the population of young people and student production was, as expected, highly significant and positive ($r= 0.54$ $p.<0.0001$). In addition, the size of the population of young people was also found to be statistically significantly correlated with many of the census measures of socio-economic characteristics at the ward level (see Table 5.7).

4. Prediction of Student Distributions on the Basis of Socio-Economic Characteristics at the Ward Level

Due to the inter-correlations between the various indicators of socio-economic characteristics and the numbers of young people, multiple regression analysis was used to provide a description of the linear dependence of the number of vocational students on the various socio-economic characteristics of wards, while controlling for the influence of the size of the population of young people. The variable, 'number of people aged five to fifteen', was entered into the regression analysis first, in order to control for the possible effect of this factor before examining the contributions of socio-economic characteristics. The method of forward stepwise inclusion was used to isolate the respective contributions to the statistical explanation of variance in the numbers of vocational students made by the remaining census measures, once the effect of population size had been taken into account. The results of the stepwise multiple regression analysis are presented in Table 5.8. In all, 36 per cent of the variance was accounted for by two factors, the number of young people and the percentage of economically active males in skilled manual work. Both were positively partially correlated with the number of vocational students at the ward level. An examination of the relevant partial correlation coefficients indicates that none of the other measures of area socio-economic characteristics added significantly to the proportion of variance explained when these two factors had been included in the regression equations.(12)

Thus, these results indicate that school leavers in areas containing a high percentage of skilled manual workers were more likely than those in other areas to have entered low-level vocational training, presumably because expectations or opportunities available to school leavers in these areas were different from those in more middle-class neighbourhoods.

The linear regression model assumes that the error terms in the model are independent and normally distributed. An examination of the standardised residuals (measures of the error component of the regression equation) indicates the extent to which areas were 'over'- or 'under-' producing vocational students, given the number of young people and percentage of males in skilled manual work in the neighbourhood. The spatial distribution of over- and under-producing wards (in terms of standardised residuals) is given in Figure 5.8. It is clear that over- and under-producing wards tended to occur in spatially associated groups and were not randomly distributed. This pattern of positive and negative residuals is indicative of spatial auto-correlation.

Thus, across the centre of the borough of Lewisham there was a band of wards which contained higher numbers of vocational students than predicted. The residuals of four contiguous wards - Drake, Ladywell, Lewisham Park, and Blackheath and Lewisham Village were positive and large (greater than two) while those for the surrounding wards of Pepys, Drake, Honor Oak Park and Manor Lee were also positive. In

Southwark, the adjacent wards of Burgess and Faraday also contained higher numbers of students than predicted.

North of the river, two wards in Hackney which significantly over-produced vocational students (Kingsmead and Downs) were also surrounded by areas characterised by positive standardised residuals, as were two over-producing wards in Westminster (Maida Vale and Harrow Road).

There was also a tendency for wards which produced fewer vocational students than predicted (given the number of young people and percentage of skilled workers) to be spatially associated.(13) The standardised residuals for all wards in Wandsworth were negative (although many were very small in size). However, two contiguous wards (Roehampton and Westhill) produced markedly fewer vocational students than predicted. In Lambeth, the majority of wards had negative, though small, standardised residuals (less than one). Overall, therefore, wards in Lambeth tended to contain fewer students than predicted. In north London, the majority of wards in Islington and Camden tended to under- rather than over-produce vocational students, as did a group of contiguous wards in the south of Hackney and in the north-west of Tower Hamlets.

As King (1969) has noted in a discussion of spatial auto-correlation in multiple regression analysis: ***"In studies where the data relate to contiguous areal units, the assumption of independence (in the distribution of error terms) is not likely to be satisfied"***(p.157).

The technical consequences of auto-correlation between regression residuals have been outlined by Cliff and Ord (1973). In particular, the presence of auto-correlation leads to biased estimates of the residual variance and inefficient estimates of the regression coefficients.

However, the majority of spatial patterns are highly complex and are the result of the interplay of many factors. In most geographical analyses, King (1969) suggests, "*...there is considerable unexplained variation and the residual values can be interpreted as reflecting, in part, the effect of other possibly unknown variables*" (p.148). The results of the multiple regression analysis should therefore be treated with caution. Nonetheless, an examination of the locational pattern of standardised residuals is a useful exercise because it may suggest other factors which are of importance in explaining the remaining variation in the spatial distribution of vocational students.

The results of the multiple regression analysis presented above suggest that, in certain wards and groups of spatially associated wards, factors not included in the equation were at work which influenced school leavers' decisions about entering low-level vocational courses. The spatial pattern of standardised residuals is suggestive of an 'area' effect upon school leavers living in particular neighbourhoods. It is possible that these reflected employment traditions or opportunities, or specific attitudes and expectations which have developed in particular types of neighbourhoods. It is also likely that, in areas where there was a tradition for high numbers of youngsters to have entered some sort of vocational training, local school leavers would have been affected by their example.

Another possibility is that the 'area' effect may have been related to the combination of socio-economic characteristics of specific wards or ward groups which influenced the development of local climates of opinion and expectations in particular types of urban sub-areas.(14)

5. Variations Between Student Groups

However, the distribution of vocational students in this study was made up of the combination of the separate distributions of three groups. Analyses presented in section 1 above have indicated that there were differences in the spatial distributions of commercial, construction and engineering students. Therefore, it might be expected that there would be differences in the pattern of association between each student group's distribution and the socio-economic characteristics of wards.

Correlation analysis revealed some differences in the strength and direction of the associations between the distribution of the three student groups and particular census-based variables (see Table 5.9). For example, only the commercial group was significantly positively correlated with the percentage of owner-occupied housing and uncorrelated with the percentage of council housing. Both the construction and the engineering groups were positively associated with the percentage of council housing and more strongly negatively correlated with the percentage of privately rented housing. The distribution of the commercial group, unlike those of their engineering or construction counterpart, was weakly positively correlated with the percentage of people with New Commonwealth ethnic origins (a measure of ethnic composition).

Separate multiple regression analyses were used to establish which of the census measures provided the best statistical explanation of variance in the distributions of the three student groups. The results are presented separately for each group, commencing with the commercial students.

(i) Commercial students

The variable NYOUNG (number of people aged between five and fifteen) was entered first and a stepwise procedure adopted for the inclusion of the remaining census measures (see Table 5.10). In all, just over a quarter of the variance in the numbers of commercial students at the ward level was accounted for by the numbers of young people and by socio-economic characteristics at the ward level (multiple r2 = 0.271). Two variables contributed significantly to the proportion of variance explained, once the numbers of young people had been taken into account. These were the percentage of males in skilled manual work and the percentage of the population living in council housing. Full details of the results of the regression analysis are given in

Table 5.10. They indicate that the partial correlation between the number of commercial students and percentage of males in skilled work was positive ($r_{c2.13} = 0.291$ where c = number of commercial students, 1 = number of young people aged between 5 and 15 years, 2 = % skilled workers, 3 = % population in council housing) while that for council housing was negative ($r_{c3.12} = -0.248$).

As with the student distribution as a whole, a plot of the standardised residuals - Figure 5.9 - provided a clear indication of spatial auto-correlation in the distribution of wards which over- or under- produced commercial students. Wards which over-produced students tended to form spatially associated groups. Thus, in central Lewisham, a band of five wards all recorded significant positive residuals. This band extended into western parts of Greenwich. A number of wards in central and northern parts of Lambeth also tended to over-produce commercial students, as did a large cluster in north Greenwich around the Woolwich area.

In north London the Kingsmead ward, on the eastern edge of the borough of Hackney, contained significantly higher numbers of commercial students than predicted and was surrounded by a number of other wards which also recorded positive standardised residuals. Much of Westminster contained higher numbers of commercial students than predicted, with the largest residuals recorded for the adjacent wards of Queen's Park, Harrow Road and Westbourne (again, this may reflect the influence of local perceptions of job opportunities or attitudes towards commercial work).

The standardised residuals for the majority of wards in Wandsworth and in the southern half of Lambeth were negative. A contiguous group of wards on the eastern border of Southwark also produced fewer commercial students than predicted. In north London, the majority of wards in Camden and all those in the borough of Islington had negative residuals, as did the majority of wards in Tower Hamlets.

One explanation for the spatial pattern of these positive and negative standardised residuals is the proposition that areas close to the location of college centres offering commercial courses were more likely than distant wards to have over-produced commercial students. Such a 'distance decay' effect might reflect greater knowledge of the availability of commercial training in areas nearby providing centres. Alternatively, potential commercial students may be less mobile than other student groups (due to the absence of employer sponsorship) and thus be less able to travel to undertake commercial courses.

However, an examination of the plot of standardised residuals indicates that, in many wards, this proposed 'distance decay' effect did not appear to have operated. Thus, although many wards around Vauxhall College tended to over-produce commercial students, a sizeable number did not (for example, Bishop's, Prince's and Vassall in northern Lambeth recorded negative residuals). Conversely, the wards of Burgess, Browning, Abbey and Bricklayers in the borough of Southwark are not close to either Vauxhall or South East London College, yet all produced higher numbers of commercial students than predicted. This cluster of wards was surrounded by wards characterised by negative residuals which were closer to colleges providing commercial courses. And, although many wards near the Lewisham Way annexe of South-East London College over-produced commercial students, a number did not (for example, Grinling Gibbons, St Mildred Lee, Park and Trafalgar).

In north London a similar pattern emerged. A number of wards near the Stoke-Newington and Dalston Lane centres of Hackney College over-produced commercial students - for example, Queensbridge, Downs and Clissold. However, other wards nearby the centres were characterised by negative standardised residuals (Dalston, Rectory and Mildmay, for example).

An examination of the location of negative and positive residuals indicates, therefore, that although a number of wards near colleges offering commercial courses contained higher numbers of commercial students than predicted, others contained fewer students than predicted. In addition, some wards which were not near the colleges contained far higher numbers of commercial students than predicted. Factors other than spatial proximity must, therefore, account for the unexplained concentrations of commercial students in some neighbourhoods and under-production of commercial students in other areas.

(ii) Construction students

Results of the multiple regression analysis for the construction group (using the number of construction students at the ward level as the dependent variable and the various census measures of socio-economic characteristics of areas as the independent variables) are presented in Table 5.11. In all, nearly a third of the variation in the numerical distribution of construction students was accounted for by two of the ward-based variables, the number of young people aged between five and 15 years of age and the percentage of the population living in council housing. The partial correlations between the number of construction students and these two variables were positive ($r_{c1.2}$ = 0.525 and $r_{c2.1}$ = 0.207 respectively, where c=number of construction students; 1=number of young people aged 5 to 15 years; 2=% of the population living in council housing). Thus, when controlling for the potential student population, only the percentage living in council housing contributed significantly to the statistical explanation of variance in the numbers participating in construction courses.

The plot of the standardised residuals (Figure 5.10) was suggestive of spatial auto-correlation in the distribution of positive and negative residuals. The pattern of the distribution of these residuals was rather different from that identified for the commercial student group. A number of wards in Wandsworth contained higher numbers of construction students than predicted (seven in all) but only one ward had produced higher numbers of commercial students. In addition, five contiguous wards in the south of Lambeth produced higher numbers of construction and fewer commercial students in terms of standardised residuals (Knight's Hill, Leigham, Streatham Wells, Thurlow and Herne Hill). However, as with the commercial group, wards comprising a band across central Lewisham recorded high positive residuals. In Greenwich, the majority of wards in the eastern half of the borough produced fewer construction students than predicted - but those along the western edge of the borough and bordering the river (the contiguous wards of Park, West, Trafalgar, March, Eastbourne and Charlton) formed a cluster characterised by positive standardised residuals.

In north London, few wards in Tower Hamlets had produced more commercial students than predicted. However, the map for the construction group indicated that a number of spatially associated wards in this borough had over-produced construction students.

A group of wards in Hackney - Kingsmead, Wick, Chatham and Downs - over-produced both commercial and construction students. However, few wards in Westminster (except a group in the far south of the borough) produced more construction students than expected, while the group of wards which over-produced commercial students in this borough was characterised by under-production of construction students (Harrow Road, Maida Vale, Queen's Park and Westbourne).

An examination of the standardised residuals for the construction group was indicative of spatial association in the distribution of over- and under-producing wards. Although over-producing wards were sometimes located near colleges which offer construction courses (for example, South Lea, Grove Park, Southend, Whitefoot, Bellingham and Sydenham East, in Lewisham, near the Sydenham annexe of South-East London College), in other areas wards near the centres were characterised by negative residuals (for example, Bishop's, Chaucer, Newington, Stockwell and Queenstown near Vauxhall College and De Beauvoir, Queensbridge and Haggerston near Hackney College). Therefore, spatial proximity is unlikely to have accounted for the spatial patterns of standardised residuals. Other factors must have been operating to increase or decrease the numbers of school leavers who opted into construction courses in particular wards or ward groups.

(iii) Engineering students

The results of multiple regression analysis with the number of engineering students at the ward level as the dependent variable are given in Table 5.12. In contrast to both the construction and commercial student groups, only a very small proportion of the variance in the numbers of engineering students was accounted for by the selected census-based measures of ward socio-economic characteristics (less than 15 per cent). The variable NYOUNG was entered into the equation first and, when this factor was taken into account, only the percentage of males in skilled manual work contributed significantly to the proportion of variance explained. Both factors had positive partial correlations with the number of engineers (re1.2 = 0.172 and re2.1 = 0.280 respectively where e = number of of engineering students, 1 = number of of people aged between 5 and 15 years, 2 = % males in skilled manual work).

A map of the standardised residuals (Figure 5.10) indicated that wards characterised by positive and negative residuals tended to be spatially associated. Similarly, wards recording negative residuals also tended to form clusters. All the wards in the boroughs of Wandsworth and Lambeth produced fewer engineering students than predicted, while most of the wards in Lewisham contained higher numbers of engineers than predicted. In Southwark the pattern was more mixed, with wards in the south of the borough characterised by negative residuals and those in the centre and north west characterised by positive residuals. A number of contiguous wards in Greenwich, around Woolwich College, tended to over-produce engineering students (in contrast to the pattern for the construction group). In Hackney, however, some of the wards which over-produced construction students (in terms of standardised residuals) also over-produced engineers (namely, Downs, Lea bridge, Kingsmead and Wick). In other wards (for example, Chatham and Dalston) which over-produced construction students, engineering students were under-produced, while in Haggerston, Queensbridge and Victoria this pattern was reversed.

Around Paddington College in Westminster a cluster of contiguous wards produced higher numbers of engineering students than predicted (the same group of wards consistently under-produced construction students and over-produced commercial students). These results suggest that, overall, in many areas wards which tended to under-produce construction students over-produced those undertaking engineering courses, although there were a few areas which over-produced both student groups.

6. The Influence of the Distribution of Employers

It is possible that part of the explanation for variations in the over- and under- production of particular sstudent groups at th ward level might be due to variatins in employment opportunities. The inner London area was selected as the unit within which to conduct the present study in large part because of the wide range of training and employment opportunities available within this LEA at the time the research was commenced. In addition, the area was experiencing a relatively low rate of youth unemployment in comparison with the national average (see Chapter 2). These factors guided the choice of study area with the intention of reducing the potential confounding influence of variations in employment opportunities upon participation in vocational training. Nonetheless, some consideration of this possible source of influence is required.

It is highly unlikely that the spatial variations in the distribution of commercial students identified in this chapter reflected variations in employment oportunities in this field, because large numbers of clerical and secretarial jobs were a feature of the capital's labour-market during the 1978/1979 period. Moreover, only a small minority of commercial students (less than ten per cent) were sponsored by employers. It is probable that the only way in which the local commercial employment market influenced the training decisions of school leavers would have been through an awareness of the extent of commercial job opportunities, and the effect such opportunities may have had upon the careers advice given by formal agencies and by parents and friends.(15) The ready availability of public transport within inner London would have made many commercial jobs accessible even to youngsters living in any areas which were less well endowed with this form of employment.

For construction and engineering students sponsored by employers, however, it is possible that the availability of employment opportunities in these two industries may have had some effect upon job and training choices (see the discussion of labour-market opportunities by Roberts, 1971; 1974).(16) In particular, the distributions of firms in these two fields might have been closely related to the availability of construction and engineering jobs in different places. Thus, areas where few construction firms were located might be expected to have produced few youngsters entering construction work (and thus obtaining sponsored training). In contrast, localities where many construction firms were located might be expecteded to have produced higher numbers of construction students. A similar pattern could be expected in relation to the distributions of engineering employers and engineering students.

It is thus possible that the grouping (at the ward level) of positive and negative regression residuals for the construction and engineering groups might merely reflect the operation of a 'mirror image' effect related to the location of employers. To test this possible explanation for the differential distribution of the two groups of sponsored students, additional areally based data were collected.(17) Due to the constraints of time and resources, it was not feasible to collect data about the distribution of firms for both industries. Instead, data were collected only for the construction industry (see Appendix 5.4). It was hypothesised that, if the distribution of firms in these two industries had had an impact upon student participation in vocational training, this should be identified from data about one of the two fields. This is because, as demonstrated earlier in this chapter, the spatial distributions of construction and engineering students were markedly different, and there was a tendency for ward groups which over-produced one group to have under-produced the other.

The locations of construction firms in inner London in 1978 were mapped on a ward basis (see Figure 5.12). A visual examination of the map revealed some spatial differences in the concentration of firms. Numbers varied quite markedly between different parts of the inner London area. For example there were marked concentrations in and around the City, in central areas of Hackney and Lewisham, and in parts of Camden and northern Westminster. By contrast, few firms were located in some of the wards bordering the southern boundery of the borough of Greenwich or the eastern edges of Tower Hamlets. (The frequency distrubution of construction firms at the ward level is given in Appendix 5.5.)

The distribution of construction firms provided a crude indicator of the probable areas in which construction job opportunities were more or less likely to have been available. In addition, the very presence of a number of construction firms in certain neighbourhoods might be expected to have influenced the job ambitions of local youngsters, even if such firms did not have any job vacancies when a particular age group left school.

However, correlation analysis indicated that there was no association between the distribution of construction firms and that of construction students ($r=-0.025$). Moreover, there was no relationship between the number of engineering students and the distribution of construction firms at the ward level ($r=0.047$). The predicted positive relationship between construction student patterns and those of the location of construction firms was not identified. Nor was there a negative relationship between engineering student numbers and construction firms, as might have been expected. These findings provide little evidence that the location of potential construction employers had any impact upon patterns of participation in construction and engineering training in inner London during the period under study.(18)

In part, it is likely that this finding may reflect the separation of the location of some construction firms from residential areas. (Thus, the distribution of firms was negatively correlated with the percentage of council housing in an area, ($r=-0.44$), a factor positively correlated with the distribution of construction students.)

Quite a substantial number of construction firms were, in fact, located within, or in the near vicinity of the City, (usually firms' headquarters). Nonetheless, clusters of firms were located outside this central core in particular ward groupings and yet were not associated with construction student concentrations. For example, in Hackney the contiguous wards of Defoe, Northwold, Rectory, Clissold and De Beauviour contained clusters of construction employers, but these wards all under-produced construction students (recording negative residuals).

The results of these analyses suggest that the explanation of variations in the over- or under-production of particular student groups in the inner London area is unlikely merely to reflect the distribution of employment opportunities. More complex inter-relationships between young people's perceptions of job opportunities, and the value placed upon particular types of work by local residents (which may reflect the operation of 'area' effects peculiar to specific localities), are more likely to account for such differences in student distributions.(19)

CONCLUSIONS

The results of multiple regression analyses indicated that the number of young people and other census-based characteristics accounted for a greater proportion of the variance in the distribution of construction and commercial than of engineering students. An examination of the standardised residuals on a ward basis suggested that, for each student group, positive and negative residuals tended to be spatially associated. However, differences between the three student groups in the spatial distribution of positive and negative residuals were identified.

The existence of spatial auto-correlation in the distributions of residuals indicates that, in particular ward groups, factors not included in the regression analyses must have been operating to increase or depress the numbers of school leavers opting into specific types of vocational training. Although proximity to colleges offering particular vocational courses could be expected to have influenced take-up, an analysis of the spatial location of positive and negative residuals suggested that this factor was not important. For, although some wards which over-produced a particular student group (in terms of standardised residuals) were close to college centres offering the relevant courses, other over-producing wards were not located near the colleges. In addition, under-producing wards (in terms of negative standardised residuals) often formed spatially associated clusters very near college centres which provided the courses under analysis.

However, although 'distance decay' does not appear to provide an explanation for the spatial pattern of residuals, it seems likely that 'area' influences were acting to promote the take-up of particular types of vocational training. In certain wards or ward groups, therefore, specific factors may have influenced the development of local school leavers' ambitions or expectations in such a way that youngsters tended to enter specific types of employment or vocational training. The example of neighbourhood contemporaries might be expected to reinforce any such area-based vocational traditions. The location of employers did not, however, appear to have been a significant factor in explaining participation in sponsored courses at the time the present study was undertaken.

The results of analyses of the spatial distributions of the three student groups indicated that some areas contained higher numbers of particular student groups than predicted. Although some of the variation could be explained in terms of the number of young people at the ward level, other factors (such as the percentage of males in skilled work and the percentage of the population living in council housing) were also important.

Nonetheless, spatial auto-correlation in the distribution of positive and negative residuals for commercial, construction and engineering students indicated that, in certain ward groups, other factors were encouraging school leavers to enter particular types of vocational courses. Although spatial proximity to providing colleges may have had some influence, the distribution of positive and negative residuals suggested that 'distance decay' effects were not a sufficient explanation of the pattern. These results suggest that further analyses to establish the possible contribution of 'area' effects to individuals' vocational training choices are justified.

NOTES

CHAPTER 5

(1) The sponsorship of female and male students is discussed in Chapter 7.

(2) Vauxhall College appears to be an exception to this rule. In all, 38 students crossed the Thames. This high total, however, was mainly due to short distance movement of students from the Millbank area in south west London across the river and so does not reflect movement from north to south London.

(3) For example, south of the river, Brockwell, Crystal Palace, Danson, Dulwich, Greenwich and Peckham parks, the open spaces of Blackheath, Woolwich Common, Borstal Woods, Plumstead and Erith Marshes and the dockyards bordering the river did not produce students. Similarly, in the north, the non-residential districts of Wormwood Scrubs, parts of White City, Knightsbridge, Hyde Park and Regents Park, Hampstead Heath and Parliament Hill, Hackney Marshes, parts of the River Lea valley and the docks also created gaps in the distribution.

(4) Accurate information about careers advice and local employment opportunities was not available. However, data about the distribution of construction firms in inner London was collected to explore whether the location of such firms was related to the distribution of construction students. (Due to the constraints of time and resources it was not possible to collect information for engineering firms). The results of these analyses are presented in sub-section 6 of this chapter.

(5) Wards in the boroughs of Hammersmith and Kensington and Chelsea contained very few students. As noted in Chapter 2, these were excluded from the spatial analysis because it seemed likely that low student numbers in thes boroughs might have reflected the refusal of two colleges (South Thames and Hammersmith) to participate in the study.

(6) Due to the constraints on the use of this form of the chi-square statistic (fewer than 20 per cent of the expected frequencies should be less than five and none less than one), it was necessarey to amalgamate wards which produced a total of fewer than seventeen students. Wards were grouped with adjacent wards in the same borough and the number of wards combined kept to the minimum necessary to satisfy the constraints. A maximum of five was amalgamated in some boroughs but the modal number was two, producing a total of 65 areas in all. (Some wards, - 38 in all,

containing fewer than one representative of each student group were excluded because they increased the number of wards which it was necessary to combine into larger ward groups and their inclusion made no substantial difference to the final chi-square. In all, therefore, 171 wards were grouped to form a total of 65 areas.)

(7) Carley (1981) has provided a comprehensive outline of the historical development of the theory and policy applications of such research and the use of social indicators, while Smith (1979) has given an overview of the use of social indicators in geographical investigations.

(8) Although 1971 Census data were seven years old at the time of the survey described in chapter two, it was hypothesised that, if the characteristics of home areas in which young people grew up did have an influence upon their attitudes and expectations, the use of data collected in 1971 was more useful than that of the 1981 Census.

(9) See Chapter 4 for the discussion of 'area' or 'neighbourhood' effects and the 'mirror image' relationships of spatial distributions.

(10) Thus, partial correlation analyses have suggested that the concentration of particular social classes did have an effect upon student participation in vocational training over and above that due to the numerical distribution of such classes (see Sammons, 1983 for details).

(11) The 1971 Census provides the most suitable source of data on population at the ward level because figures on the numbers in particular sub-groups were not available at the ward level from the 1978 National Housing and Dwelling Survey. Unfortunately, it was not possible to isolate the appropriate four year cohort (first year students undertaking courses in 1978 and 1979 would have been aged between 8 and 12 years in 1971). However, figures for the numbers aged between 5 and 15 years were available.

(12) Only twelve of the thirteen census measures were included as independent variables in the multiple regression analyses because the three tenure variables summed to nearly one hundred per cent. The variable occupation (the % population in owner-occupied housing) was dropped because this variable showed the least relationship with the overall distribution of students in correlation analysis.

(13) Fewer of the wards for which the standardised residuals were statistically significant were negative than positive. This is a reflection of the nature of the data (it is not possible for wards to contain fewer than zero students).

(14) The importance of the combination of characteristics of an area is discussed in Chapter 4 and Chapter 6.

(15) There is evidence that girls, in particular, generally consider only a relatively narrow range of occupations when choosing jobs, and that clerical/secretarial work is highly popular (see research by the National Child Development study reported by Fogelman, 1979). The influence of job ambitions was closely related to student sex, as will be demonstrated in analyses in Chapter 7. Thus, despite the wide range of commercial-type jobs available in inner London very few boys had opted into the commercial training courses included in this study.

(16) A discussion of 'labour-market' theories of occupational choice is presented as part of a literature review in Chapter 7.

(17) Full details of the methods used to collect the supplementary data about the locations of employers are given in Appendix 5.3.

(18) Regression analysis also revealed that the distribution of construction employers did not contribution to the explanation of variations in the spatial distributions either of construction or of engineering students.

(19) This finding does not, of course, imply that in other areas employment opportunities were not important. Moreover, given the current much higher levels of youth unemployment and marked fall in the availability of sponsored craft apprenticeships, it is likely that at the present time the availability of employment opportunities would be closely related to participation in sponsored vocational training of the kinds considered here.

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CHAPTER 6

THE IDENTIFICATION OF CLUSTERS OF SIMILAR WARDS AND 'AREA' or 'NEIGHBOURHOOD' EFFECTS

SECTION 1

The Choice of Ward Grouping

The focus of the present study is to establish the relative contributions of a variety of factors in determining participation in low-level vocational training. The possible contributions of 'area' or 'neighbourhood' effects are of particular interest because of the lack of attention these have received in previous studies. However, before it is possible to examine the way 'area' effects influenced individuals, it is necessary to establish the spatial basis for such investigations.

Analyses presented in the last chapter were conducted at the ward level. Differences between the spatial distributions of commercial, construction and engineering students were identified. An examination of ecological relationships between student patterns and measures of selected socio-economic characteristics indicated that student distributions were significantly correlated with spatial variations in social class composition, educational achievement and housing tenure at the ward level. However, the results of stepwise regression analyses suggested that socio-economic characteristics did not completely account for variations in participation in commercial, construction and engineering training. Maps of the distribution of residuals were highly suggestive of an 'area' effect, with some wards under- or over-producing school leavers entering particular types of training. In many cases, these over-producing or under-producing wards formed spatially associated groups. Thus, it appears that in particular ward groups local school leavers may have experienced a similar set of influences which affected their training choices.

One of the problems associated with the use of multiple regression analyses in this study is related to the highly inter-correlated nature of many of the socio-economic characteristics at the ward level. Stepwise regression was used to establish the proportion of the variance accounted for by the most highly correlated variable. Further variables were included if they contributed significantly to the explanation of the residual variation. In circumstances in which many of the socio-economic characteristics were highly intercorrelated, this form of analysis resulted in the inclusion of only a few of the variables in the final solution. However, such reductionism may be misleading. It is possible that it is the combination of area characteristics, rather than individual, possibly independent forces, which differentiated particular kinds of neighbourhood and which influenced the development of neighbourhood norms and expectations. These norms and expectations, in turn, were likely to be among the factors which influenced the training choices made by school leavers living in particular neighbourhoods (the 'area' effect).

Rather than conceiving 'area' effects to be related to the proportion of different social classes in a neighbourhood (with minority groups influenced by the norms of the dominant group) as the regression analyses suggested, it is also possible that 'area' influences are related, in part, to particular combinations of neighbourhood characteristics. The influence of such combinations may have been obscured in the regression analyses, because of the high correlations between socio-economic characteristics at the ward level. Thus, it seems possible that the 'neighbourhood' influence upon school leavers living in skilled manual areas characterised by an above average percentage of owner occupiers and average levels of educational attainment may be different from that in areas of similar occupational structure but characterised by a large proportion of council house tenants and a below average proportion of people with high educational attainment. Similarly, in areas where the majority of males are in skilled manual work but a large minority are in non-manual employment, the local climate of opinion about employment and education may differ from that prevalent in areas where the majority are in skilled manual work, but where a large minority are in semi- or unskilled manual employment.

Spatial clustering of wards in terms of residuals from the regression analyses indicated that, in particular ward groups, school leavers may have been subject to 'area' influences. If, as suggested, it is the <u>combination</u> of characteristics of neighbourhoods which is of importance, such wards would be expected to exhibit similarities in terms of socio-economic characteristics. To test this hypothesis, further analyses of the socio-economic characteristics of students' home areas were undertaken in an attempt to establish whether particular types of area tend to over-or under-produce school leavers who participated in specific vocational courses.

The identification of different types of area was undertaken as a basis for the grouping of similar wards into clusters and these clusters, in turn, were used in the examination of 'area' effects upon individuals. Some form of ward grouping was also required in order to ensure that the numbers of students living in different types of neighbourhood were sufficient to allow statistical analysis of individually-based information.

Cluster analysis can be used for a variety of purposes, including data reduction and the generation of groups which form the basis for later hypothesis testing (see Ball, 1971; or Everitt, 1974). The techniques of cluster analysis are commonly used as a means of classification to form sub-sets of a group of objects or individuals under investigation. In this study they were applied as a means of identifying groupings of 'like' areas (in terms of the socio-economic characteristics of the 209 wards included in the investigation). The resulting classification was used as a basis for the re-examination of student distributions in order to establish whether groups of similar wards tended to over- or under-produce school leavers entering particular types of vocational training. The relationships between ward scores, in terms of standardised residuals, and the cluster groupings were also studied. These analyses were designed to establish whether particular clusters exhibited 'area' effects in terms of student participation in specific types of vocational training, prior to further study of the mechanism by which 'area' effects operated (reported in Chapter 9).

Cluster analysis is a multivariate tool which can be used to search for natural groupings in a set of data. The results of applying the technique are dependent upon the choice of data about the individuals to be grouped, the method of measuring similarity or distance when assigning individuals to groups and the number of groups used in the final solution. In this study, in order to define similar ward groups, a polythetic approach was adopted. Classes of 'like' wards were formed on the basis of the overall similarity of individual wards on the selected census variables simultaneously. This approach had the advantage that it took into account the combination of neighbourhood characteristics at the individual ward level in the classification of clusters. It thus ensured that the resulting areal grouping of wards could be used to test the hypothesis that 'area' effects upon participation in vocational training were related to neighbourhood type.

Measures of social class composition, tenure, housing conditions, ethnicity and educational attainments (thirteen variables in all) involved in the previous analyses were used in the ward grouping (see Appendix 5.1). The thirteen variables were included because, although only some of these measures were individually significantly correlated with the student distributions, all have been found important in previous studies which differentiate urban sub-areas. They were, therefore, likely to have been important in deciding the 'character' of the neighbourhood which, it is hypothesised, determines the nature of any 'area' effects.(1)

The percentage scores of the 209 wards on each variable were used in a hierarchical technique of cluster analysis using a method developed by Ward (1963).(2) Individual wards were grouped according to the distance between them with respect to the thirteen variables, each of which was equally weighted in the analysis.(3) Thus, groups, initially consisting of one of the 209 single wards were combined and, at each step of the program, the process of fusion decreased the number of clusters by one. The process of union continued until all wards were combined into a single group; forming a dendogram or hierarchical tree of linkages. It is common practice for the researcher to select a suitable 'cut-off' point in the linkage tree which provides a useful number of clusters for the purposes of his or her study.(4) In this study the selection of the 'cut-off' point was made after an examination of the dendogram and with reference to the size of the fusion coefficient (the higher the value the greater the degree of within cluster variety) and the researcher's own judgement of the most useful number of classes for the research.(5)

The advantages of cluster analysis included the choice of a ward grouping which suited the purposes of the present study. An eight cluster solution was adopted in this investigation because, at that point, further fusion of the ward groups led to a reduction of within-cluster similarity and between-cluster differences (as measured by the fusion coefficient). Although the choice of eight clusters was arbitrary, a larger number of clusters would have been too detailed for the present study and would have resulted in the use of clusters composed of very small numbers of wards. This, in turn, would have had the disadvantage that, in some clusters, the number of students would be low.

SECTION 2

Characteristics of the Eight Clusters

It was possible to describe the characteristics of each cluster through an examination of the census variables on which it scored above or below the average for all wards in the survey. The mean percentage scores of each cluster on the thirteen indicators are given in Table 6.1 and the findings are represented graphically in Figures 6.1a to 6.1m.

An examination of the computed F ratios indicates which variables had comparatively low variation within a cluster, while the relevant T values indicate which variables had cluster means which were substantially different from the population sample means for those variables.(6) In combination, these statistics aid the interpretation of the characteristics of the clusters (see Everitt, 1974).

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Four of the eight clusters were characterised by above average percentages of non-manual workers and can be seen as relatively middle-class, in comparison with the remaining four clusters. These contained lower percentages of non-manual and higher percentages of manual workers. The geographical pattern of the four different types of clusters characterised by above average percentages of non-manual workers is illustrated in Figure 6.2, while Figure 6.3 indicates the spatial distribution of the more working-class ward clusters which underscored in terms of the distribution of non-manual workers. The pronounced contiguity of the wards allocated to many of the cluster groups reveals the marked areal patterning of the socio-economic structure of the ten London boroughs, because no spatial measures of ward proximity were included in the analysis.

A brief description of each cluster's characteristics and geographical distribution is provided below. A summary of cluster characteristics is given in Table 6.2.

Cluster One

The 26 words comprising cluster one were characterised by small F ratios and high T values for the variables COUNCIL, SKILLED, SEMI, UNSKILL and RENTED. Thus, this area was differentiated from the other ward clusters by the very low percentages of males in working-class jobs (skilled manual, semi- and unskilled manual). Correspondingly, the percentages of males in professional and managerial and other non-manual work were much higher than the average for all inner London wards, as were the percentages of the population with A levels or degrees. However, these variables have higher F ratios which indicate some degree of variability within cluster one on these factors (see Appendix 6.1).

In terms of tenure, wards in cluster one contained very high percentages of their population living in privately rented housing and very low percentages in council housing. Cluster one can be summarised as a high-status, predominantly non-manual area characterised by a concentration of privately rented housing. The majority of wards allocated to this cluster were found in north-west London forming a contiguous group in the northern part of the borough of Camden and most of Westminster.

Cluster Two

In all, eleven wards were allocated to cluster two. This cluster, like cluster one, was characterised by high percentages of males in professional and managerial work, and in other non-manual work, and low percentages in skilled, semi- and unskilled-manual employment. Like cluster one, it also scored highly in terms of the percentages of population with A levels and/or degrees. However, it differed from cluster one in terms of tenure. A very low percentage of the population lived in privately rented housing and over 50 per cent of the population lived in owner-occupied accommodation. The wards in this cluster also scored highly in terms of the percentage of the population living in housing with exclusive use of all amenities and contained a very low percentage of people of New Commonwealth ethnic origins.

Cluster two can thus be described as a 'high-status owner-occupied' area. The wards allocated to this cluster tend to be located at the suburban fringes of south London. Three wards formed a contiguous group on the south-eastern edge of Greenwich (around Eltham), while two wards were located in the south of Southwark (the Dulwich area). Another group distinguished the advantaged Blackheath and Lewisham village area.

Cluster Three

Cluster three consisted of 21 wards. Wards in this cluster were relatively homogeneous (recording low F ratios for all variables) but scores for the majority of the census measures were not greatly different from the average for all wards. In terms of social class composition, cluster three contained a higher than average percentage of males in non-manual employment and slightly lower than average percentages in skilled, semi-skilled and unskilled manual work. However, wards in this cluster were far less 'middle-class' than those in clusters one or two (the percentages of the population with A levels or degrees was little different from the average for all wards and the percentage living in owner-occupied housing was below average)

In terms of tenure, nearly 50 per cent of the population lived in council housing and housing conditions were good. The area contained a low percentage of people of New Commonwealth ethnic origins.

The spatial distribution of the wards allocated to cluster three was rather more scattered than that of other clusters. However, a number of the wards were located in south London, along the southern edges of the inner city boroughs (see Figure 6.2).

Cluster Four

The percentages of males in professional and managerial work in wards comprising cluster four were below average. However, the 28 wards in this cluster were characterised by a high percentage of males in other non-manual work. The other variables which distinguished this cluster were related to housing tenure and housing conditions. The percentage of the population in owner-occupied housing was slightly above average but 52 per cent lived in privately rented housing and only 22 per cent in council accommodation. Housing conditions were relatively poor - less than 60 per cent lived in housing with exclusive use of all amenities and 11 per cent in overcrowded housing. In terms of housing conditions, cluster four was less advantaged than all clusters with the exception of cluster eight.

In addition, cluster four was characterised by a relatively high percentage of the population of New Commonwealth ethnic origins (13%)..sk The wards which comprised cluster four formed a closely associated group on the eastern edge of the borough of Wandsworth extending into central Lambeth around the Brixton area. A second group of wards in this cluster formed a contiguous body in the northern half of the borough of Islington.

Cluster Five

In all, 33 wards were assigned to this cluster. These wards were characterised by higher than average percentages of males in skilled manual work and average percentages in non-manual work. The percentages in unskilled manual work were below the average for all wards. Cluster five was characterised by a very high mean percentage of the population living in owner-occupied housing (44%) and a much lower than average percentage living in council housing (22%). Housing conditions were above average, with only a small percentage of people living in over-crowded conditions.

The spatial distribution of the wards which formed cluster five was concentrated into three main groups. A large cluster of fifteen wards in the centre of Lewisham, extending across the border into Lambeth, formed one spatially concentrated group. Five contiguous wards along the eastern edge of Greenwich, and eight wards in Wandsworth (which formed a band fringing the southern edge of the borough) comprised the remaining two groups.

Cluster Six

In all, 45 wards were allocated to this, the largest of the eight clusters. These wards were characterised by very low F ratios for the majority of variables, an indication of internal homogeneity in this cluster. Cluster six had the highest mean score in terms of the percentage of males in skilled manual work (nearly a third). The percentage of males in unskilled manual work was the highest for all clusters and the percentage in non-manual work the lowest. In terms of social composition, therefore, this cluster was predominantly a working-class area. Cluster six also scored the lowest mean percentages of population with A levels or degrees.

In terms of tenure, the cluster was characterised by a very high mean for the percentage of the population living in council housing (75%) and the. The percentage of the population of New Commonwealth ethnic origins was very low - reflecting the negative association (in a geographical sense) between these two variables. This result, presumably, is a function of the greater difficulty experienced by first generation immigrant groups in obtaining council housing.

The wards in cluster six can, therefore be summarised as stable working-class council estate areas.

Wards allocated to cluster six were spatially associated, a high number being in the dockland areas bordering the Thames (in the northern parts of Southwark and around Woolwich in north Greenwich).

Many of the wards in the heart of the docklands areas of Tower Hamlets were allocated to cluster six, as was a band of wards bordering the City in the south of the boroughs of Hackney and Islington. On the whole, wards in cluster six appeared to be located in the central and older parts of the inner city, where many council estates have been built as a result of slum clearance. There are exceptions, however, a group of four contiguous wards in southern Lewisham represent the development of council estates on the borders of the inner city.

Cluster Seven

This working-class area consisted of 29 wards. It was characterised by a high percentage of skilled, semi- and unskilled manual workers and a low percentage of non-manual workers. Only a small minority of the population had obtained A levels or degrees. In these respects cluster seven was little different from cluster six. However, although a high percentage of the population lived in council housing the percentage was still much smaller than for cluster six. Only 10 per cent of the population lived in owner-occupied housing and an average percentage in privately rented housing. Cluster seven was characterised by poorer housing conditions than cluster six and an average percentage of people with New Commonwealth ethnic origins (again in contrast to cluster 6, which underscored on the ethnic variable).

A number of the wards assigned to cluster seven formed a contiguous group in northern Lambeth. Another spatially distinct group was located in a band across the centre of Southwark extending into the northern parts of Lewisham. In north London, a group of wards from cluster seven were located around the Kingsmead area in eastern Hackney and extended into the centre of this borough.

Cluster Eight

Cluster eight consisted of 16 wards and was the most socially and economically disadvantaged of the eight ward clusters. The wards which made up this cluster were characterised by low percentages of males in professional, managerial and other non-manual work. The percentage in skilled manual work was equal to the average for all wards and high percentages of males were in semi-skilled and unskilled manual work. In terms of tenure, a high percentage of the population lived in privately rented housing (49 per cent) and around a third in council housing. Cluster eight obtained the worst scores of all clusters on the two measures of poor housing conditions with a mean of only 55.6 per cent living in housing with exclusive use of all amenities and an overall average of nearly 16 per cent in overcrowded conditions. This cluster also recorded the highest score in terms of the mean percentage of the population of New Commonwealth ethnic origins.(7)

The distribution of wards allocated to cluster eight thus identified some of the most disadvantaged areas in the inner London area which were known to contain a high proportion of black British. The latter have demonstrated a strong tendency to reside in areas where New

Commonwealth immigrants first settled upon arrival in the city (see Baboolal, 1980). Wards in cluster eight formed a spatially associated group in central Lambeth around the Brixton area, and a second group in Tower Hamlets around Bethnal Green. In central Hackney, around Stoke Newington, six wards formed a third compact group.

SECTION 3

Student Distributions at the Cluster Level

Chi-square analysis of the distribution of vocational students at the cluster level indicated that some of the clusters under- and others over-produced vocational students as figures presented in Table 6.3 indicate.(8) Thus, the four 'non-manual' clusters (numbers one to four) under-produced students as a whole. By contrast, the two clusters characterised by a high percentage of skilled manual workers (numbers five and six) significantly over-produced vocational students. The numbers of students in clusters seven and eight were not significantly different from those expected.

Further analyses were undertaken to establish whether spatial differences in the distributions of the three separate student groups remained when using the larger units of analysis of the cluster. If differences in patterns of participation could not be identified at the cluster level, it would suggest that similarities in the characteristics of home areas were not likely to be related to vocational training choices. Chi-square analysis was used to examine

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The results, given in Table 6.4, indicate that five of the eight clusters exhibited a statistically significant tendency to over- or under-produce one or more of the three student groups. In cluster one, higher numbers of students than expected had entered engineering courses and fewer had entered commercial or construction courses. By contrast, in cluster three, the numbers who had entered construction training were higher than expected, and the numbers who had entered commercial courses were lower than expected.

Two of the working-class clusters, numbers five and eight, showed a significant tendency to over-produce commercial students and under-produce those on construction courses. But, in cluster three, for example, commercial student numbers were significantly lower than expected, and the numbers of construction students higher than predicted. In cluster six, the number of commercial students was significantly lower than predicted and the number of engineering students higher than expected. These results may merely be a reflection of sex differences in participation in particular types of vocational training. But it appears more likely that, in some areas where commercial training was popular, trade training was less popular, while in some areas where trade training was favoured, training for white collar work was less popular.

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There were also differences in the numbers of students entering the two types of trade training (construction and engineering) at the cluster level. The numbers entering engineering training were significantly higher than expected in cluster one and somewhat lower in cluster two - the opposite of the pattern for construction students. In other clusters there was a tendency for one of the trade groups to be over- or under-represented while the numbers of the other group were as expected. Male school leavers in certain types of neighbourhoods thus appear to have been more likely to enter particular types of vocational training than were their counterparts in other areas.

However, the results of the multiple regression analyses presented in the last chapter have indicated that student distributions were associated with particular socio-economic characteristics at the ward level, and that a substantial proportion of the variance in student distributions was explained by a small number of factors. It is possible that, if account is taken of these relationships, differences between the clusters in overall participation in commercial, construction and engineering training would not be found. It may be that the characteristics of the individual wards comprising each cluster identified as important in the regression analysis (namely the numbers of young people and the percentage of males in skilled manual work) were responsible for some of the differences between clusters in patterns of participation in vocational training.

An examination of maps of the spatial distribution of standardised residuals from the multiple regression analysis, however, revealed a strong tendency for the residuals to be spatially auto-correlated (see Chapter 5). This, it was suggested, was indicative of an 'area' effect. If the residual values were found to be non-randomly distributed at the cluster level, such that clusters of 'like' wards contained a high proportion of positive or negative values, the results would indicate that the suggested 'area' effect was related to the combination of socio-economic characteristics in the neighbourhood.

The distribution of standardised residuals by clusters was examined to establish whether the residual values varied at this level. The results, presented in Table 6.6, revealed differences, both within and between clusters, in the mean residual values for commercial, construction and engineering student distributions. For the distribution of commercial students, three working-class clusters (numbers five, seven and eight) recorded positive mean values, while two of the more middle-class clusters - numbers three and four - recorded negative mean values. However, for the construction students, clusters one and eight recorded negative mean values while clusters two, three and seven recorded positive mean values. For the engineers, negative mean values were recorded for clusters three, four and seven, and positive mean values for clusters one, five and six. Unlike the commercial student distribution, therefore, residual values for the construction and engineering student distributions differed amongst both the middle-class and amongst the more working-class clusters.

The Student's t test was used to test the significance of differences between the mean residual values of the clusters separately for each student group. The results of the calculations, given in Table 6.7, indicated that there were statistically significant differences in the mean residuals between the clusters ($p.<0.05$). Thus, for commercial students, the t test values for the pairs of clusters one and four, four and five, four and six and four and seven were significant. For construction students, t test values indicated that the pairs of clusters one and two, one and seven, and seven and eight were significantly different, and, for the engineers, significant t values were obtained for the cluster pairs one and four, and four and six.

As noted earlier, the standardised residuals represent the unexplained part of the variation in student distributions, and spatial auto-correlation in their distribution (identified in Chapter 5) was held to be suggestive of an 'area' effect. It was hypothesised that such 'area' effects could reflect the combination of socio-economic characteristics in an area which have an impact on the development of neighbourhood norms and attitudes towards employment. These, in turn, may have influenced school leavers' decisions to participate in particular types of vocational training.

The identification of significant differences between the eight clusters in the value of mean standardised residuals provides some support for this proposition. It appears that clusters of wards classified as similar on the basis of their socio-economic characteristics differed from other clusters in the extent to which they over- or under-produced members of a particular student group. From the chi-square analysis it also appears that certain clusters over-produced a particular group relative to members of other groups. Therefore, on the basis of these results, the possibility that 'area' effects may have a part to play in explaining differences in participation in vocational training cannot be excluded.

The two methods of investigating student over- and under-production at the cluster level (chi-square analysis and analysis of standardised residuals) produced results which were in broad agreement. A summary of the results is given in Table 6.8 by student group. Three clusters were identified which were found to have significantly over-produced commercial students by at one or both methods (numbers five, seven and eight). Two neither over- nor under-produced members of the commercial group (numbers one and two). The remainder were found to have significantly under-produced commercial students by one or both methods (three, four and six).

In the same way, for the construction group clusters two, three, six and seven were found to be areas of over-production. Cluster four neither over- or under-produced this group, while clusters one, five and eight under-produced construction students.

For the engineers, the results indicated that clusters one, five and six over-produced, while clusters two and eight did not under- or over-produce engineering students. Clusters three four and seven under-produced engineering students.

SUMMARY

Eight clusters of similar types of wards were identified using the techniques of cluster analysis. The solution adopted differentiated the 209 inner London wards in terms of their socio-economic characteristics in an interpretable manner. In addition, the various clusters exhibited marked spatial patterns in terms of their geographical distribution, many of the wards in the same cluster were found to form spatially associated groups.

Statistically significant differences in the spatial distribution of vocational students were identified at the cluster level and the numbers of students entering commercial, construction and engineering students differed markedly from those expected in specific clusters. These results indicate that this cluster solution would provide a useful basis for the examination of 'area' effects in determining participation in vocational training.

The cluster solution was used in analyses of the distributions of standardised residuals because it was hypothesised that 'area' effects would be related to the combination of socio-economic characteristics of neighbourhoods.

These residuals, represented the unexplained variation in the student distributions which could be attributed to an 'area' effect. Further analyses revealed significant differences between the eight clusters in terms of mean residual values. Thus, certain clusters contained a high proportion of positive residuals for particular student groups, while other clusters contained a high proportion of negative residuals. In addition, the pattern of between cluster differences varied for the three student groups.

The results of the analyses presented in this chapter suggest that an 'area' effect, related to the combination of socio-economic characteristics of residential area, may have influenced school leavers' vocational training choices. It appears that school leavers living in particular types of urban sub-area were more likely than their counterparts in different areas to enter specific types of vocational training. Further analyses are required at the level of the individual student to establish whether such differences are, in fact, partly attributable to an 'area' effect. Analyses of individually based attitude data will be used to investigate whether students' attitudes were related to cluster characteristics in a consistent manner (see Chapter 9). If such effects can be confirmed, the results may be of relevance to the careers information and guidance provided to young people living in different types of areas. However, before further investigation of 'area' effects is attempted, attention is given to the influence of structural factors upon participation in particular kinds of vocational training.

NOTES

Chapter 6

(1) The inclusion of five measures of social class composition had the effect of weighting this factor more heavily than others employed in the cluster analysis. Such a step was felt to be justified because of the importance of the social structure factor in determining urban patterns in inner city areas, and the relationships between student distributions and social class composition identified at the ward level.

(2) Ward's method of hierarchical cluster analysis was selected because it was based on the distance between individuals with respect to all variables simultaneously. This ensured that entities within a cluster were to each other than to entities in other clusters (an important requirement for the present study and one which would not necessarily be met if a different method had been used).

(3) Percentage scores were used because of interest in the possible contribution of 'area' effects (which are believed to be related to the concentration of social and economic factors at the neighbourhood level). These scores were standardised before the population was classified. This procedure was adopted to ensure that the similarity coefficients would not be biased towards those variables which had large variances. This was necessary because there was no theoretical basis for deciding that a particular census measure should be given more weight than any other in determining the cluster solution. The use of standardised data ensured approximately equal influence for each of the input variables.

(4) The 'cut-off' point is usually chosen at a point where further fusion causes a significant reduction in <u>within</u> cluster similarity and <u>between</u> cluster differences.

(5) Further details of the method of cluster analysis used in this study are given in Chapter 3. Examples of the use of Ward's method in the classification of wards have been provided by Webber (1977) and Yeomans (1979).

(6) The expected value of the F ratios is 1.0, therefore a low F ratio indicated low variation within the cluster. The expected T value is 0.0, therefore high values indicated that the cluster mean differed markedly from the population mean. Further details of the method of computing these statistics are provided by Wishart (1978) pp. 76-78.

(7) Although cluster 8 scored very highly on the ethnic variable and on over-crowded housing conditions, the F ratios for these measures were quite high (although not equal to unity) indicating lower internal homogeneity for these factors.

(8) The expected numbers of students in each cluster was calculated with reference to the number of people aged 5 to 15 in each cluster using 1971 Census figures.

(9) The expected numbers of students in the three student groups were calculated for each cluster as follows:-

$$E_{Com_i} = \frac{ComT}{ST} \times Si$$

where:

E_{Com_i} = expected no. commercial students in cluster i

ComT = Total no. of commercial students in the 8 clusters

Si = Total no. of all vocational students in cluster i

ST = Total no. of all vocational students in the eight clusters.

CHAPTER 7

STUDENT CHARACTERISTICS AND PARTICIPATION IN VOCATIONAL TRAINING

INTRODUCTION

Analyses of the spatial patterns of participation in vocational training have indicated that the distributions of the three student groups considered in this study tended to cluster in certain parts of the inner city, and that these concentrations were spatially associated with specific socio-economic characteristics. The task, given the spatial bias, is now to account for students' different training choices.

Broadly, the likely influences on student decisions may be considered under three headings - social structure, the local economic structure (particularly employment opportunities), and the prevailing values amongst the relevant peer group in terms of occupation and training choices. The present chapter is primarily concerned with the influence of the first of these factors - social structure - although all of the above mentioned influences are closely inter-connected.

It is possible that students undertaking particular vocational courses, for example construction courses, were different from students entering other courses - such as engineering or commercial courses. Different educational qualifications, or different social class or home backgrounds, for example, may account for their particular training and occupational choice. To test this it is necessary to examine the characteristics of the student body itself. If no differences are found between the three student groups, it will not be possible to explain either individual occupational choices or patterns of participation in vocational courses in structural terms.

Hypotheses concerning factors likely to influence school leavers' educational and occupational futures, and hence training choices, have been derived from sociological and educational research, and these hypotheses have been tested using information about the three student groups collected by means of a questionnaire survey. Finally, conclusions are drawn about the importance of structural characteristics in determining occupational choice.

1. Review of Sociological and Educational Theory and Relevant Empirical Research

A number of different approaches to the explanation of school leavers' occupational choices can be identified in educational and sociological literature. Although not necessarily mutually exclusive, these approaches vary in the importance they attribute to different factors in the process. A brief account of these approaches is given before considering their implications for the present study.

(a) Social class

The impact of social class upon educational and occupational achievements has been a major focus of sociological inquiry in the area of occupational choice for more than the last fifty years. This interest in the relationships between social class and social mobility via occupation predates Tawney's seminal work 'Equality' published in 1938. Tawney had argued that, because social circumstances prevented effective competition in the labour-market, greater equality of opportunity could be achieved only through greater equality of condition ...*"All careers may be equally open to all ... But in the absence of measures which prevent the exploitation of groups in a weak economic position ... the phrase equality of opportunity is a jest"* (p.110).

Thus, Tawney claimed that the social and economic conditions of members of the various social class groups were different, and that these differences had an impact upon the occupational opportunities available to school leavers of different social class backgrounds. Similarly, Glass (1954), in a major study of social mobility, concluded that post-war attempts to widen opportunities, notably through educational reform, might be limited in their effects because certain basic economic and status inequalities between social groups remained.

These two early and influential studies of the impact of social circumstances upon the educational and career opportunities available to different groups indicated that measures of social disadvantage (in particular, low social class) were strongly correlated with, and predictive of, later occupational attainment. Later research has suggested that this relationship has remained remarkably consistent throughout the post-war period. Parental social class has been shown to be strongly correlated with offspring's educational achievement and occupational choices in studies such as those by Anderson, 1965; Brannen, 1975; Clarke, 1980b; Davies et al, 1972; Douglas, 1964; Goldthorpe, 1980; Little & Westergaard, 1964; Sammons et al, 1983; Stewart et al, 1980; and Willis, 1977.

There is strong empirical evidence that, as a whole, young people of non-manual origins are much more likely than their manual peers to do well at school and to stay on beyond the minimum school leaving age (a point discussed below). In addition, such young people are much more likely to enter some form of higher education and eventually to obtain non-manual jobs than are young people of manual origins.

However, although sociological and educational studies have both produced a consistent picture of limited social mobility, there is argument as to the factors responsible for these differences. Thus, as Lane (1972) argued; ... ***"such correlations as we do have between social class and educational choice in no sense constitute an explanation. Even if the correlation were perfect, which it is not, we would still need to seek out and specify the mechanism or mechanisms whereby the family's position in the social hierarchy*** *operates to constrain the educational decisions of its offspring"* (p.255).

Inequality in educational opportunities, difference in parents', teachers' or schools' expectations, individual differences in ability, motivation or attitudes, cultural differences in the value placed on particular jobs by different social groups, and areal variations in employment opportunities have all been suggested as possible determinants of occupational achievement, and, by implication, as influences on occupational choice (see Weir & Nolan, 1978). The link between such factors and the association between social class and educational and occupational achievement is explored in further sections of this thesis. The impact of two of these structural characteristics - parents' jobs and educational qualifications - are discussed in this chapter. In the next chapter the influence of attitudes towards employment is examined.

(b) Parents' occupations

The possible influence of social class background has already been discussed. It is also suggested that the particular jobs in which parents are engaged may have an impact upon their offsprings' particular occupational choices. Thus, Douglas et al (1968) noted that male school leavers' choices were frequently made within a frame of reference that was only wide enough to include those types of employment pursued by members of their own families.

Weir and Nolan (1978) and Ryrie (1983) have suggested that research into school leavers' occupational choices has tended to neglect the influence of the home upon the development of young peoples' expectations, attitudes and aspirations. This influence can be direct, through advice, or indirect, through example. It has been suggested that the father's job can be a major influence on the type of jobs considered by sons (see Ryrie, 1983). This is believed to be particularly important for boys from skilled manual backgrounds. Lee and Wrench (1981), in a study of apprenticeships in Birmingham, argued that fathers tended to obtain jobs for their sons in the same firm.

It is also probable that job choice or aims may be affected by the role-conditioning aspect of the father's job. Sons may see the type of job in which their father is engaged as appropriate for themselves because they have used their father as an example upon which to model their masculine identities. Weir and Ryrie (1973) reported that the closer the match between father's job and son's job, the more succesful the son was in his apprenticeship. Work by Weir and Nolan (1978) also indicated that the sorts of jobs done by other members of the family could have an impact upon male school leavers' job ambitions; in particular, a strong tradition of skilled manual work in the family was related to the desire to become an apprentice. In some families a strong engineering tradition may have developed. In other families, mining may be the example followed (see West and Newton, 1983). (The impact of mother's occupation is discussed later in the chapter because the majority of literature is based on the links between sons' and fathers' occupational patterns.)

This approach, in contrast to that concerned with inequalities in the opportunities available to school leavers of different social classes, lays considerable emphasis on home factors which influence expectations of, and attitudes towards, employment, and the potential moulding influence of father's occupation. However, the two are closely linked in that both result in limited social mobility between the generations.

(c) Sex

Both these strands of research (that emphasising social class background and that concerned with the father's job) can, however, be considered "class centrist and sexist" (Holland, 1981, p.1). They have concentrated almost exclusively on young men's entry into the world of work. The factors which affect young women's occupational choices have only recently been addressed. Work by Rauta Hunt (1975) and by West and Newton (1983), has indicated that the post-school training opportunities available are very different for the two sexes.

The sex-role stereotyping of occupations by school leavers has been examined by Sharpe (1976) and by Deem (1978, 1980). These authors suggested that most girls, particularly those of average or less than average ability, consider only a relatively narrow range of occupations. Deem argued that the process of socialisation moulds school leavers' employment ambitions to conform to culturally based sex-norms. Thus, if the example of the parent of the same sex is used by the child in developing his or her identity, then the occupation of the mother would be expected to be a more influential factor than father's job or social class in shaping girls' occupational expectations and choices (Holland, 1981; Pratt et al, 1984).

Other researchers have suggested that girls tend to take 'feminine' subjects at school, and that this limits their later vocational choices to jobs traditionally entered by women (see Wolfe, 1977; Holland, 1981).

(d) Psychological or personal development

The majority of early studies of the process of occupational attainment generally paid little attention to sociological work on the impact of social class, father's occupation or sex as determinants of occupational choice. Rather, attention was concentrated on an examination of the personal or psychological development of young people. Research by Ginzberg and colleagues (1951) suggested that occupational choice was a process comprising several stages, and taking place over a number of years. Super's (1957) theories were much influenced by Ginzberg's research. Super argued that the process of occupational choice was best understood as one of vocational development in which preference and competence were related to individual differences and altered over time and with experience. The most important factor in this process was the development of the individual's self concept which would, in turn, affect his or her vocational choice.

However, although proponents of this approach saw personal or psychological development as the major influence upon occupational choice, the significance of other factors - particularly the influence of the opportunities and constraints of the labour-market - were not totally ignored. Both Ginzberg and Super acknowledged that the individual young person was forced to compromise with the reality of the labour-market and with his or her own abilities when choosing jobs. Thus, vocational maturation was partly a process of coming to terms with the external world of jobs and opportunities.

Ryrie (1983) has argued that, at the time the vocational choice approach was proposed, the opportunities available to school leavers were far greater than they have been during the last decade and, therefore, that the model was not totally inappropriate for the period in which it was developed. However, West and Newton (1983) suggested that, if it was applicable to any groups, the vocational development approach applied only to advantaged school leavers (that is, those who were white, middle class, male and educationally successful). These authors thus acknowledged the impact of social class and associated inequalities of opportunity.(1)

(e) Labour market opportunities

Roberts (1971, 1974) also questioned the relevance of a personal, psychological development approach to the study of occupational choice. He laid emphasis on the determining influence of local employment opportunities and argued that ... *"it is not choice but* *opportunity that governs the manner in which many people make their entry into employment"* (1971, p.145). Roberts went on to suggest that, although individuals may develop expectations and ambitions, these are in effect shaped by the structure of opportunities available. In this way, the local labour-market and selection procedures adopted by employers can be seen as crucial factors.

Although Roberts' model may be appropriate in an era of economic recession, high youth unemployment and structural change, it neglects the importance of other factors, such as cultural forces, which may exert a major influence upon the occupations considered by school leavers (in particular, the effects of father's job or the sex-stereotyping of occupations discussed above). Overall, the labour-market opportunities approach seems likely to be most relevant in areas of high unemployment dominated by a few industries and where geographical mobility is restricted. In addition, it is probable that opportunities available may be most severely restricted for school leavers from the most disadvantaged groups in terms of social class background or qualifications (see Weir & Nolan, 1978), and this approach therefore ties in with research on the impact of social class.

As noted in Chapter 2, the inner London area was chosen for the present study because of the wide variety of employment and training opportunities available. This strategy minimised the possible confounding influence of variations in employment opportunities likely to be found in areas dominated by a few traditional industries, high youth unemployment rates and a poor mix of job opportunities. The wide variety of job opportunities, accessibility provided by public transport and the relatively low youth unemployment rate in the inner London area (5% when the present study was commenced, compared with a figure of around 8% nationally), meant that the labour-market opportunities approach was likely to be less relevant than others for this investigation.

Analyses presented in Chapter 5 indicated that, for the two groups of sponsored students, the distribution of employers was not related to spatial patterns of participation in construction and engineering training. The predicted 'mirror image' relationship between employment opportunities and student distributions was not identified. Moreover, the wide availability of commercial jobs, and the non-sponsored nature of the training, mean that labour-market opportunities were unlikely to have accounted for spatial variations in the distribution of commercial students.

It is also possible, however, that employers' recruitment strategies might have differed between the construction and engineering industries. For example, one of these industries might have tended to rely upon recruitment through present employees (the 'lads of dads' strategy). The other, in contrast, might have placed greater reliance upon the possession of particular levels of qualifications or of specific school subjects. Thus evidence of differences between particular sponsored student groups in level of qualifications and subjects studied may be interpreted as possibily reflecting the different recruitment strategies of employers in the construction and engineering industries. Although these factors would not necessarily account for variations in the spatial distribution of particular student groups, they could have had an impact upon individual students' chances of getting jobs in the two industries. The impact of parents' jobs may also have been related to the labour-market opportunities theory. Not only may parental example have been important in choosing an employment field, it may also have provided specific job opportunities through 'inside' knowledge of vacancies.

(f) School influences

Allen and Smith (1975), Bowles and Gintis (1976), Ashton and Fields (1976) and others have argued that schools are the agents of a sorting, selecting and 'channellising' process which affects pupils in such a way as to prepare them to enter jobs at particular levels in the occupational hierarchy. This is, in part, achieved through an effect on pupils' attitudes and self concepts (see Rosenthal & Jacobson, 1968, on the impact of teacher expectations). Allen and Smith (1975) have suggested that the school system 'cools off' or reduces the aspirations of certain categories of young people (particularly those of working-class origins). In this way the process of schooling will tend to perpetuate the social origins of pupils so that, on leaving school, young people apply for jobs in keeping with their social class origins. This is offered as an explanation for the close association between social class of parent and offspring (discussed above).

It has been argued that the way in which the school 'channellises' young people is through the definition of their ability. Thus *"young people's choices of jobs and anticipatory orientations towards those jobs are largely shaped by other people's definitions of their ability as these were mediated to the children through the school organisation"* (Ryrie, 1983, p.6, quoting Ford, 1969).

The 'channellising' process can be viewed as operating indirectly through a process of the development of attitudes and expectations during the school career (through such processes as streaming and setting, for example). In addition, the process may later operate directly through the public examination system. The way in which young people are chosen to enter particular types of examination, and their success or failure, is seen to be of prime importance in confirming young people's perceptions of their own ability and to the sorting function of schooling (see Woods, 1976). These ideas also link with the labour marker theories, however, because employers' selection procedures have been shown to be influenced by school leavers' educational qualifications (see Dore, 1976; Gordon, 1982).

2. Hypotheses

Summarising the relevant literature, it is suggested that six elements are likely to be of key importance in the process of occupational choice by school leavers. These are sex, social class background, the father's job, educational qualifications, attitudes and the opportunities afforded by the local employment market.

Four of these elements may be regarded as characteristics of individual students - namely sex, social class, father's job and qualifications - and several hypotheses have been constructed to test relationships between attributes and students' occupational choices (as measured by the type of vocational training entered).

Hypothesis 1

'Students' vocational training choices will be related to the sex-stereotyping of occupations'.

A review of the literature suggests that the processes of occupational choice may be different for male and for female school leavers. In addition, there is evidence that the availability of post-school training opportunities varies significantly for the two sexes. Therefore, participation in particular types of vocational training would be expected to be divided along traditional sex lines. Girls should have been over-represented on commercial courses, and boys over-represented on engineering and construction courses.

Hypothesis 2

'Students' vocational training choices will be related to the social class of their parents'.

Previous research has indicated that social class background is related to occupational achievement, and that social mobility via occupational entry is limited. It was expected, therefore, that the majority of engineering and construction students would have been of skilled manual origins, whilst the majority of commercial students would have been of non-manual backgrounds.

Hypothesis 3

'Students' vocational training choice will be related to the types of jobs in which their parents are engaged'.

It was expected that if school leavers were influenced in their occupational choices by parental jobs, boys who entered engineering courses would have had fathers working in the engineering field, while boys who enter construction courses would have fathers working in the construction industry. Commercial students' parents were expected to have had jobs in the commercial field.

Hypothesis 4

(a) 'Students' vocational training choices will be related to the level of their educational qualifications'.

The 'channellising' in school approach to occupational choice suggested that school leavers were guided into occupations of a particular level through their perceptions of their own abilities. The public examination system was the mechanism by which this process was seen to operate in the employment market. Therefore, school leavers entering different types of low-level vocational training were expected to have achieved similar levels of qualification.

(b) 'Students' vocational training choices will be related to the nature of their educational qualifications'

It was also hypothesised that the nature of the subjects studied at school influenced subsequent vocational choices. If this was the case, it would be expected that construction students would have studied some subjects relevant for construction work while at school. Similarly, engineering students would have taken subjects related to engineering work. Finally, the commercial group would have studied subjects relevant to commercial type jobs.

3. Testing the Hypotheses

In order to test the applicability of these hypotheses, a variety of data about the individual students' educational and occupational backgrounds, sex, and their job ambitions and expectations were collected (see Chapter 2) and are here analysed.

SECTION 1

The Influence of Sex

Overall, 565 of the 1863 students (nearly one third) were female, but the proportion varied greatly from one course to another, as figures in Table 7.1 indicate.(2) If sex was related to vocational training choice, it would be expected that nearly a third of students from each group would have been female. However, over 82 per cent of commercial students were female. Or, to put the figures another way, whereas 99 per cent of the girls had opted into commercial courses, only 9 per cent of males had done so. Conversely, construction and engineering training proved to be almost exclusively male preserves.

These figures support the findings of the Department of Education and Science (1978) survey, which noted that only one in eight part-time day vocational students was female. The DES suggested that this reflected the technical nature of the majority of sponsored vocational courses. Redpath and Duncan (1981) have also noted that "...*the* *bias against girls doing any course is stronger at the lower levels of academic attainment and that this is largely due to the lack of part-time educational opportunities open to young women workers".* Similarly, in a study of Bradford school leavers, Sharpe and Roberts (1983) noted that, for those going into non-advanced further education, *"...the most popular courses for the girls are secretarial, business, clerical, catering and institutional management and pre-nursing or nursery nursing"* (p.92).

Analysis of school leavers' job intentions, undertaken as part of the National Child Development Study, showed that engineering (and, to a lesser extent building work) were popular choices amongst the boys. The findings indicated that *"the most striking pattern to emerge ... is indeed the differences between the sexes. Some are to be expected: it is very rare for a girl to go into building or engineering"* (Fogelman, 1979, p.46). Conversely, Fogelman's research indicated that clerical work was unpopular amongst male school leavers.

Similar findings were reported by Pratt et al (1984). In a study of over 1000 pupils, Pratt et al noted that *"... the most desired job for boys is some form of apprenticeship, whereas for girls a secretarial or office job is most often wanted"* (p.45).

Thus, the analysis of male and female participation in low-level vocational courses confirms the hypothesis that sex was a major determinant of vocational training choice. There seems little doubt that girls did not enter construction and engineering training because they were girls.

The reasons for this sex differentiation are by no means evident and will be explored at greater length in a later section. However, it is worth noting here certain of the potential explanations for this bias. It is possible that vocational choices reflect the 'channellising' processes of schools. Girls may have studied subjects inappropriate for entry into technical training (see Byrne, 1978). Analyses of the pattern of subject entries of the two sexes in public examinations reported by Byford et al (1982, 1983) indicated that, in inner London, very few girls entered Craft, Design and Technology and related examinations at either CSE or GCE level. It is also possible that employers may not wish to employ female school leavers for construction or engineering training, or males for clerical and secretarial positions. This may be due to employer bias, the hostility of current employees, or some other reason connected with the activities involved in the job.

It also seems likely that the socialisation processes experienced by boys and girls are different and that, in developing their sex-roles (the way in which particular types of behaviour and activity are identified as appropriate for members of each sex, children absorb culturally acceptable notions of the types of jobs which are suitable for males and females. If this is the case, girls' and boys' attitudes towards jobs traditionally filled by members of a particular sex would be expected to differ. Differences in attitudes might then be the factor of prime importance in accounting for sex differences in participation in particular types of training.

Sharpe (1976) and Holland (1978) suggested that the sex-stereotyping of occupations was more marked amongst both girls and boys of particular social class backgrounds. Specifically, they argued that working-class school leavers were more likely to perceive jobs in terms of a traditional sex basis than were middle-class school leavers.

SECTION 2

The Influence of Social Class

In order to establish whether the student sample was drawn predominantly from a particular social class, it was necessary to assign the jobs in which students' parents were engaged to social class groups.(3) The majority of sociological and educational research studies have employed the Registrar General's Classification of Occupations. Although this scheme has been criticised (see Bland, 1979), it provides a useful ordinal scale for ranking jobs. It has also been shown to be strongly related to differences in life chances (as measured by educational achievement or the incidence of disease and mortality for example). For these reasons, and to facilitate comparability with previous research, the Registrar General's Classification has been used in this study. Jobs were allocated to one of four groups - 1) professional, managerial and intermediate non-manual, 2) other non-manual, 3) skilled manual and 4)semi- and unskilled manual.

If social class background affects job choice, such that school leavers obtain employment of the same general type as their parents, students entering training for skilled manual work would be expected to have had parents in skilled manual jobs. Conversely, students training for low-level non-manual work would be expected to have had parents in non-manual employment. In the context of this thesis, one would, therefore, expect parents of engineering and construction students to have been in skilled manual work, and those of commercial students to be in equivalent kinds of non-manual work. However, if parents' social class did not have an effect, the percentage of students opting into vocational training from, for example, semi-skilled and unskilled manual origins, would be expected to have been roughly equal to the percentage of semi-skilled and unskilled manual workers in the population.(4) Likewise, the expected percentage of students from professional and managerial homes would have been roughly equal to the percentage of professional and managerial workers in the population.(5)

Marked differences in the percentages of students drawn from the different social class groups were identified (see Table 7.2). These differences did not reflect the social class composition of the inner city male working population (χ^2 = 834.98, p.<0.001). Thus, a far higher percentage of students than expected (given the percentage of skilled manual workers in the area) had a father in skilled manual work. In all 28.5 per cent of economically active males in the study area were in skilled manual work, but 64 per cent of students had a father in that occupational group. In contrast, the percentages of students with fathers in other social class groups were much lower than predicted.(6)

These results are indicative of a strong relationship between choice of low-level vocational training and father's social class. School leavers of skilled manual backgrounds were heavily over-represented on low-level vocational courses. These findings are in line with results of research by Martin (1954) who noted that most males in manual employment expressed a preference for their sons to enter a skilled manual trade. Similarly, Thomas and Wetherall (1974) concluded that the occupational status of the father exerted a considerable influence on the occupational aspirations of the son. The present study suggests that link between the social status of fathers and of sons still remains strong.

The Nuffield study of social mobility in Britain had concluded that, although mobility can and does occur, the majority of men enter and remain in jobs of the same class as that of their fathers. *"Even in the presumably more favourable context of a period of sustained economic growth and of major change in the form of the occupational structure, the general underlying processes of intergenerational class mobility - or immobility - have apparently been little altered, and indeed have, if anything, tended in certain respects to generate still greater inequalities in class chances"* (Goldthorpe et al, 1980, p.85). Analysis of the social class backgrounds of students in this survey provides some confirmation of this view. The majority of students had entered training for jobs in the same social class as their father. The extent of social mobility amongst this sample was thus limited.

It is possible, however, that the social class backgrounds of the three student groups differed, and, as indicated in the hypothesis two, it may be that differences in class background account for differences in course choice. In particular, the commercial student group had entered training for low-level non-manual work. It was expected that this group would be drawn from similar non-manual backgrounds. However, it is evident from Table 7.3 that the majority of students in each course group, including those undertaking commercial training, had fathers in skilled manual work. In all cases the percentage was much higher than that which might be expected, given the composition of the population at large.

In terms of social class background, there were no significant differences between the construction and engineering groups. The commercial student group, however, was significantly different both from the engineering and from the construction group (chi-square figures comparing student group pairs are given in Table 7.3). These differences are due to the lower proportion of commercial than construction or engineering students with a father in skilled manual work. Even so, under a quarter of commercial students had a father in non-manual work. Although for both construction and engineering students, social class origins and social class of training choice coincided very markedly, for the commercial group the pattern differed. Commercial students were training for low-level non-manual work, but the vast majority were of working-class backgrounds. Thus, unlike their construction and engineering counterparts (who were on the whole not socially mobile), the commercial group appear to have been mobile in an upward direction.

The results described reflect the predominance of girls on the commercial courses. Studies of social mobility have concentrated almost exclusively on the relationship between fathers' and sons', rather than fathers' and daughters', jobs. The findings concerning social mobility - generally of stability rather than change in level of occupations between the generations - appear to reflect that research emphasis. Daughters' and fathers' occupational levels are less closely linked.

In view of this finding, it was decided to examine the links between mother's social class and offspring's vocational training choices. Few surveys of occupational choice have examined the relationship between the social class of the mother's, as well as of the father's, job and the child's job choice. Yet, it has been conjectured by Holland (1981) that the social class of the mother's job may be a more important influence than the father's on a girl's job choice.

Around a half of students' mothers were in full-time work and, in contrast with students' fathers, working mothers were very poorly represented in skilled manual work (a mere 8.8%) and none was employed in the construction or engineering industries (see Table 7.4).

The majority of mothers in full-time work were in some kind of non-manual job (around 52%). Nonetheless, the proportions of mothers in the various social class categories differed significantly for the three student groups (χ^2 = 17.35, p.<0.05). This result was primarily a function of the different occupational profiles of the mothers of the commercial group. The percentage with mothers in semi- or unskilled manual work was highest for the commercial student group and lowest for the engineers (44.1% compared with 34.3% respectively). Therefore, although nearly half of commercial students whose mothers were in full-time work had entered training for jobs in the same social class as their mothers (i.e. the non-manual), for almost an equal proportion, the choice of training represented a high level of aspiration when compared with the types of jobs in which their mothers were employed.

In combination with information about father's social class, these results suggest that commercial students were more likely than their engineering or construction counterparts to be upwardly socially mobile.

However, these conclusions can only be tentative because it is possible that many of commercial students' mothers currently in semi- or unskilled manual work may have been in non-manual jobs prior to child rearing. If this was the case (it was not possible to collect details of parents' employment histories in the questionnaire survey of students) girls may have been influenced by the level and type of job in which their mother had been engaged prior to marriage/child rearing, and have used this as a model when choosing their own vocational course.

Although only a small percentage of males had entered commercial courses (9%) their choice of training for work in a traditionally female-dominated field is of interest. It is possible that they differed from other males in the survey in terms of social class background, and that such differences may account for their unusual (for boys) choice of commercial training. The majority of construction and engineering students had fathers in skilled manual work and had themselves entered training for a skilled trade. It is possible that males who entered commercial courses had fathers in non-manual work. If this was the case, then their choice of commercial training would conform to their social class background.

Comparison of the social class backgrounds of males in commercial, construction and engineering training indicated that the commercial group was significantly different from their engineering and construction counterparts ($p.<0.05$) but that there were no differences between the construction and engineering groups (chi-squared figures are given in Table 7.5). In all, 35.5 per cent of males in commercial work had a father in non-manual work, almost twice the percentage of construction and engineering students with a father in this class. A lower percentage of male commercial than other male students had a father in skilled manual work. Nonetheless, despite these differences only a minority of male commercial students had a father non-manual work. Therefore, the hypothesis that differences in social class background accounted for male entry into commercial training was only partly confirmed. In terms of father's social class, nearly two out of three of male commercial students were socially mobile.

An examination of mother's occupation indicated that there were no significant differences between male commercial students and their construction and engineering counterparts. Therefore, mother's social class did not account for male entry into commercial training.

There are a number of important points to be made as a result of consideration of the influence of social class upon vocational training choices. Although for the majority of students these results confirm the hypothesis that student choice of vocational training was related to the parent's social class, the link between parental social class and offspring's training choice is seemingly determined largely by the sex of the child. For boys, a strong relationship between father's social class and training choice was identified and the extent of social mobility was limited. (Only the tiny minority of males on commercial courses proved an exception to this rule.) For girls, mother's rather than father's social class was related to training choice but the link was less strong. Nearly half the sample with mothers in full-time work had a mother in manual work, but had entered training for non-manual jobs. Thus, girls appear to have been rather more socially mobile than boys in this sample.

These results emphasise the importance of social structure and sex as influences upon young people's occupational and training choices. The sex of the child largely determined which parent's social class was likely to have been an influence. However, the results do not offer an explanation for the correspondence between social class origins and outcomes. The correspondence may be due to differences in the opportunities available to school leavers of different social class backgrounds, and to the link with educational attainment. Alternatively it may be due to more subtle differences in the employment ambitions, expectations and attitudes of youngsters in different social class groups. Further attention will be paid to job ambitions later in this chapter. Attitudes are considered in the next chapter. First, however, the possibility that the actual job in which parents were engaged, as well as their social class, had an influence on students' vocational choices is investigated.

SECTION 3

The Influence of Parents' Jobs

If school leavers relied upon their parents as role-models and sources of guidance in developing their adult identities, it would be expected that the particular types of job in which their parents were engaged would have influenced their vocational choice. Specifically, it was hypothesised that school leavers who entered engineering training would have had fathers working in the engineering field, and those who entered construction training would have had fathers working in the construction industry. Commercial students were expected to have had parents working in some kind of commercial employment.

The results of analysis of the relationships between parent's employment and offspring's training choice are presented in Table 7.6. In all, just under a third of students (30.6%) had chosen training for employment in the field in which a parent was already working. For more than two out of three students, therefore, the types of job in which their parents were engaged were not directly related to their own vocational choice.

There were variations, however, between the three student groups. The percentage of students with a parent working in the same field was highest for the construction and lowest for the commercial group (36% of construction students had a parent - invariably the father - working in the construction industry, but only a quarter of commercial students had a parent working in the same field).

Chi-square figures in Table 7.6 indicate that the differences between the three student groups were statistically significant (χ^2=14.9, p.<0.001). Further analysis indicated that these differences were due to the commercial group alone. This group differed significantly from both the engineering and the construction groups. In contrast, there were no significant differences between the engineering and construction groups in terms of the proportion with a parent working in their chosen employment field (chi-square figures for comparisons of student group pairs are given in Table 7.6). The numbers of commercial students with a parent working in the same field were much lower than expected (in comparison with the construction or engineering group). This is a reflection of the sex differences in entry to the skilled trades and the high proportion of mothers not in full time work (discussed above under Section 2).

When the proportion of construction students with a father in the construction industry was compared to the proportion of economically active males in construction employment in the inner London population, marked differences were identified. it was clear that a much higher proportion of construction students than expected had a father in their chosen employment field. In all 36 per cent of construction students had a father in their choosen fieldcompared with an expected figure of 11 per cent. These differences were highly statistically significant (χ^2=301.6, v=2, p.<0.00001). A similar pattern was identified for the engineering group. In all 31 per cent of the engineering students had a father working in the engineering industry, compared with nine per cent of economically active males in inner London. Again, those differences were highly significant (χ^2=315.3, v=1, p<0.00001).(7)

Thus, in both cases, the probability that the construction and engineering groups had a father working in their chosen employment field was roughly three times that of the male population at large. These results provide limited support for the hypothesis that male school leavers were influenced by the type of jobs in which their fathers were engaged. Nonetheless, it is not a complete explanation because two thirds of the male students did not have a father working in their chosen employment field.

These results have important implications for understanding the processes of vocational choice. Although a substantial proportion of construction and engineering students had a father working in their chosen employment field, around two out of three of both groups had fathers engaged in different types of work. The majority of school leavers obtaining training in the construction and engineering trades do not appear to have done so primarily because of the influence of fathers working in the industry concerned (although, for the minority of students the father's work and contacts were likely to have been very important).

These findings are in broad agreement with those reported by Lee and Wrench (1981) in their study of apprenticeships in Birmingham. They had suggested that it was common practice for sons to obtain apprenticeships in the firms in which their father work. *"A surprisingly large number of firms interviewed rely in significant part on the family members of existing employees for filling their post"* (Lee and Wrench, 1981, p.8). This, it was suggested, meant that members of ethnic minorities were disadvantaged *"They lack the informal contacts which often alert white boys to the possibility of a job opening, and here the 'lads of dads' syndrome is particularly important"* (Lee and Wrench, 1981, p.17).

The present results also suggest that parental contacts in the industry concerned were likely to have been influential for a substantial minority of students. However, parents' jobs were not the only determinants of school leavers' vocational choices. The virtual absence of males from ethnic minority backgrounds on the sponsored courses included in this study is likely to have reflected the influence of other factors, in addition to under-representation of parents in skilled manual jobs, which prevented their entry into the skilled trades.(8)

(b) Elder Siblings' Occupations

It is of course possible that elder siblings may have had an influence upon younger siblings' vocational choices. The family factor may not be confined to parents.

To test this possibility, information about the occupations in which students' elder brothers and sisters were engaged was analysed. Overall a quarter of students had an elder sibling working in the same employment field as their chosen training (i.e. construction for construction students, engineering for engineering students, commercial for commercial students). Nearly 38 per cent of students had an elder sibling(s) working in a different employment field, and a similar percentage had no elder siblings to influence vocational choice. Almost exactly three quarters of students had no elder siblings working in their chosen employment field. For these students, the example of older brothers and sisters cannot have influenced vocational choice directly.(9)

Overall, the commercial group appeared to differ from its engineering and construction counterparts. Commercial students were less likely to have had a parent working in their chosen employment field, but were more likely to have had an elder sibling in that field. This is possibly a reflection of the growth in white-collar employment over the last two decades, a growth which has altered the balance of skilled-manual to white collar jobs in favour of the latter.

Table 7.8 shows that although a substantial proportion of students had a parent or an elder sibling working in their chosen vocational field, more than half of students in each group had neither a parent nor an elder sibling engaged in the same employment field. Taken together, these results suggest that family traditions of employment had an important impact but did not explain the vocational choices of the majority of students. Nonetheless, the hypothesis that students' vocational choices were related to the types of job in which their parents were engaged was partly confirmed, because a much higher than expected number of construction and engineering students had a parent working in their employment field. Parents', and to some extent siblings' jobs appear to have been an important influence upon a substantial minority of school leavers in the sample.

SECTION 4

The Influence of Educational Qualifications

1. Level of Qualification

It was hypothesised that a student's choice of vocational training was related to the level of his or her educational qualifications. The 'channellising in school' theory of occupational choice proposes that school leavers are prepared to enter particular levels of employment through the sorting processes of schooling. The public examination system is seen as one of the major mechanisms through which this channelling process occurs. This is because public examinations confirm pupils' perceptions of their own abilities and, in turn, influence their vocational choices. In addition, potential employers use qualifications in their selection procedures and this will limit the opportunity available to school leavers with particular levels of qualification.

If the channelising process occurs, school leavers' job ambitions would have been mediated by their perceptions of their own abilities. These perceptions would have been affected by their entry for, and success in, public examinations. School leavers with higher levels of attainment than average would not, therefore, be expected to enter low-level vocational courses. Similarly, those with relatively poor attainments were expected to enter occupations which did not require any further education, or might suffer unemployment upon leaving school. In addition, in the case of sponsored students, employers were expected to have recruited school leavers with a similar level of achievement because it was hypothesised that they used qualifications as a guide to the potential employee's ability (see Raffe, 1981, or Ryrie, 1983).

To test the hypothesis that students' vocational training choices were related to the level of their educational qualifications, information about CSE and GCE qualifications was collected. The basis upon which vocational courses were selected for inclusion in this survey (a matter which was discussed in Chapter 2) was that they should be designed for youngsters of relatively limited academic attainment. Given this requirement, it would be expected that the bond between levels of qualification and vocational training choice amongst this sample would be pronounced.

The results of analysis of student levels of qualifications, however, provide only limited support for the 'channellising in school' model (see Table 7.9). Given course entry policy, it was expected that few students would have obtained any CSE grade 1 passes.(10) In fact, although the majority of students (nearly 55%) had not obtained any CSE grade 1 passes, a substantial minority - nearly a fifth - had obtained two or more passes at CSE grade 1. This proportion compares quite favourably with the national average of the time because one or more 'O' level (or equivalent) passes was obtained by only just over a quarter of school leavers on a national basis (DES Statistics of Education, 1978). In contrast, nearly 11 per cent of students had not taken any examinations and a further eight per cent did not know the results of the public examinations they had taken.

Thus, there was substantial variation in the levels of attainment amongst students undertaking low-level vocational training. It appears that such training attracted not only school leavers of average attainment (CSE grades 3 and 4) - a substantial minority of students were 'better' qualified than expected, while others were less well qualified. This is not to say that qualifications were of no importance. None of the sample had obtained 'A'-levels, and very few had five or more 'O'-levels.

These results suggest that, although in very broad terms academic attainment was related to the level of training entered, it was unlikely to have been the major determinant of the particular type of vocational training chosen. It seems that perceptions of ability developed through the schooling processes and confirmed by the public examination system cannot be the main factor to have influenced vocational training choices. In this respect, the results of the present study do not agree with those presented by Ryrie (1983) following a study of Scottish school leavers. Ryrie had argued that perceptions of ability developed in school, and through qualifications obtained, were the major determinants of school leavers' job ambitions.

When attention is turned to the issue of the importance of qualifications for the recruitment policies of the employers of sponsored students, results in Table 7.10 suggest that qualification levels were unlikely to have been a major factor. School leavers with several 'O'-level (or equivalent) passes, those with CSE grade 3 and below, and those with no examination passes had obtained apprenticeships which involved sponsored vocational training. From these variations in the level of qualification amongst sponsored students, it appears that the association between qualifications and job choice (which research reported by Dore, (1976) and later by Raffe (1981) had indicated was characterised by a "tightening bond") was rather less strong amongst this sample than the arguments of proponents of the 'channellising in school' model would suggested.

These conclusions are supported by the findings of Ashton and Maguire, (1980) in a study of the function of academic and non-academic criteria in employers' selection strategies. For the recruitment of young people for skilled manual work three different strategies were identified "*... 16% of employers insist on minimal educational qualifications ..... 25% do not ask for any evidence of educational certification ....., while the majority use such certification only as a guide*" (p.151) Similarly Jones (1982) found that employers were fairly flexible on qualification requirements for jobs (under half their sample of employers required entrants to possess CSE grade 3 or better for skilled manual traineeships).

It is possible, however, that level of qualification may have had an effect upon the type of low-level vocational training which was entered. If, for example, employers in the engineering industry laid more emphasis on qualifications than employers in the construction field, school leavers with different levels of attainment might have been advised to consider particular trades. Those with higher levels of qualifications would be channelled towards engineering and those of lower ability, towards construction work.

To test this hypothesis, levels of qualification possessed by the three student groups were compared, (see Table 7.10). The results indicated that there were no significant differences in the level of qualifications possessed by the three groups (χ^2=10.35, p.>0.10). Neither were there significant differences between the construction and engineering groups (χ^2=5.57, p.>0.5).(11) It appears that differences in levels of attainment were unlikely to have accounted for job/training choices in the three fields because of the considerable overlap in qualifications held by the three groups. All student groups contained both relatively well and relatively poorly qualified young people. Qualification levels cannot, therefore, explain why some male school leavers in the sample entered construction and some entered engineering training. Employers in both industries had recruited young men with various levels of qualifications for craft apprenticeships.

Ryrie (1983) had claimed that qualifications were the major determinant of school leavers' level of job intentions. Nonetheless, he admitted that, at entry to employment *"the level of school leavers' jobs, particularly those in the middle range of the hierarchy of occupations, was not completely determined by qualifications"* (p.101). Students in the present sample were training for jobs in the 'middle range' of the hierarchy. In this case, level of qualifications did not appear to account for participation in particular types of vocational training. In addition, level of qualification cannot account fully for entry into training for 'middle range' occupations, because both relatively well and poorly qualified school leavers alike had obtained places on courses. The hypothesis that students' choices of vocational training were related to the level of their educational qualifications was not confirmed. This finding is in line with the conclusions reported by Weir and Nolan in their study of male school leavers in Scotland. They noted that *"Apart from a few expectations ... the possession SCE certificates made little difference to to employment prospects "* (p.104).

2. Subjects Studied at School

However, it is also possible that schools may channel pupils towards particular jobs through their influence on pupils' choices of subjects to study. The proponents of the 'channellising in school' model have concentrated upon the way pupils develop a sense of their abilities, but it may also be that schools affect pupils' subject choices and, in this way, indirectly influence later vocational choices. In particular, one of the reasons for girls and boys differential patterns of occupational entry may be the traditional sex bias in their subject choices at school (see Holland, 1981; Deem, 1980).

Unfortunately, it was not possible to establish, for this sample, whether pupils' subject choices had been primarily determined by advice from school, parental influences or those of the peer group. In addition, although pupils may have chosen subjects in line with their existing vocational preference (to prepare themselves for their chosen job) it is also possible that subjects were chosen (for other reasons such as enjoyment or teachers' or parents' advice) and that this choice then determined the school leaver's later vocational opportunities. In order to establish whether subjects studied at school were related to vocational training choices, information about the types of subjects taken for examinations (both public, such as CSE and GCE, and vocational, such as City and Guilds or Royal Society of Arts) was collected.

Subjects with a vocational basis were identified for the three fields of interest - commercial, construction and engineering. If school leavers were influenced in their vocational choices by their subject choices at school, or if the training opportunities available were related to subjects studied, engineering students would be expected to have studied some subjects related to engineering work (such as metalwork, electronics and engineering studies, for example). Similarly, those entering construction work would be expected to have studied a subject(s) related to the construction industry (woodwork, building craft studies or brick work, for example). Commercial students would be expected to have taken some commercial subject(s) (such as commerce, office practice, typing or accounts).

Certain subjects, such as technical drawing, are relevant for either construction or engineering apprenticeships.(12) Therefore information about these subjects was also obtained.

Comparisons of the subjects studied by students in the three groups indicate that there were some striking differences (see Table 7.11). Only a very tiny proportion of commercial students - less than 3 per cent - had studied any vocational subjects related to the skilled manual trades (male commercial students almost completely accounted for this proportion). These results are in line with these reported by Byford et al (1980,1984) on sex differences in examination entries within the ILEA area.

Thus, commercial students appear to have had little experience at school of practical subjects related to the skilled manual trades. It is not possible to confirm whether the girls were not offered or were 'channelled' by their school experiences away from traditionally 'male' subjects, or whether the influence of home, peers, or the media ensured that girls chose not to enter such subjects even though they may have been available in some schools. However, if subjects studied at school did influence later vocational choices it is not surprising that these girls did not enter construction and engineering courses.

Commercial students were much more likely to have studied commercial subjects at school than were their engineering or construction contemporaries. Just over a third of commercial students had studied one or more commercial subjects at school, compared with 3.3 per cent of construction, and 4.6 per cent of engineering, students. Again, if subject choices did influence vocational choice, it is not surprising that construction and engineering students did not opt for commercial courses.

However, although a third of commercial students had taken a relevant subject which at school, the majority had not. This suggests that subjects studied at school cannot be of prime importance in determining commercial students' post-school vocational training choices.

When attention is turned to subjects studied by construction and engineering students, it is clear that construction students were more likely than their engineering fellows to have studied a construction subject at school (34.3% compared with 15.2% respectively). The engineers were much more likely than construction students to have taken an engineering course (45.0% compared with 16.5%). These differences are highly statistically significant (χ^2=75.75, p.<0.01).

Nevertheless, as Table 7.12 shows, just under a third of the construction students had studied subjects which would have fitted them equally well for an engineering career. Moreover, just under two-fifths of the engineering students had studied subjects which would have fitted them equally well for a construction career. Furthermore, two out of three construction students had taken no course relevant to the construction industry. Similarly, more than half the engineering students had taken no course relevant to the engineering industry while at school.

These results show that engineering students were more likely than their construction counterparts to have studied a subject relevant to their chosen employment field while at school. It is possible, therefore, that employers in the engineering industry paid greater attention to the type of subjects studied by school leavers than construction employers. These findings suggest that the 'labour-market opportunities' model and the 'channellising in school' models may both operate, at least in part, through employers' perceptions of school subjects relevant to future apprentices' needs.

Nonetheless, a substantial proportion of young men who had not studied any relevant subjects at school managed to obtained sponsored training places on construction and on engineering courses. These results suggest that engineering employers showed a slightly greater preference than construction employers for recruiting school leavers who had studied relevant subjects while at school. But, it also seems that those who never studied relevant subjects could, and did, obtain training in these two fields (these results are in line with findings reported by Ashton & Maguire, 1980; Lee & Wrench, 1981; that unqualified school leavers may also succeed in obtaining craft apprenticeships). Therefore, although subject choice at school may well influence later vocational choice it had not completely conditioned the choices of students included in this sample.

For girls the complete absence of technical qualifications would be likely to have limited vocational choice, although it is not possible to establish whether girls chose not to study technical subjects because of their pre-existing vocational preferences. The powerful influences of sex-stereotyping may also have affected the subject choices of girls, and this may then have influenced and or limited later vocational choices. Thus Pratt et al (1984) concluded in their study of the link between subject choices and job aspirations and job entry "... *our analyses also show that taking a non-traditional subject increases the likelihood of a leaver subsequently taking up a non-traditional course, but the factor of sex far outweighs that of subject choice in predicting destination*" (p.53)

SECTION 5

The Influence of Job Ambitions and Expectations

In this chapter it has been demonstrated that student sex and social class background are related to participation in low-level vocational training. Students of all groups were predominantly drawn from skilled manual backgrounds and females were massively under-represented in particular types of training (construction and engineering) and over-represented in commercial training.

However, although social class and sex clearly had an impact upon participation in vocational training, the ways in which these factors operated requires further explanation. One possible hypothesis is that the job ambitions and employment expectations of young men and young women, and of youngsters from different social class backgrounds were different, and this helps to explain the sex and social class differences in participation in vocational training identified earlier.

1. Differences According to Student Sex

Students' responses to the question 'What job did you want to do when you left school?' were first classified according to the social class of the occupation named. The responses of males and females were then compared (see Table 7.14). Although the vast majority of boys had wanted to enter skilled work when they left school (80%) only 2.4 per cent of girls named a skilled manual job. The girls exhibited a preference for low-level clerical/secretarial work (58% of the jobs named by girls were included in this category). These findings are similar to those reported by Rauta and Hunt (1975) in a study of fifth form girls. They had found that *"clerical or secretarial work and school teaching were easily the most popular choices"* (p.49) and that over three fifths of their sample had entered clerical or secretarial work - a proportion very similar to the proportion of girls in this study who had wanted to enter a job in this field.

Fogelman (1979), in analyses of the job ambitions of young people in the National Child Development Study (NCDS), noted the marked difference between males and females in their job ambitions on leaving school. Similarly, Pratt et al (1984) stated *"It is evident from* that the job ambitions and employment expectations of young men and young women, and of youngsters from different social class backgrounds were different, and this helps to explain the sex and social class differences in participation in vocational training identified earlier.

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Fogelman (1979), in analyses of the job ambitions of young people in the National Child Development Study (NCDS), noted the marked difference between males and females in their job ambitions on leaving school. Similarly, Pratt et al (1984) stated *"It is evident from* *our analysis that each sex has very different aspirations from the other"* (p.45).

Female students in this survey, however, had been far less sure than their male counterparts of what type of job they wanted to do when they left school. More than a fifth of the girls, but less than nine per cent of the boys, said they had not known what they wanted to do when they left school (see Table 7.14). This may reflect the confused attitudes towards work held by some girls (a result of social norms which place an emphasis on women's traditional roles as housewife and mother), and the high proportion of mothers of the sample who were not in full-time work (noted earlier). It is also possible that girls' greater uncertainty about what job they wanted to do when they left school may have reflected the narrower range of job opportunities available to girls with average levels of qualifications.

To obtain information about their expectations for the future, students were asked what job they thought they would be doing in five years time. Both sexes displayed modest expectations for their employment future. Neither group expected to move up or down the social scale (in terms of social class of their occupation). The vast majority of both sexes expected to complete their current training and remain in work in the same occupational field and social class group.

Only four girls said they expected to be a full-time housewife rather than a full-time employee in five years time. The girls, however, were again much more likely than the boys to be uncertain of what job they would be doing in the future. Nearly 28 per cent of girls, compared with under 14 per cent of boys, could not say what they expected to be doing.

This is possibly because the majority of girls were on full-time non-sponsored courses, while the vast majority of boys were on sponsored courses. For this reason the boys' employment futures were more secure and definite than those of the girls.

2. Differences According to Social Class Background

Willis (1977) suggested that differences between middle- and working-class school leavers in their attitudes towards education and work, influenced the value they placed upon particular jobs. If this view is correct, the degree to which vocational students had fulfilled their ambitions would be expected to have been related to their social class background. Analyses of the students' job ambitions when they left school were used to test this hypothesis. The job ambition named was classified as to whether or not it corresponded to the student's present training.

Most students claimed to have wanted to enter the job for which they were now training when they left school (62.8% named a job in line with their training choice). It is possible that this result reflects an element of post-hoc rationalisation (an inevitable problem in surveys of a longitudinal nature which rely upon the respondent's powers of recall). However, other studies of job ambitions and job entry have noted *"Aspirations are a good guide to what happens"* (Pratt et al, 1984, p.45)

Nonetheless, students from skilled manual backgrounds were most likely to have fulfilled their job ambitions. In contrast, those of non-manual origins were least likely to have entered training for the job they originally wanted to do when they left school (see Table 8.15). These findings appear to indicate higher levels of job ambitions, and lower levels of congruency between ambition and training, amongst school leavers from non-manual backgrounds. They are in line with the conclusions of Weir and Nolan (1978), who noted that boys who continued a family tradition of skilled manual work found greater satisfaction in work than did other school leavers.

Thus, the extent to which students' job ambitions corresponded to their present training was significantly related to social class background. This relationship remained when the responses of the three student groups were examined separately. Figures presented in Table 7.16, however, indicated that the engineering students were more likely than students of other groups to have fulfilled their job ambitions. Nearly 80 per cent of the engineers, compared with 66 per cent of construction and 61 per cent of commercial students, were training for the type of job they had wanted to do when they left school. Amongst all three groups, however, those of non-manual origins were less likely to have fulfilled their ambitions than those of skilled manual origins. This pattern was most marked for the construction and commercial groups.

The students' training course and social class background thus appeared to have been related to their job ambitions and expectations. When these two influences were considered together it was found that, in each social class, girls were less likely than their male counterparts to have known what job they wanted to do when they left school. However, whereas there was little difference between the percentages of boys from non-manual and from manual homes who did not know what job they wanted to do when they left school, amongst girls this was not the case. A much higher percentage of girls from manual backgrounds (20%) than of non-manual backgrounds (11%) had not known what they wanted to do when they left school.

A number of studies have suggested that a lower value is placed upon girls' education and employment by working-class groups - where sex-role divisions are thought to be more marked (see, for example, Driver, 1980; Sharpe, 1976; Willis, 1977). It is possible that the greater uncertainty about what job to do on leaving school exhibited by working-class girls in this sample reflects the lower importance attached to female employment by working-class than by middle-class groups. Nonetheless, as noted earlier, the limited job opportunities available may have caused greater uncertainty for girls in comparison with boys.

Differences in job ambitions did not, however, provide a full explanation of differences between the sexes or social class groups in participation in vocational training. Nor do they account, in themselves, for participation in <u>particular</u> types of courses (though it is clear that the majority of students from each group had wanted to enter a job in the area for which they were now training). It seems likely that differences in job ambitions may, in turn, reflect differences in students' attitudes towards employment and the way different jobs were perceived and evaluated. In Chapter 8 consideration is given to the possible link between attitudes and training choices.

CONCLUSIONS

In this chapter attention has been focused on the possible influences of structural characteristics upon participation in vocational training. Following a review of the literature, four hypotheses about the relationships between sex, social class background, parents' jobs and educational qualifications and participation in vocational training were generated. These have been tested using data about individual students' characteristics.

Sex was closely related to entry into different types of vocational training. Construction and engineering training were almost exclusively male preserves, whilst commercial training was predominantly entered by females. These results support the hypothesis that student choice of vocational training was related to the sex-stereotyping of occupations. There seems little doubt that girls did not enter construction and engineering training because they were girls (and because of the different cultural pressures experienced by the two sexes).

Analysis of social class background and participation in vocational training emphasises the importance of social structure in determining the level of occupation and training choices. School leavers of skilled manual origins were much more likely than those of other class groups to have entered low-level vocational training. However, although the social class profile of the commercial group was significantly different from that of the construction or the engineering group, the majority of students from each group were of skilled manual origins. Because of this, variations in social class cannot account for participation in particular types of training, (although it is clear that social class was related to the level of occupational training and level of jobs entered amongst this sample).

It was hypothesised that students' vocational training choices would have been related to the type of job in which their parents were engaged. A substantial minority of each group had a parent working in their chosen employment field. Analysis of the occupations of students' elder siblings indicated that this factor was of less importance, because the proportion of students who had an elder brother or sister working in their chosen field was smaller. However, although a minority, the proportion of engineering and of construction students with a parent working in their chosen field was much higher than the proportion of males in the relevant area amongst the population at large. The third hypothesis was therefore, confirmed. Nonetheless, family traditions of employment did not completely explain participation in particular types of vocational training, because the majority of students of each group had neither a parent nor an elder sibling working in their chosen field. (The interrelationships between all the factors identified as potentially significant and area of residence are considered in Chapter 10.)

The 'channellising in school' model proposed that school leavers' occupational choices were influenced by their perceptions of their own ability. However, the results of analyses of the level of students' qualifications indicated that low-level vocational training did not, as was expected, attract school leavers of average ability only. Some students were 'better' qualified than expected, while others were more poorly qualified. Differences in levels of attainment did not seem to account for students' particular vocational training choices (there was considerable overlap in the levels of qualification held by the three groups).

An examination of subjects studied at school in terms of their relevance to jobs in the three fields of interest (commerce, construction, and engineering) revealed significant differences between the two sexes in the subjects studied. In the vast majority of cases girls had not taken subjects related to the construction and engineering trades, while boys had not taken commercial subjects. Differences in the subjects studied at school may be one factor which helps to explain the pronounced sex imbalance in vocational training choices.

However, it seems that this factor cannot provide a complete explanation, because only a minority of girls had taken any commercial subjects at school, and only a minority of boys had taken subjects relevant to their chosen trade. This suggests that the evidence of sex-stereotyping in the choice of vocational course identified in this study was not due solely to differences in the subjects studied by the two sexes. Differences in the attitudes and expectations held by male and female school leavers may be of more importance and will be explored in detail in Chapter 8.

Construction students were more likely to have taken construction than engineering subjects at school, and engineering students were more likely to have studied engineering than construction subjects at school. Amongst both groups, however, most of those who had taken vocational subjects had taken courses relevant to jobs in either field. Moreover, over half the students in each of these groups had taken no subjects directly related to their chosen employment field while at school.

The subjects studied at school thus seem to have acted, to some extent, as a determinant of later vocational choice. Nonetheless, employers were prepared to recruit youngsters without relevant qualifications for craft apprenticeships as well as those with appropriate qualifications. Many students had entered vocational training for which they had not studied relevant subjects while at school.

Thus, of the four structural factors considered in these analyses, sex appeared to be the most important determinant of participation in different types of vocational training, but the mechanism by which this factor operated remains unclear. Although social class and to a lesser extent educational qualifications may have determined the level of occupations considered by young people, they did not fully account for the type of vocational training chosen.

Nonetheless, socio-structural factors such as parents'/siblings' employment fields and subjects studied at school were significantly related to entry into particular kinds of vocational training. From the earlier spatial analyses there was some evidence that area of residence may also have been of importance. In the introductory review of theories of occupational choice, a further factor was identified which might affect vocational entry. This was student attitudes, towards employment.

The results have demonstrated that students' original job ambitions were closely related to the type of vocational training courses they later entered - a finding in line with those reported by Pratt et al (1984). In particular, the job ambitions of the two sexes were sharply differentiated. It seems likely that the attitudes towards, and perceptions of, different types of employment held by male and female school leavers may have differed, and that these factors accounted for their different job ambitions and choices of vocational training. In addition, it is also possible that the attitudes towards, and perceptions of, different kinds of work held by construction and engineering students differed and had an impact upon their job ambitions and vocational choices.

In the discussion of the possible impact of 'area' influences (presented in Chapter 4), it was noted that the majority of authors who had considered such influences argued that they operated through differences between areas in local residents' attitudes. If attitudes did play a part in accounting for individual students' participation in particular kinds of vocational training, some of the differences in the spatial distributions of commercial, construction and engineering students (identified in Chapters 5 and 6), may have reflected area differences in attitudes towards, and perceptions of, employment. First, however, it is necessary to establish whether the three groups of students' attitudes and perceptions differed in line with their vocational training choices. In the next chaper, therefore, analyses are conducted to test hypotheses about the relationships between students' attitudes and perceptions, and their vocational training choices. Only if these analyses support the proposition that attitudes and perceptions were related to entry into different types of vocational training will the study move on to consider whether attitudes were also related to possible 'area' effects.

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NOTES

Chapter 7

(1) Ethnic background has been suggested as an important factor in determing the employmemnt opportunities available school leavers. (see Williams, 1978 or Lee and Wrench, 1981). Unfortunately permission to collect data about ethnic background was not obtained, it was not possible, therefore, to give proper consideration of this factor's contribution to occupational choice.

(2) Of the total questionnaire sample (1884 students) 21 (1.1%) failed to indicate their sex.

(3) This is because, as Goldthorpe et al (1980) argued, in advanced societies the occupational order is the key to social class structure.

(4) The percentage of students from each social class group may, of course, be affected by such factors as differential fertility of the social classes or differential rates of out migration from the inner city study area. However, although such factors may have had some effect, it is highly unlikely that they would account for the gross differences in the percentages of students drawn from particular social class groups identified in this study.

(5) The population in question was taken as that from which the majority of students was drawn, namely the ten inner London boroughs excluding Hammersmith and Kensington and Chelsea. The social class composition of employed males in this study area was used to derive the expected percentages of students from different social class groups.

(6) The social class grouping used in these analyses were based upon father's occupation. This follows the usual practice in educational research and reflects the importance of the father's employment in determining the status and income of the majority of families (over half the student's mother's were not in full time work). The influence of mother's occupation is considered at a later point in this section.

(7) The percentage of males in construction and engineering employment resident in the inner city was derived from figures from the 10% sample of the National Housing and Dwelling Survey for inner London (1978).

(8) Permission to collect ethnic data was not obtained for this study, but the researcher noted the striking under-representation of ethnic minority students during the administration of the questionnaire survey.

(9) There were marked differences between the three student groups in the proportion with an elder sibling(s) working in their chosen field as figures in Table 7.7 indicate. A much higher percentage of commercial, than either engineering or construction , students had an elder sibling engaged in their chosen field. In all, a third of commercial students had an elder sibling working in a commercial job, compared to only a fifth of construction students with an elder sibling in the construction industry, and a fifth of engineers with an elder sibling in engineering work. These differences between the commercial and engineering and the commercial and construction groups were statistically highly significant ($p < 0.01$).

A separate examination of the male commercial students' responses indicated that only a third had either parent working in the same employment field and, in all, 36 per cent had an elder sibling engaged in commercial work. In this respect, therefore, it does not appear that family traditions of employment accounted for the vocational training choices of the majority of male commercial students.

(10) The difference between the construction and commercial pair just reached statistical significance. However, it is unlikely that level of qualification was a major influence, given the strong link between sex and entry into commercial compared with constructiion training.

(11) The courses included in this survey were designed for youngers of limited academic attainments. The usual entrance requirement for the majority of courses were a number of CSE passes of grade '3' in various subjects including mathematics and English for the construction and engineering departments. For commercial departments a few secretarial courses required entrants to possess CSE grade 1 or 2 in English (although it was found that not all entrants to such courses in fact possessed passes of this level) but for other courses no particular qualifications were specified.

(12) The subjects studied for CSE or '0' level which were considered to be of relevance to vocational choices in the commercial, construction and engineering fields (and which had been taken by members of the sample while at school) are given below.

Commercial subjects	Construction subjects	Engineering subjects
Accounts	Brickwork	Craftwork - metal
Business studies	Building construction	Electronics
Commerce	Building craft studies	Engineering studies
Office practice	Painting & decorating	Mechanics
Office skills	Plastering	Metalwork
Typing	Plumbing	Motor vehicle engineer
	Woodwork	Motor mechanics
		Telecommunications

Subjects Relevant to Construction and Engineering

Combined crafts
Design and technology
Graphical communication
Technical drawing

CHAPTER 8

STUDENTS' ATTITUDES TOWARDS EMPLOYMENT

INTRODUCTION

In the last chapter the relationships between students' sex, social class, educational qualifications and participation in low-level vocational training were investigated. The assessment of the influence of these factors indicated that all were related to participation in vocational training, but that they did not fully account for entry into particular types of course.

Analyses also revealed marked differences in job ambition between the two sexes and, for all student groups, it appeared that job ambition on leaving school was closely related to subsequent choice of a vocational course. Such differences between school leavers in the job they wanted to do when they left school may have been due to differences in the way particular jobs or employment fields were perceived. Thus, some groups may have valued particular aspects of work (for example, future prospects or the responsibility involved) more highly than did other groups for whom different aspects of employment might have been more important (for example, the level of pay or extent of contact with other people). If there were systematic differences between the three student groups in the way they evaluated different kinds of employment, support would be provided for the proposition that attitudes towards employment had had an impact upon students' vocational choices.

In addition, if such differences in perceptions can be identified, further analyses will be conducted to establish whether area variations in attitudes are related to the spatial patterns of participation in the three types of training identified earlier in the thesis. (The link between attitudes and area of residence is explored in Chapter 9.)

First, however, the study investigates the three student groups' attitudes towards commercial, construction and engineering employment. Attention is focused upon students' perceptions of employment, with the aim of establishing whether commercial, construction and engineering students evaluated their respective employment fields in different ways.(1) Previous research on the relationships between attitudes and educational and occupational attainment are reviewed. As a result of this discussion several hypotheses about the possible influences of attitudes upon participation in vocational training are developed. These hypotheses are tested in later sections of the chapter. Particular attention is paid to the extent of similarities and differences between the three student groups in the way they evaluated jobs in their own and other employment fields. In addition, differences between the two sexes, and between students of different social class backgrounds are examined.

1. Previous Research

The results of a number of studies of the determinants of academic achievement have indicated that children's attitudes towards school are related to, and may be predictive of, cognitive attainment. The relationships between attitudes and attainment were found to remain, even when controls were made for other factors (such as IQ) which were also related to both attitudes and attainment (see Behrens and Vernon, 1978; Finlayson, 1978; or Metcalf, 1981). Other work has concentrated on the impact of parental attitudes upon pupils' achievements in school. Both Douglas (1964) and Bynner (1972) suggested that favourable parental attitudes towards education and high aspirations were related to children's attainment in a positive direction. Negative parental attitudes, in contrast, were shown to be associated with poorer achievement. Research by Robson (1969), Little and Mabey (1973) and Panton (1982) has also demonstrated the importance of parental attitudes towards education, although work by Sammons, Varlaam and Mortimore (1985) has indicated that parental attitudes were not related to attainment at the junior level, when account was taken of socio-economic background and parental activities in the home.

By comparison with the number of studies of pupils' and parents' attitudes towards school and relationships with attainment, however, relatively little research has been conducted on the nature of attitudes towards employment, and whether such attitudes influence employment choice. Given the relationships between educational attainment and occupational attainment (see, for example, Halsey et al, 1980; or Stewart et al, 1980) and the importance of common factors, such as social class, which relate to both educational and occupational attainment, it seems probable that if attitudes can have an impact upon educational attainment, they may also have an effect upon occupational choice.

A number of American studies have investigated the relationships between parental attitudes and sons' educational and occupational success. However, they have concentrated upon the status of occupations rather than the type of jobs entered. Thus, Kahl's (1953) study indicated that parental pressure was of major importance in determining boys' educational and occupational aspirations.

In Britain, Raby and Walford (1981) claimed that *"empirical studies of career related attitudes are sparse and all have severe limitations"* (p.19). The majority of such studies have been confined to investigations of boys' attitudes and are now rather dated (see Himmelweit and Swift, 1969, 1971; or Ashton, 1973). The one study concerned with girls was based on a sample of fifth form pupils at school in 1970/71 (Rauta and Hunt, 1975). And, although Rauta and Hunt's work was designed to investigate girls' attitudes towards employment, it was primarily concerned with the relationships between attitudes, ability and type of school attended. Because of this it did not examine the relationships between attitudes and type of job entered, nor investigate in detail the attitudes girls held towards particular kinds of job.

More recent work, undertaken as part of the National Child Development Study (NCDS), has been reported by Lambert (1978) and Fogelman (1979). These studies were, however, primarily concerned with the educational and occupational aspirations of school leavers, rather than with their attitudes towards employment. Only one item designed to establish which factors were of most importance in choosing a job was included. The results of this research revealed marked differences in the occupational aspirations of boys and girls, and in the frequency with which different factors were cited as important in choosing a job by the two sexes. Weir and Nolan's (1978) study of male school leavers in Scotland also suggested that the attitudes of school leavers and of their parents were closely linked, and were related to job ambitions and choices. However, none of these studies examined in any detail the ways in which different types of jobs were evaluated.

Raby and Walford's (1981) study of career-related attitudes was concerned primarily with the determinants of young people's attitudes towards work. These authors found (in line with the results of the Weir & Nolan study) that variables associated with the home environment dominated as predictors of career related attitudes. They noted that *"...parents' aspirations for their children are an important predictor for a whole range of career attitudes, in the same way that parental aspirations were found to be the major predictive variable for pupil's own career status aspirations"* (p.26). Raby and Walford identified a strong anti-work feeling amongst their sample, and stated that *"...the status of a job was ... of secondary importance to the nature of the work and the conditions of life* *attached to the work. The majority were keen to avoid 'hard' work, long hours and shift work, and wanted 'clean' as opposed to 'dirty' work"* (p.23).

Raby and Walford's research thus provided an account of some of the characteristics of jobs which school pupils valued, and indicated the importance of perceptions of particular kinds of work to the development of job intentions. It also established the relative importance of home as opposed to school or peer group influences in determining the level of job aspiration. Nonetheless, Raby and Walford's study did not investigate pupils' perceptions of different kinds of jobs in detail. Rather, attention was concentrated on positive or negative attitudes to work and school as a whole, and on job preferences.

In addition, Raby and Walford's study was limited because it was based on a sample of all first to fifth year pupils attending one 'deprived' West Midland school, and the authors themselves had noted that *"...career horizons were largely limited to occupations available locally, and that most of these working-class pupils were aiming for working-class jobs."* (p. 22). Thus, the choice of school and the local employment structure may have had an important influence on the results of their investigation.

Research by West and Newton (1983) compared pupils' attitudes to school and to their teachers in two disadvantaged schools in two Nottinghamshire mining communities. The relationships between pupils' attitudes to school and their educational performance, job ambitions and later attitudes towards work were investigated. Like the Raby and Walford study, West and Newton's work suffers from the limitation of being based on only a small sample of pupils. The selection of two traditional mining communities as the basis of the study also limits the extent to which the results can be considered to be generally applicable. Moreover, as with the other studies described in this section, the emphasis was placed on job ambitions rather than comparing attitudes towards different kinds of work, and the way these may have influenced job choices.

Although the West and Newton research was not concerned with attitudes towards different kinds of jobs, the authors did identify differences in attitudes towards school and teachers related to pupil sex and school organisation. It was found that (as in the case of the present study) job choices were markedly different for the two sexes, and West and Newton concluded that the experience of the transition from school to work was very different for boys and girls.

However, Reeb (1979) did conduct research into pupils' perceptions of particular jobs and reached the conclusion that "... *surprisingly, children with different vocational preferences have similar perceptions*" (p.115). He argued that it was important for researchers to ask the question "...*how do you think of this occupation in relation to others?*"(p.114). The results of Reeb's study indicated that, in his sample of pupils, there was much agreement in the way jobs were perceived. Such differences as could be identified were related to school stream and the prestige of particular jobs. Reeb's research, however, has the disadvantage of being confined to a small sample of pupils attending only one school. In addition, although the study did examine pupils' perceptions of different jobs, it was limited to a consideration of a narrow range of occupations, consisting mainly of high status jobs.

A number of other sociological studies have examined certain aspects of occupational perceptions in some detail. They have not, however, related differences in perception to occupational choice, preferring to focus on the way people evaluate the social status of different jobs.

Examples of such work have already been noted in Chapter 7. Research by Hall and Glass (1954) and by Martin (1954) has suggested that, in general, perceptions of the relative social class ranking of different jobs were quite stable and broadly conformed to the Registrar General's Classification of Occupations. These studies reported that members of different social class groups exhibited similarities in their perceptions of the relative social status of different jobs.

However, Young and Willmott (1956) noted 'status dissent' in their study of the perceptions of workers who lived in London's East-End. It was found that dustmen were ranked as more important than many middle-class occupations. These differences may have been related to respondents' own social status or to perceptions held more generally by people living in particularly socio-economically disadvantaged neighbourhoods.

Coxon and Jones (1978) conducted a study of the occupational 'images' held by respondents engaged in different kinds of employment. The research was designed to establish how a given set of jobs were perceived in relation to each other. In addition, the study intended to find out whether respondents' perceptions varied systematically in accordance with the status and character of their own occupations.

Coxon and Jones's results suggested that social stereotypes or 'images' of different occupations could be identified, and that there was a reasonable degree of agreement amongst different respondents in the 'images' they held of particular jobs. This finding is in line with those reported by Beardslee and O'Dowd (1961) and Hudson (1967) in analyses of the occupational 'image' of the scientist. Coxon and Jones's results also conform to the pattern noted by Reeb (1979) (discussed earlier).

Some significant differences in job perceptions were identified between sub-groups of respondents (defined on the basis of their own occupational membership) by Coxon and Jones. However, it was noted that *"The differences were by no means of large size. We did not find any sub-groups of individuals who consistently inverted the status order of occupations that is reported in textbooks of sociology"*(p.192). In terms of social status, therefore, they found only partial evidence of 'status dissent', and broad agreement in views amongst respondents, irrespective of the status of respondents' occupations.

Coxon and Jones also reported that, when subjects were free to choose their own criteria for comparing jobs, they used a variety of bases of judgement. This finding was in accordance with the results of the NCDS research and that by Rauta and Hunt (discussed earlier). In particular, Coxon and Jones noted that respondents used the amount of training required, skill, and qualification levels to differentiate jobs. They concluded that *"The rank-ordering of occupations in terms of income is not the same as the rank-ordering of occupations in terms of such factors as the degree of autonomy they offer, the amount of contact with other people they involve, the level of prestige they confer and so on. It is precisely the trade-offs between these different forms of desirability that is of most interest when people move from one occupation to another."*(p.193)

Coxon and Jones did not, however, consider how occupational 'images' or perceptions were related to occupational choice, nor how the "trade-offs" between different forms of desirability might operate. Moreover, their work did not examine the relationships between the sex of respondents and their perceptions of different jobs. Yet it seems likely that sex may be a highly influential factor, given previous research on sex differences in job aspirations and occupational entry (discussed in Chapter 7). For example, the findings of the NCDS research suggested that girls and boys differed in the factors perceived as important in choosing jobs.

2. Implications of Previous Research for the Present Study

The foregoing survey of earlier research indicates that there has been only limited investigation of the relationship between attitudes towards employment and occupational choice or occupational ambitions. Of the studies which have been conducted, the majority have been concerned with attitudes towards work as a whole, rather than perceptions of different types of job and the way such perceptions may influence job choices. Yet, in explaining why students in this study (with similar social class backgrounds and qualifications) had entered different types of jobs and vocational training, it may prove helpful, as Reeb (1979) argued, to examine their perceptions of different types of job in detail.

Previous research has tended to involve small numbers of pupils in one or two schools. In addition, the West and Newton (1983) and Raby and Walford (1981) studies were undertaken in traditional northern communities where local employment opportunities were limited. For this reason, their sample's perceptions of employment may differ from those of school leavers living in larger conurbations with more diverse employment structures. Although Coxon and Jones's (1978) study involved larger numbers it did not focus specifically on young people, nor did it examine the relationship between perceptions and occupational choices.

Nonetheless, results of these studies have indicated that people tend to evaluate jobs in terms of particular attributes they consider to be important. The findings of the NCDS study showed that males' and females' perceptions of the relative importance of various factors in choosing a job differed. Reeb's (1979) work suggested that it was important to compare an individual's perceptions of different jobs in relation to each other (in other words, to establish how an individual evaluates one job in relation to other jobs on given criteria). Research by Coxon and Jones (1978) indicated that, although there may be broad agreement in occupational 'images', some differences existed between sub-groups of respondents classified according to their own occupational membership and status.

3. Hypotheses

On the basis of the results presented in earlier chapters, and the review of previous research on attitudes and educational and occupational attainment, a number of hypotheses have been developed.

Hypothesis 1

'Students' perceptions of different types of employment will be related to their job and training choices.'

The findings of 'status dissent' and 'egoism' reported by Willmott and Young (1956) and Alexander (1972), indicate that people tend to have a relatively favourable view of their own and of related occupations. If perceptions of different types of job were related to vocational

training choices, it would be expected that students would have a more favourable view of jobs in their chosen employment field than of jobs in other employment fields. Thus, amongst the present sample, it was predicted that students who entered construction training would have had a more favourable view of construction than of engineering jobs. Conversely, students who had entered engineering training would have had a more favourable view of engineering than of construction jobs. Commercial students would be expected to have favoured commercial jobs rather than construction or engineering jobs. Engineering and construction students would also both be expected to have perceived jobs in their chosen field more favourably than jobs of a commercial type.

Hypothesis 2

'The evaluative measures associated with job preference will differ for students undertaking different vocational courses'

Coxon and Jones (1978) suggested that the "trade-offs" between different forms of desirability might vary for different people. They argued that such variations are of interest in considering why people moved from one occupation to another. In the context of the present study, it was predicted that, although students may have shared many common perceptions about specific jobs or employment fields, the factors associated with job preference would differ for commercial, construction and engineering groups. Thus, certain criteria are likely to have been more important in determining job and training preferences for some rather than other student groups.

Hypothesis 3

'The perceptions of different types of employment and the evaluative measures associated with job preference will differ for the two sexes.'

It has already been shown that sex was a significant factor in determining participation in vocational training and that the job ambitions of the two sexes were very different. The results of research by Lambert (1978) and Fogelman (1979) suggested that the importance of different aspects in choosing a job varied for boys and girls. Therefore, in the context of this study it was hypothesised that the evaluative measures associated with job preference would also have differed between the two sexes.

Hypothesis 4

'Students' perceptions of different kinds of employment will be related to social class background.'

Results presented in Chapter 7 revealed that the majority of students in each group were of skilled-manual origins. The minority of students of non-manual backgrounds who had entered training for jobs in the skilled-manual trades were rather less likely to have fulfilled their ambitions than were those of skilled-manual origins. For non-manual students entry into skilled-manual training courses may have represented a drop in status. Therefore, it might be expected that non-manual students training for construction or engineering work would have had a less favourable view of skilled-manual work than their manual peers. Conversely, for those of semi- and unskilled manual origins, training for a skilled manual trade represented a degree of social mobility. This group, therefore, might be expected to have had very positive perceptions of skilled manual jobs.

Amongst the commercial group, those from skilled and semi- or unskilled-manual backgrounds would be expected to evaluate commercial work more favourably than would their non-manual peers. This is because, for these students, commercial employment would represent an upward social movement.

4. Testing the Hypotheses

In order to test these hypotheses, data about commercial, construction and engineering students' perceptions of different types of jobs are analysed. First, the attitudes of the three student groups towards different kinds of employment are compared and the extent to which students' perceptions were related to participation in different kinds of vocational training examined in order to test hypothesis one. Attitude data are also analysed to investigate the applicability of the second hypothesis, concerning differences in the factors associated with job preferences according to student group. Sex differences in the factors associated with employment preferences are investigated to test the third. Finally, the relationships between social class background and job perceptions are compared for each student group in order to test hypothesis four.

SECTION 1

Commercial, Construction and Engineering Students' Perceptions of Different Types of Employment

Repertory grid techniques were used to measure individual students' perceptions of different types of employment.(2) During the pilot repertory grid survey, constructs - ways of differentiating the elements (in this case jobs) included in the study - were elicited from individual students. A comparison of the verbal labels of these constructs revealed similarities amongst the students in the factors they used to evaluate different jobs (see Chapter 2). Moreover, when the list of constructs obtained from the pilot survey was compared with the results of the NCDS research reported by Lambert (1978), and that by Raby and Walford (1981), similarities were apparent in the factors identified by these workers and the constructs obtained in the pilot survey. Some similarities were also noted with the bases of judgements identified by Coxon and Jones (1978). Thus, there seems to be a relatively large measure of agreement between past studies and the present pilot in the types of factors young people used to differentiate jobs.

For example, the constructs 'clean v dirty', 'difficult v easy' and 'well paid v poorly paid' were used to distinguish jobs by several students in the pilot, and were also found in Raby and Walford's (1981) study and in the NCDS research. In addition, several other factors found to be important in choosing a job in the NCDS were similar to constructs found in the pilot - for example, 'It should involve using your head and need thought and concentration' is like the construct 'jobs where you use your mind a lot v jobs where you don't use your mind much'. The factor 'The job should offer you chances of promotion' is similar to the construct 'jobs with no prospects v jobs with good prospects', and the factor 'The job should let you be your own boss' is similar to the construct 'jobs where you are told what to do v jobs where you are more independent'. Coxon and Jones's study noted that, amongst other factors, degree of autonomy, skill and qualification levels were frequently used to differentiate jobs. Constructs similar to these items were also identified in the pilot study.

These result indicate that there was a certain amount of agreement amongst young people in the factors with which they distinguish different jobs. Proctor and Parry (1978), in a review of the social origins of personal constructs, commented that "... *individual construct systems are constrained by the structure and ideology of society .... The family acts as mediator between society and the individual. In our society it is the earliest important area in which the process of construct formation takes place, although later the role of school, the work environment, the neighbourhood and reference* *groups increases."* (p.160) In other words, individuals subjected to similar social processes would be expected to exhibit similarities in the way they view the world.

The use of constructs obtained directly from students undertaking low-level vocational training and with shared social class and educational backgrounds ensured that, as far as possible, the constructs included in the standard grid would be understood by other students undertaking similar courses. In addition, this strategy helped to ensure that the constructs were representative of the ways in which students construed the world of work.

Six hundred and sixteen students were included in the main repertory grid survey, but only 568 (92.2%) completed the standard grid fully and the remainder have been excluded from further analysis.(3) The grids produced by the three groups were analysed separately, so that the structure of the perceptions and evaluations of different jobs held by commercial, construction and engineering students could be compared. This strategy enabled the hypotheses presented earlier to be tested. First, however, analyses were conducted to establish the extent of similarities in views amongst the members of each of the three student groups. This was a necessary first step because, if there were evidence that members of any one group varied considerably in their perceptions of different types of job, it would not be valid to use aggregated information at the group level in order to compare the average views of members the three student bodies. Only if the analyses indicate that, within each group members possessed broadly similar views, will the study proceed to examine differences between the three groups' perceptions.

1. Analysis of Repertory Grids by Student Group

(i) Extent of within group similarities in construct use

In order to establish the extent to which members of a particular student group shared broadly similar perceptions of different jobs, analysis of variance results were obtained from the output of the SERIES program (used for the separate analysis of each of the three student groups' repertory grids). These results indicated what proportions of the total variance in a student group's use of each the twenty constructs (to rate the list of jobs named on the repertory grids) were due to differences between individual respondents, to differences between the elements (common perceptions held about the jobs named on the standard list), and to interactions between the two. The amount of total variance due to differences between respondents can be viewed as the unique or personal part of students' perceptions about jobs. That due to differences between elements reflects perceptions held in common by members of a particular student group (see Chetwynd, 1974).

The higher the proportion of variance due to differences between the respondents - the unique component of job perceptions - the less useful the construct for comparing the perceptions of the three different student groups. Conversely, the lower the percentage of total variance due to differences between individuals, the more useful a construct was for establishing similarities or differences in the views of the three student groups.

Figures in Table 8.1 show for each construct the percentage of the total variance due to differences between respondents and that due to differences between the jobs (shared perceptions of group members). For each group of students over 50 per cent of total variance in the use of four constructs ('jobs working mainly with machines v jobs working mainly with people'; 'office work v manual work'; 'women's jobs v men's jobs'; 'clean jobs v dirty jobs') was due to differences between jobs - representing perceptions shared by a group. More than a third of the variance in three further constructs ('jobs I'd like v jobs I wouldn't like'; 'jobs where little experience is needed v jobs where lots of experience is needed'; 'jobs which need few qualifications v jobs which need many qualifications') also represented common perceptions.

In contrast, the percentage of total variance in the use of constructs due to individual differences was much lower for all groups. In only one instance did it amount to more than a quarter of the total. This was for the construction group's use of construct 19 'jobs with a friendly atmosphere v jobs with an unfriendly atmosphere' (which reached 28%). It seems that there was slightly greater variation in views on this aspect of jobs amongst members of the construction than of the other student groups.

These results indicate that members of each student group did exhibit similarities in the way they used constructs to evaluate different jobs. Within each group members held certain common perceptions about particular jobs. Overall, similarities in views were greater than individual differences. These findings support Reeb's (1979) view that young people share common perceptions about different jobs. In terms of Kelly's (1955) propositions, the similarities in construct use identified between the three groups conform to the 'commonality corollary'. Because there is evidence that, within each student group, members held certain common perceptions, it is possible to use aggregated results (obtained from the SERIES analyses of groups of grids) to compare the ways in which the three groups evaluated particular jobs or types of work. Variations between student groups in their perceptions of different jobs and types of employment were the subject of the first and second hypotheses, and form the focus of the following analyses.

2. Perceptions of Different Kinds of Job

The students rated each of the 23 jobs in the standard list (the elements) in turn on 20 constructs. Mean scores applied to each job on each construct have been listed separately by student group in Appendix 8.1. Comparisons of these mean scores revealed marked differences between the student groups in the average ratings attached to the same job for specific constructs.(4) In addition, for each group the overall perceptions of the 23 jobs differed markedly. On the majority of constructs particular jobs were much more favourably evaluated than others by certain of the student groups. Given the nature of the present research inquiry, particular attention has been paid to students' perceptions of commercial, construction and engineering work. However, before turning to analyses of the way students evaluated their respective fields of employment, differences in job preferences have been examined. This was done to establish the relationships between job preference and participation in particular types of vocational training. The results of both sets of analyses are used to test the first hypothesis - **'Students' perceptions of different types of employment will be related to their job and training choices'.**

(i) Job preferences by student group

Construct 1 ('jobs I'd like v jobs I wouldn't like') was used to establish students' preferences for particular jobs. Analyses showed that the commercial group rated the generally traditionally female dominated office jobs of clerical worker, secretary, bank clerk, travel agent and telephonist highest in their order of preference, with the job of secretary being most favourably scored. (Over 52 % of commercial respondents stated that the job of secretary was one they would really like to do.) The least preferred jobs were the generally traditionally 'masculine' jobs of plumber, bricklayer, lorry driver and motor-bike mechanic.(5) Factory worker was also very unfavourably viewed. Over 79 per cent of the commercial group had a strong dislike of this job and none recorded a positive view (see Table 8.2).

By contrast, the construction group showed a very marked preference for the job of plumber, though bricklayer, carpenter, painter and decorator, electrician and lorry driver were also positively rated. This group scored the jobs preferred by the commercial group most unfavourably. For engineering students, the jobs of engineer, electrician, motor-bike mechanic, technician and lorry driver were the most positively rated jobs. As with the construction group, the engineers rated the traditionally 'female' jobs least favourably.

These results indicate that, as a whole, the three student groups preferred jobs in their chosen employment and training fields.(6) Differences were particularly marked between the commercial group and their engineering and construction counterparts. The jobs favoured by the former were much disliked by the latter.

Although the construction group tended to rate construction jobs most favourably, they did not have negative views about several of the engineering jobs - for example, the job electrician was given a mean of 2.5 and engineer and motor-bike mechanic were both given means of 2.8. (The mean scores recorded for each job on each construct are listed by student group in Appendix 8.1.) The engineering group tended to rate construction jobs nearer the mid-point of the scale and rated engineering jobs very favourably. The only exception was the job of carpenter which was similarly rated by both groups ($\overline{X}$=2.5 for construction and $\overline{X}$=2.6 for engineers).

All three student groups rated the job factory worker very negatively (over 60 per cent of each group expressed a very unfavourable view). This consensus may be a reflection of students' ambitions (in terms of further education and job choice) and their social class backgrounds. Factory work might well be regarded as of low status by these students because of its unskilled nature. (As noted in Chapter 7, the majority of all groups were of skilled-manual origins.) The jobs of teacher and of police constable were also negatively rated by a substantial percentage of students in each group, indicating an adverse view of the two authority figures with whom young people are most likely to have had contacts during their adolescent years.

A much higher number of jobs were rated very unfavourably than very favourably by all student groups. Members of all groups seem to have had a very clear view of the jobs they would strongly dislike. However, although the particular jobs disliked were generally very different for the commercial, compared with other student groups, the most favoured jobs were different for all groups.

Overall, therefore, the three student groups showed marked differences in their preferences for particular jobs, and these differences were in the directions predicted by the first hypothesis.

(ii) Perceptions of commercial, construction and engineering work

As part of the first hypothesis it was also proposed that students' views of different types of employment would vary, such that each student group would favour jobs in their own field, rather than jobs in another group's employment field. In order to test this proposition it was necessary to examine students' perceptions of the three employment fields which form the focus of the present study. In this section, therefore, the ways in which each student group evaluated their own and other groups' employment fields are compared.

The overall mean score for the five commercial type jobs (telephonist, bank clerk, secretary, travel agent and clerical worker) was calculated for each group on each of the twenty constructs. Similarly, the mean score for the four construction jobs (carpenter, plumber, painter and decorator, and bricklayer) and four engineering jobs (technician, motor-bike mechanic, engineer and electrician) were also computed. Comparisons of these mean scores for the three employment fields revealed some significant differences between the three student groups (see Appendix 8.2).

As predicted, the commercial group had a much more favourable view of their own employment field than that of other groups on construct 1 ($\overline{X}$=2.3 for commercial, $\overline{X}$=4.4 for construction, $\overline{X}$=4.1 for engineering work). Similarly, the construction group favoured construction work more than other fields ($\overline{X}$=2.4) and the engineering students favoured engineering work ($\overline{X}$=2.1). Construction and engineering students both expressed very unfavourable views of commercial work ($\overline{X}$=4.5 for both groups) and were more or less indifferent to jobs in each other's fields (rating them on average near the mid-point of construct 1).

The engineers were, however, the group most positive about 'liking' jobs in their chosen field.

Examining the data at the individual level it was found that 'liking' for commercial work was strongly positively correlated with entry into commercial training ($r=0.86$, $p.<0.001$) amongst the whole repertory grid sample. Entry into commercial training was, in contrast, strongly negatively correlated with 'liking' for construction work ($r=-0.71$, $p<0.001$) and 'liking' for engineering work ($r=-0.65$, $p<0.001$). Participation in construction training was, as predicted, positively correlated with 'liking' for construction work ($r=0.47$, $p<0.001$) and 'liking' for engineering work was strongly associated with particpation in engineering training ($r=0.57$, $p<0.001$). Amongst the whole sample, there was little relationship between 'liking' engineering work and entry into construction training ($r=0.05$). 'Liking' for construction work was, however, weakly positively related to entry into engineering training ($r=0.23$, $p<0.05$).

Overall, these figures provide strong support for the first hypothesis. The three student groups exhibited a marked preference for their chosen vocational field. Students were not only attracted to one job in particular (though, as demonstrated earlier, most groups had a couple of favourite jobs) but showed an overall pattern of preferences in favour of work in their chosen employment field.

Because of the marked sex differences identified in participation in different types of vocational training, and in job ambitions and preferences, it was decided to consider the views of commercial students separately from those of the construction and engineering groups. These analyses have been used to test the second and third hypotheses proposed in this chapter. Particular attention has been paid to the question of differences between student groups in the factors associated with job preferences (the subject of the second hypothesis), and to the issue of sex differences in perceptions of the three employment fields (the subject of the third).

(a) Construction and engineering students' perceptions of their respective employment fields

Contact with people and experience needed

Construction and engineering students agreed in their perceptions of engineering work as involving a relatively greater amount of work with machines than with people (construct 2), and as requiring the holders to have more experience than those in construction jobs (construct 3) (see Appendix 8.2). The two groups were, therefore, in accord in their perceptions of a difference between construction and engineering work on these scales. The engineering students, however, viewed the difference in terms of experience needed as greater. (The engineers gave construction work an overall mean of 3.7 and engineering work a mean 4.4 of in terms of experience required, whereas the construction group made a smaller distinction, with a mean of 3.9 for construction and 4.3 for engineering work.)

Sex-stereotyping

The two student groups both perceived construction jobs as involving more manual work than engineering jobs (construct 4). In this case, however, the difference between the means was greater for the construction group. The construction group evaluated construction work as relatively more manual than engineering work. Neither group used the scale 'women's jobs v men's jobs' (construct 5) differently to assess their respective employment fields - both were evaluated on the 'mainly men's jobs' pole of construct 5.

Job interest

Construction and engineering work were rated favourably in terms of job interest by both groups. As predicted, the construction students viewed construction work more favourably in terms of interest than engineering work, and the engineers saw engineering work as relatively more interesting. The difference was, however, more marked (and reached statistical significance) for engineering students. (The mean rating the engineers accorded to engineering work was 2.0, whereas for construction work it was 2.6. For construction students, engineering work was accorded 2.6 and construction work 2.4.)

Responsibility and qualifications

On construct 6, ('jobs without much responsibility v jobs with more responsibility'), both groups indicated that engineering work involved more responsibility than construction work. However, the extent of the difference was perceived as rather greater by the engineering group.

There was strong agreement between the two groups in perceiving engineering work as requiring 'quite a lot of qualifications' (construct 10). Thus, construction work was generally evaluated near the mid-point of this scale and engineering work on the 'jobs which need more qualifications' pole. For both groups the difference between the mean scores was statistically highly significant.

Pay and prospects

In terms of pay (construct 11), engineering and construction work were both evaluated as relatively well-paid by the two student groups. Although the construction group viewed their own field marginally more favourably than engineering employment, and the engineers rated their chosen field slightly more positively, these differences did not reach statistical significance. Their relative assessments of pay did not, therefore, distinguish the two groups.

There was a statistically significant difference for the engineering group in their perceptions of the prospects of engineering, as compared with construction work (construct 15). Although both fields were positively rated by engineers, their own field was given a higher mean score (3.9) than construction work (3.4). By contrast, the construction group did not distinguish the two fields in terms of future prospects. Overall, however, the construction group had a relatively less positive view of the prospects of their chosen field than the engineers had of theirs ($\overline{X}$=3.5 for construction students' views of construction work, compared with $\overline{X}$=3.9 for engineers' rating of engineering work).

Social class

There were no differences between the two student groups in their ratings of engineering and construction work on construct 16, ('high class jobs v working-class jobs'). Both fields were rated on the 'working-class' pole of this construct. The two groups, however, were agreed in their view of construction work as significantly more working-class than engineering work (see Table 8.3).

Other aspects

As with constructs on experience and qualifications, the two student groups evaluated their respective employment fields differently in terms of the mental effort required by those doing jobs of these types. For construct 17, ('jobs where you use your mind v jobs where you don't use your mind'), engineering work was rated as more demanding. This view was most marked for the engineering student group ($\overline{X}$=1.8 for the engineers' rating of engineering work, compared with 2.4 for the equivalent rating of construction work).

Nonetheless, both groups saw engineering and construction work as generally requiring you to 'use your mind a lot'. For the difficulty of jobs, the majority of students in both groups evaluated construction and engineering work on the 'difficult' pole of construct 18. Engineering work, however, was generally seen as more difficult than construction work, especially by the engineering students for whom the difference was statistically significant (see Table 8.4).

The construction group, however, rated construction work more favourably in terms of construct 19 ('jobs with a friendly atmosphere v jobs with an unfriendly atmosphere') than the engineers rated engineering work ($\overline{X}$=2.2 for construction students' score for construction work compared with $\overline{X}$=2.5 for the engineers' rating of engineering work). The construction group rated their own employment field more positively on this factor, whereas the engineering group did not differentiate the two fields in terms of the friendliness of the working atmosphere.

These analyses indicate that, overall, the construction and engineering employment fields were evaluated as different by both student groups in terms of job responsibility, experience and qualifications required. The construction group perceived construction work as more manual, dirtier, more working-class and less difficult than engineering work. They also regarded construction work as slightly more interesting, as offering a rather friendlier working atmosphere and as involving rather more contact with people, and less with machinery, than engineering jobs.

With these exceptions (job interest and working atmosphere), the engineering students' perceptions generally agreed with those of the construction group. (A finding in line with Reeb's (1979) work which indicated that young people share many common perceptions about employment.)

The two student groups thus showed a fairly high level of agreement in the way they used the various constructs to differentiate construction and engineering work. The two employment fields were seen to differ in a number of respects. In terms of Kelly's (1955) personal construct theory these results support the 'communality corollary' (discussed in Chapter 2). Among this group of male teenagers, views on construction and engineering work seem to be based to some extent on a perceptual consensus.

However, the engineers exhibited a stronger pattern of differences, tending to differentiate construction and engineering work to a greater extent. The engineering group rated jobs in their chosen field more positively than jobs in the construction industry, in terms of qualifications required, the extent to which you use your mind, job difficulty, future prospects and pay than jobs in the construction industry. The construction students, in contrast, rated construction work more favourably than engineering work in terms of interest, friendliness and contact with people. (These findings also provide additional support for the first hypothesis. Students tended to have a more favourable view of jobs in their own compared with jobs in other employment fields.)

(b) Factors associated with job preference for construction and engineering students

It is possible that the relationships between the factors related to job preference differed for the each student groups, as was proposed in the second hypothesis. It is suggested that, although the construction and engineering groups generally agreed in their perceptions of engineering and construction work, their views about the importance of particular aspects of work may have varied. For example, it is possible that the two groups concurred in their view that engineering work gave more responsibility than construction work, but that the factor of job responsibility was less important for the construction than for the engineering students.

Further analyses were conducted to examine the relationships between students' 'liking' for particular jobs and their perceptions of additional characteristics of those jobs. For each student group the covariation between construct 1 ('jobs I'd like v jobs I wouldn't like') and other constructs was examined for construction and engineering jobs separately. The figures for the construction group are listed in Table 8.5 and those for the engineers in Table 8.6.

The constructs most closely related to the construction groups' 'liking' for construction jobs were compared with those identified for engineering work as rated by the engineering group. In both cases, construct 8 ('interesting job v boring job') was most strongly associated with the first construct ('jobs I'd like v jobs I wouldn't like').(6) Construct 20 ('apprenticeship jobs v non-apprenticeship jobs') was also closely related to job preference (see Table 8.5).

For the construction group construct 4 ('office work v manual work') and construct 5 ('women's jobs v men's jobs') were negatively related to job preference. Thus, the construction group showed a strong preference for 'men's' jobs and manual rather than office work.

For the engineering group construct 12 ('technical jobs v non-technical jobs') was closely positively associated with job preference. Construct 2 ('jobs working with machines v jobs working mainly with people') was also associated with the engineering students' liking for engineering jobs. These differences in the emphasis placed on technical work and use of machines are of importance.

Construct 7, ('clean jobs v dirty jobs') was negatively related to job preference, for the two. Both, therefore, liked jobs which they classified as 'dirty' work.

Overall, these analyses have revealed some differences between the construction and engineering groups' views of their respective employment fields in the directions proposed by the second hypothesis. There were some variations between the groups in the factors related to job preferences. These results, therefore, provide some support for the secondhypothesis. This support is qualified, however, because the two groups also exhibited some similarities in the factors which were related to their 'liking' for jobs.

Coxon and Jones (1978) had suggested that the 'trade-offs' between different types of desirability might be important in considering job choice, though they did not test this proposition. The results of analyses of the factors associated with job preferences for construction and engineering students provide some support for Coxon and Jones's proposition.

(c) Commercial students' perceptions of commercial, construction and engineering employment

Because of the research evidence, described earlier, which indicated marked differences between the sexes in their job ambitions preferences and factors considered important in choosing a job, commercial students' perceptions of different types of employment have been described separately. Where applicable, however, their evaluations have been compared with those of construction and engineering students. In this section attention is focused on the extent of the differences between the commercial and other student groups' perceptions of the three employment fields, and whether such differences were related to the sex-stereotyping of particular types of work.

Liking for the three employment fields

As might be expected, given the differences in job ambitions between commercial and other student groups (reported in Chapter 7), the commercial group evaluated commercial employment much more favourably than engineering or construction work ($\overline{X}$=2.3). However, they viewed construction work more unfavourably than engineering work ($\overline{X}$=4.4 and $\overline{X}$=4.1 respectively).

Contact with people

Commercial work was evaluated as involving more contact with people than with machines (construct 2) by the commercial group and this (given girls' apparent lack of experience of technical subjects at school, described in Chapter 7) may be one factor which helps to account for girls' marked preference for commercial type work (see Table 8.7).

Sex-stereotyping

In terms of construct 5 ('women's jobs v men's jobs') the commercial students' ratings of the three fields of employment - commercial, construction and engineering - corresponded very closely to those of the engineering and the construction students. Thus, the three student groups apparently shared a common view about the sex-roles associated with jobs traditionally dominated by males or females (see

Table 8.8). Commercial jobs were perceived as 'women's', and both construction and engineering jobs as 'men's' work.

Responsibility and qualifications

Some marked differences between the commercial and the other student groups' evaluations of commercial work were, however, identified. On construct 6 ('jobs without much responsibility v jobs with more responsibility'), the commercial group rated commercial work more highly in terms of responsibility than did either of the other groups. Thus, the commercial group's mean rating for commercial work was 3.7, compared with mean ratings of 3.3 and 3.4 for the construction and engineering groups respectively. Again, in contrast to the construction and engineering groups, commercial students perceived commercial work as requiring more qualifications (see Table 8.9).

Pay and prospects

The commercial group evaluated commercial work more favourably than construction or engineering work in terms of pay. Their views about tha pay of commercial work were significantly more positive than those of their construction and engineering counterparts (see Table 8.10). The commercial students also rated commercial work as offering the best prospects of the three types of employment ($\overline{X}$=3.6 for commercial, $\overline{X}$=2.8 for construction and $\overline{X}$=3.5 for engineering work on construct 15). The construction and engineering students, however, both perceived commercial work as offering relatively poor prospects compared with either construction or engineering employment. It is probable that differences in perceptions of the relative levels of pay, prospects and responsibilities of commercial, compared with skilled-manual, jobs influenced students' job ambitions and training choices. This may be one way in which the sex stereotyping of occupations is reinforced. Commercial type employment appears to have been held in low regard by male students. This was perhaps because it was female-dominated, and, therefore, assumed to be poorly paid and lacking in prospects and responsibilities. These perceptions are likely to have influenced the two sexes' job ambitions and training choices, and may thus have helped to maintain the traditional imbalance of male and female entrants into commercial, construction and engineering employment.

Social aspects

The commercial student group differentiated the three employment fields in terms of construct 14 ('jobs where you aim to make people happy v jobs where making people happy isn't important') to a greater extent than their construction and engineering counterparts did. Making people happy was perceived as relatively more important in commercial than in construction or engineering work ($\overline{X}$=2.1 for commercial compared with $\overline{X}$=2.8 for construction and 2.9 for engineering work). Again, this result supports conclusions by Fogelman (1979) and Lambert (1978) in their study of factors cited as important by male and female school leavers in choosing a job. Their research indicated that girls were more likely than boys to give altruistic rather than materialistic responses. Rauta and Hunt (1975) also noted that girls were unlikely to classify material rewards as one of the most important factors in choosing a job. Nonetheless, as noted earlier, the girls in the present study still had a relatively favourable view of the material rewards of their chosen field.

In addition, the commercial student group rated commercial work more favourably in terms of construct 19 ('jobs with a friendly atmosphere v jobs with an unfriendly atmosphere'). They rated engineering and construction work near the mid-point of this scale. This result also supports those of Rauta and Hunt (1975) who found that *"friendly people to work with"* was cited by girls as one of the most important factors in choosing a job (named by nearly 70% of respondents in that study).

Thus, commercial students' perceptions about the extent of contact with people rather than machines, the importance of helping people, and the friendliness of the working atmosphere may be important factors in influencing commercial students' job and training choices. However, the rather limited range of alternative occupations available to female school leavers with only average to below average qualifications may also have had an impact, even if only indirectly.

(d) <u>Factors associated with job preferences for commercial students</u>

Some differences between commercial, construction and engineering groups' evaluations of commercial work have been identified. Further analyses were conducted to examine the relationships between job preference and perceptions of characteristics of commercial employment (measured by the remaining constructs) by commercial students.

Information about the covariation between the scores attributed on construct 1 ('jobs I'd like v jobs I wouldn't like') and on the remaining nineteen constructs was analysed for commercial students' ratings of commercial jobs. The results indicate that construct 4, ('office work v manual work') was closely positively related to job preference (see Table 8.11). There was also a strong relationship between liking a job and scores on construct 7 ('clean jobs v dirty jobs'). However, by contrast with their construction and engineering peers, commercial students favoured work which was 'clean', and preferred office rather than manual activities. As with the construction and engineering groups, commercial students' job preferences were strongly associated with construct 8 ('interesting jobs v boring jobs'). However, whereas liking a job was negatively related to construct 5 ('women's jobs v men's jobs') for construction and engineering students, for the commercial group the association was strong and positive.

Perceptions of pay and prospects (constructs 11 and 15) were related to commercial students' job preferences, but the relationships were strongest for the job of secretary. This was the job most favourably rated in terms of construct 1 ('job I'd like v job I wouldn't like) by the majority of the commercial group.

(iii) Overall patterns in students' perceptions of commercial, construction and engineering employment

Comparisons of commercial, construction and engineering students' perceptions of their respective employment fields revealed some similarities and some differences in the way the three groups used particular constructs to differentiate between commercial, construction and engineering jobs. The students tended to rate the three types of employment differently on the subjective constructs relating to status, prospects, interest, responsibility, experience, difficulty and atmosphere. Some differences were also found in terms of students' perceptions of qualifications required, cleanliness and the amount of manual work involved.

Overall, the construction and engineering groups viewed commercial work much less favourably than either construction or engineering work. These groups shared common perceptions of commercial work as more boring, easier, and as offering poorer prospects and poorer pay than skilled-manual work. By contrast, the commercial group had a more positive view of the interest, pay, prospects and conditions associated with commercial employment. They evaluated commercial work as involving more contact with people, having a friendlier atmosphere and as requiring higher levels of qualification.

Construction students rated engineering employment more highly than construction work in terms of difficulty, the extent to which 'you use your mind', prospects and pay. However, the construction group did not perceive engineering and construction jobs as differently on these constructs as did the engineering group. The construction group viewed construction work as more interesting, more friendly and involving more contact with people. They also perceived construction jobs as more manual, dirty and working-class. It is possible that the construction group favoured construction work because of the masculine, working-class ethos which they attached to jobs in this field (see Willis (1977) for a discussion of the importance of the masculine working-class attributes of work for some male working-class school leavers).

By contrast, the engineers seem to have been attracted to engineering work for rather different reasons. This group rated engineering work more highly than construction or commercial work in terms of interest, difficulty, contact with machines, the extent to which 'you use your mind', and qualifications required. They also evaluated engineering work rather more positively in terms of material rewards - pay and prospects.

Comparisons of the three groups' perceptions of their respective employment fields suggested that, within each student group, respondents agreed in many respects in the way they evaluated different types of employment. This supports the views of Edmonds (1979) and of Reeb (1979) which suggested that young people shared some common perceptions about specific jobs. However, the three groups also exhibited differences in the way they used particular constructs to differentiate between jobs in the three employment fields considered in this study. In terms of the second hypothesis, these results indicate that certain attitudes towards, and perceptions of, particular kinds of work varied between the three student groups. There is also some evidence that the factors associated with job preferences differed for students undertaking different courses, providing a certain amount of support for the second hypothesis. These differences in attitudes and perceptions may, in part, account for variations between the three groups in their job ambitions and training choices.

Over the whole sample, sex was found to be very strongly associated with 'liking' for, and interest in, the three employment fields. (Correlation figures in Table 8.12 show the strength of these associations at the level of the individual student.) The analyses also support the proposition that males' and females' perceptions of employment were influenced by the sex-stereotyping of particular kinds of work. Different factors appear to be associated with job preferences for commercial compared with construction or engineering students. On the whole, the sample of construction and engineering students (all of whom were male) held a very unfavourable view of the traditionally female commercial type work in terms of its difficulty, responsibility, pay, prospects, the qualifications required and extent to which 'you use your mind'. The commercial students (more than 90 per cent of whom were female) possessed a much more favourable view of these aspects, but also evaluated commercial work more highly in terms of the social aspects of employment (such as dealing with people, helping people and friendliness of the working atmosphere).

These differences in attitudes and perceptions (which are likely to have reflected sex-role conditioning at home and in the wider society) probably contributed to the sex differences in participation in different types of vocational training identified in Chapter 7. These findings provide support the third hypothesis - perceptions of different types of employment and the factors related to job preferences differed markedly for students training for traditionally 'female' compared with those training for traditionally 'male' occupations.

SECTION 2

Social Class and Perceptions of Commercial, Construction and Engineering Employment

In Chapter 7 social class was shown to be strongly associated with participation in low-level vocational training and level of educational attainment. However, social class was not found to differentiate the three students groups - the majority of each group (commercial, construction and engineering) had fathers in skilled-manual employment. Nevertheless, a minority of students with fathers in non-manual, semi-skilled manual and unskilled-manual work had entered commercial, construction or engineering training. To test fourth hypothesis, that social class background was related to job perceptions, the repertory grids completed by students of non-manual, skilled-manual, and semi- or unskilled-manual origins were analysed separately for each student group.

In all, social class data were missing for 20 (9.1%) of the engineering students included in the repertory grid survey.(7) The proportion was rather larger for the commercial group (19.6%), a reflection of higher student absence rates on non-sponsored courses (sponsored students were liable to lose a day's pay for non-attendance at college).(8)

1. The Social Class Composition of the Repertory Grid Sample

Details of the social class composition of the repertory grid sample are given in Table 8.13. The percentages of the sample with fathers in one of the three social class groups (non-manual, skilled-manual, semi- and unskilled-manual) were compared to the percentages of the questionnaire survey drawn from these groups (see Table 8.14). It appears that, in general, the social class distributions of the commercial and the engineering sample corresponded quite closely to those identified in questionnaire survey. Thus, the repertory grid sample was representative of the social class composition of the commercial and engineering student groups as a whole.

However, the repertory grid sample of construction students possessed a rather different social class composition from that of construction students as a whole. It can be seen, in Table 8.19, that a higher percentage of the repertory grid sample were of skilled-manual origins (78.4% compared with 68.4% of the questionnaire group) and a lower percentage of non-manual origins (only 10.3% compared with 18.1% of the questionnaire group). For this reason, the results of analyses of the construction students responses by social class background may not necessarily be representative of those of construction students as a whole.(9)

2. Differences in Perceptions According to Social Class

A comparison of the perceptions of commercial, construction and engineering type employment for students of different social class backgrounds indicated that social class background was not related to differences in views between the three groups. (The mean ratings of commercial, construction and engineering work for each construct by students of different social classes have been listed in Appendix 8.3.) There were greater similarities in the perceptions of the three employment fields held by students undertaking the same course, but of different social class backgrounds, than similarities in the perceptions of those from the same social class group but taking different courses. Overall, there was more variation in perceptions of employment between than within the three student groups. Conversely, there was less variation between social class groups than between student groups.

On construct 1 ('jobs I'd like v jobs I wouldn't like'), for example, commercial students of each social class rated construction jobs most unfavourably, followed by engineering work. Construction students rated commercial work the least favourable and construction jobs the most favourable, irrespective of their own social class. Similarly, engineering students' responses were not associated with social class for construct 1. Analyses of responses to construct 10 ('jobs which need few qualifications v jobs which need many qualifications') produced similar results. Commercial students of all social class groups rated construction work as requiring fewer qualifications than commercial work, and engineering employment as requiring more qualifications. Construction and engineering students of all social class groups, however, viewed commercial work as requiring the least qualifications and engineering work the most (see Appendix 8.3).

These results support the conclusions reported in Chapter 7, that differences in social class characteristics - in this case perceptions of employment- did not account for participation in particular types of training. They are also in line with the findings reported by Coxon and Jones (1978) and Reeb (1979). Although some variations can be identified, members of different social class groups held broadly similar perceptions of particular employment fields.

The fifth hypothesis proposed that, within groups, some variations in perceptions of different employment fields might be related to social class origins. Although differences between, rather than within, student groups were more striking, some variations in the use of the most subjective constructs did appear to be related to students' social class. For example, on construct 3 ('jobs where little experience is needed v jobs where lots of experience is needed') commercial students of semi- and unskilled-manual origins rated commercial work significantly more favourably ($\overline{X}$=3.6) than did commercial students of non-manual origins ($\overline{X}$=2.9). Similarly, commercial students of semi-or unskilled-manual backgrounds rated commercial work more favourably on construct 6 ('jobs without much responsibility v jobs with more responsibility') than did those of non-manual origins.

In terms of interest, commercial students of semi- and unskilled origins rated commercial work as more interesting, and engineering work as more boring than did their non-manual colleagues. Moreover, on construct 10 ('jobs which need few qualifications v jobs which need many qualifications') and construct 11 ('poorly paid jobs v well paid jobs'), commercial students of semi- and skilled-manual origins placed higher evaluations on commercial work than did the non-manual group.

These results provide certain support for hypothesis four, that job perceptions may vary according to social class. In general, commercial students of all social classes held similar perceptions. However, the semi- and unskilled-manual group possessed a rather more favourable view of commercial work than their non-manual counterparts did, a result in the direction predicted by the fourth hypothesis. It is probable that this finding reflects the higher status which commercial work offered to girls of semi- or unskilled-manual origins. In comparison to jobs of their own social class level, commercial work may have been perceived as rather more desirable and better paid. Nonetheless, these differences are small, social class appears to affect the fine tuning of perceptions but was not responsible for major variations.

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These results provide certain support for hypothesis four, that job perceptions may vary according to social class. In general, commercial students of all social classes held similar perceptions. However, the semi- and unskilled-manual group possessed a rather more favourable view of commercial work than their non-manual counterparts did, a result in the direction predicted by the fourth hypothesis. It is probable that this finding reflects the higher status which commercial work offered to girls of semi- or unskilled-manual origins. In comparison to jobs of their own social class level, commercial work may have been perceived as rather more desirable and better paid. Nonetheless, these differences are small, social class appears to affect the fine tuning of perceptions but was not responsible for major variations.

Amongst the construction and engineering groups, only a few differences in perception were associated with social class. Certainly, construction students of semi-and unskilled-manual backgrounds rated construction work more favourably than did their non-manual counterparts in terms of the experience needed for jobs in this field (construct 6). However, because of the low numbers of construction students from non-manual, or from semi- or unskilled-manual backgrounds, these differences should be treated with caution.

Construction and engineering students of semi- and unskilled-manual origins were more likely than those of skilled-manual origins to have perceived jobs in their own career fields as requiring qualifications. This may reflect the greater information available to the skilled-manual group about the qualifications required to enter the skilled trades. Alternatively, it may have been due to the lower average level of qualifications achieved by semi-and unskilled-manual students. This group may, therefore, have viewed the qualifications required for skilled-manual jobs as more difficult to obtain than did their skilled-manual counterparts. Differences in perceptions of the qualifications needed, and a generally lower level of educational performance, may both help to explain the tendency for school leavers of semi- and unskilled-manual origins to be under-represented in skilled-manual occupations and training.

There was, however, no clear evidence to support the proposition that males of non-manual origins who entered training for the skilled trades possessed a less favourable evaluation of construction or engineering work than their counterparts of manual backgrounds. Therefore, although entry into construction or engineering training was an occupational outcome at variance with social class origins for males of non-manual backgrounds, and may have represented a drop in status, the non-manual group did not exhibit significantly different perceptions of skilled-manual work. This aspect of the fourth hypothesis was not confirmed. In general, differences in perceptions of employment between the social class groups were small and generally not significant.

SUMMARY

Analyses of students' repertory grid responses indicated that school leavers of average to below-average attainment shared certain common perceptions about different kinds of employment. This finding is in line with those reported by Reeb (1979) and by Edmonds (1979), who suggested that school pupils possess many similarities in their evaluations of different jobs.

However, comparisons of the responses of commercial, construction and engineering students also revealed differences between the three groups in their use of specific constructs, particularly those relating to the more subjective aspects of work. The construction and engineering students held very unfavourable views of commercial work, and much more favourable perceptions of their respective employment fields. Both these student groups, however, also differentiated construction and engineering employment, the differences between the two fields being perceived as greater by the engineering group. Commercial students, in contrast, had a favourable view of commercial work. This group evaluated construction work more unfavourably than engineering work. These results confirmed the first hypothesis - perceptions of different types of employment varied between the three student groups and were related to their job and training choices. Moreover, the factors associated with job preferences also tended to differ between the three groups, supporting the second hypothesis. It seems probable that these differences in perceptions influenced the development of students' job ambitions and their job and training choices.

In addition, the analysis of repertory grid responses revealed marked differences between the factors associated with job preference for the predominantly female commercial students, and those associated with job preference for the exclusively male construction and engineering students. This result supports the third hypothesis and is in line with the findings of Lambert (1978) and Fogelman (1979). Sex differences in perceptions of the sex-role and other attributes of particular types of employment are likely to be an important factor in accounting for the traditional sex division in participation in commercial, construction and engineering training.

The majority of students from each student group were of skilled-manual origins. Therefore, social class (although strongly related to participation in vocational training as a whole) did not account for participation in particular kinds of training. Overall, social class was not associated with differences in job perceptions. Variations in responses between the three student groups were greater than those within groups. Thus, irrespective of social class background, the job perceptions of students undertaking the same type of course were more similar than those of students of the same social class group who were undertaking different courses.

The proposition, developed as part of the fourth hypothesis, that commercial students of semi- and unskilled-manual origins would have a similar but rather more positive view of commercial work than their counterparts of different social class backgrounds, was supported. It is likely that commercial employment represented an upward social movement for these students and, for this reason they viewed this work more favourably. However, the proposition that non-manual students training for the skilled trades had a less favourable view of construction or engineering work than students of manual origins was not confirmed. Therefore, these results provide only qualified support for the fouth hypothesis.

Overall, it is clear that the three student groups exhibited certain similarities in their perception of employment and all groups identified significant differences between the commercial, construction and engineering fields in terms of a number of the evaluative measures. However, when the students' perceptions of their respective employment fields were compared, differences in the use of many of the more subjective constructs were identified. Moreover, the constructs associated with job interest and job preference differed for the three student groups. It seems probable that these differences in perceptions of particular types of employment account, in part, for participation, in specific types of vocational training.

In the next chapter, the ways in which attitudinal differences related to spatial variations in participation in particular types of vocational training (identified in the first part of the thesis) are explored. This enables the postulated mechanism by which 'area' effects are thought to operate to be tested (these mechanisms were discussed in Chapter 4). The intention is to establish whether students' attitudes towards employment varied according to area of residence in line with spatial patterns of student over- and under-representation.

constructs associated with job interest and job preference differed for the three student groups. It seems probable that these differences in perceptions of particular types of employment account, in part, for participation, in specific types of vocational training.

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NOTES

Chapter 8

(1) Due to constraints operating on the design of the present study (permission was not granted to survey school pupils), it was not possible to investigate students' attitudes prior to their entry into vocational courses. There is a possibility, therefore, that the relationships between attitudes and vocational choices may have been subject to a degree of 'post hoc' rationalisation. Attitudes might have been adjusted to take into account training choice (to enable 'dissonance reduction').

It has not been possible to test this possibility, given the data available. Nonetheless, by examining students' perceptions in terms of a variety of constructs, and by including several jobs to distinguish each employment field, it was hoped to reduce the problems of 'post hoc' rationalisation. It also seems likely that perceptions of particular aspects of work (for example sex-stereotyping) would be fairly stable and have altered little on leaving school. Moreover, by comparing assessments of the three employment fields made by the three different student groups, it was possible to establish the extent of similarities in views. Where different groups held similar views it is likely that their perceptions were fairly stable, and had changed little after leaving school.

(2) For a full consideration of these techniques and of the method of constructing the grid see Chapter 2. The statistical basis of repertory grid methods has been discussed in Chapter 3.

(3) The 48 students who did not complete one or more than one of the twenty constructs (rating scales) were excluded from the analyses reported here. This was because the SERIES program used to analyse the groups of grids produced by commercial, construction and engineering students, can only accept full data for each individual.

(4) The possible range of values for use of any construct was between 1 and 5. A 'favourable' evaluation would be represented by a group mean on the positive pole of a given construct. For example , in the case of construct 3, each group recorded a mean above three (the mid point of the scale) on the 'jobs where lots of experience is needed' pole of the scale. To avoid response bias, the positive pole was alternated for different constructs in a random fashion.

(5) A tiny minority of commercial students rated some skilled-manual jobs favourably. These were in all cases male students.

(6) For the whole repertory grid sample, there was strong evidence of an association between 'liking' for a particular employment field (as measured by construct 1) and perceptions of the interest of jobs in that field (measured by construct 8). This was strongest for perceptions of commercial work ($r=0.76$, $p<0.0001$) but was also high for construction work ($r=0.67$, $p<0.0001$) and for engineering work ($r=0.63$, $p<0.0001$).

(7) This result is not suprising, given the high proportion of students who had entered training in the same field as the job they had wanted to do when they left school (see Chapter 7).

(8) Data were missing due to student absence at the time of the questionnaire survey or because students had joined their courses at a later date. The percentage of the construction students included in the repertory grid survey for whom social class data were missing was inflated because of the inclusion of fourteen students on one course all of whom had been out of college at the time of the questionnaire survey. All students for whom social class information was missing were excluded from further analyses.

(9) The very small numbers of construction students of non-manual and of semi- and unskilled-manual origins ($N=10$ and $N=11$ respectively) mean that results of analyses of the perceptions of these social class groups should be treated with caution.

CHAPTER 9

VARIATIONS IN ATTITUDES BY AREA OF RESIDENCE

INTRODUCTION

One of the aims of the present investigation has been to establish whether participation in particular types of vocational training was related to area of residence. The possible influence of the local residential environment has already been discussed in Chapter 4 under the headings of 'area' or 'neighbourhood' effects. Briefly, particular characteristics of the residential environment (for example, social class composition and tenure patterns) are believed to influence the development of local climates of opinion. Thus, Johnston and Herbert (1978) noted in a discussion of 'neighbourhood' or 'area' effects that "....*the term itself suggests the process that is presumed to operate; within a locality, a set of values may have existed and been widely accepted over a period of time, and is then transmitted to other residents, such as in-migrants.*" (p.25).

The residential environment is created by a combination of social and economic forces which determine residential patterns and the segregation of social groups (see Timms, 1978). Once created, however, it has been suggested that this environment becomes more than a backcloth for residents' behaviour. The residential area may affect the behaviour of residents, because it provides a major social reference group. It is seen as one influence in the process of socialisation, and is presumed to affect the development of the attitudes and values held by the local population.

Analyses of student distributions in relation to the socio-economic characteristics of area of residence have provided evidence that student over- and under-production differed significantly between different types of area. Clusters of 'like' areas were identified, and spatial analyses of student distributions demonstrated that, in some clusters, particular groups were over- or under-represented. These findings suggest that 'area' or 'neighbourhood' effects may have affected student participation in commercial, construction and engineering courses.

If such potential 'area' effects do operate through the impact of general neighbourhood attitudes and values upon local residents' behaviour, it would be expected that students' attitudes towards employment would vary according to area of residence.

Marked differences between the three student groups have already been identified in their attitudes towards commercial, construction and engineering work. Attitudes were closely related to student participation in training for jobs in particular employment fields.

On the basis of results obtained from analyses of student distributions and of their attitudes, and from a review of literature about the nature of 'area' effects, a number of hypotheses have been developed. These concern the nature of the link between attitudes and 'area' effects proposed in the present study.

1. Hypotheses

Hypothesis 1

'For any one of the three student groups, attitudes towards the chosen employment field will be most favourable in areas in which it is over-represented, and least favourable in areas in which it is under-represented.'

If variations in local climates of opinion and attitudes towards employment did have an impact upon participation in particular kinds of vocational training, this would probably have operated through an effect upon local youngsters' attitudes towards that employment field. Thus, for the commercial student group, attitudes towards commercial work would be expected to have been most positive in clusters five, seven and eight, and least positive in clusters three, four and six. For construction students, the most positive attitudes towards construction work would be predicted in clusters two, three, six and seven and the least positive in clusters one, five, and eight. Finally, for the engineering group, attitudes towards engineering work would be more favourable in clusters one, five and six and least favourable in clusters three, four and seven.(1)

Hypothesis 2

'Construction students' attitudes towards engineering employment will be relatively more favourable in areas in which engineering students are over-represented, than in areas in which they are under-represented. Engineering students' views of construction work will be relatively more favourable in clusters in which construction students are over-represented, than in clusters in which they are under-represented.'

'Area' influences upon residents' attitudes would be expected to have had an effect upon all local youngsters. Therefore, not only should students' attitudes towards their own chosen employment field have been more favourable in areas where they were over-represented but attitudes towards another employment field should also have been relatively more favourable in areas where students in that field were over-represented. This effect, however, would be less likely to influence commercial students, because of the close link between sex and attitudes (noted in Chapter 8). It could be expected that construction students would have had a relatively more favourable view of engineering work in clusters one, five and six, than in clusters three, four and seven. The engineers, in contrast, should have had a relatively more favourable view of construction work in clusters two, three, six and seven, than in clusters one, five and eight.

In order to test these hypotheses, the attitude data collected for each of the three student groups were analysed separately by area of residence. However, before investigating possible variations in students' attitudes according to area of residence, the spatial distribution of the repertory grid sample was examined to establish whether it was representative of the distribution of the student body as a whole.

2. Distribution of the Repertory Grid Sample at the Cluster Level

Of the total repertory grid sample, 30.5 per cent lived outside the inner London area, a percentage very similar to that for the total student body. A total of 353 (62%) lived within the eight ward clusters of interest to the present study. The repertory grid respondents were not equally distributed between the eight clusters. Their distributions reflected the patterns of over- and under-production identified amongst the total student body. Chi-square analysis indicated that, overall, there was no significant difference between the distribution of the repertory grid sample at the cluster level, and that of the total body of students (χ^2=19.78, v=14, p.0.10).

Figures presented in Table 9.1 show the distribution of the repertory grid respondents, by cluster. Overall, the highest numbers lived in clusters five, six and seven (clusters which contained the highest percentages of skilled manual workers), and the lowest numbers in clusters one, two and three (clusters which contained the highest percentages of non-manual workers). However, when the distributions of the three groups were examined separately, it was clear that some clusters contained high numbers of a particular student group but lower numbers of another group. The highest numbers of commercial respondents were located in clusters five, six and four (in that order), the highest numbers of construction respondents in clusters six, seven and five (in that order), and the highest numbers of engineers in clusters six, five and seven (again in order of magnitude).

Due to the overall tendency for students to be over- or under-represented in some clusters, the number of the repertory grid respondents was very low in clusters one and two for all groups (reflecting patterns noted in Chapter 5). In addition, the number of commercial respondents living in clusters three and seven, and the numbers of construction respondents in clusters four and eight were also low. Analysis of students' attitudes by cluster of residence was only undertaken where the number of students in a group for whom such data were available was greater than, or equal to, ten. This limit was necessary because problems arise in the interpretation of results based upon very low numbers of respondents (see Townsend, 1976).(2)

In the first section of this chapter, the attitudinal data have been analysed in order to establish the extent of between cluster differences, and then to test the first hypotheses - that, for any student group, attitudes towards their chosen employment field would be more favourable in clusters in which they were over-represented than in clusters where that group was under-represented. The second section presents the results of analyses adopted to test the second hypothesis.

SECTION 1

Variations in Commercial, Construction and Engineering Students' Attitudes by Cluster of Residence

The repertory grid data were analysed separately for each of the three student groups, and at the level of the individual cluster, using the 'SERIES' program . Attention was concentrated upon the ways in which these spatially defined student groups differentiated commercial, construction and engineering work. It was necessary to control for student group when examining differences in attitude at the cluster level, because marked differences between the groups in the ways they evaluated particular employment fields heve been identified (see Chapter 8).

1. The Extent of Differences Between Clusters

The mean ratings given to the three employment fields by each student group are listed separately for each cluster in Appendix 9.1. Comparisons of these ratings indicated that, for most constructs, differences between the means ascribed to a specific type of employment by students taking the same course, but living in different clusters, were smaller than differences between the means applied by students undertaking different courses, but living in the same cluster. Similarly, for most constructs differences between the three groups (in their perceptions of commercial, construction and engineering work) were greater, irrespective of cluster of residence, than differences between clusters in the way any one group rated a specific employment field.

A comparison of the ways in which commercial, construction and engineering students living in different clusters used two constructs to evaluate their respective employment fields illustrates this finding. The means for construct 1 ascribed by members of each group living in different clusters on construct 1 are presented in Table 9.2. On this construct ('jobs I'd like v jobs I wouldn't like'), commercial students in all clusters showed a common pattern of responses, rating commercial work favourably, and construction and engineering work unfavourably. With the exception of ratings of engineering work, there were no significant spatial differences in the way commercial students used construct 1. For engineering work, commercial students in cluster six rated engineering work more unfavourably than did their counterparts in other clusters.

An examination of construction students' use of construct 1 indicates that commercial work was rated very unfavourably, construction work most favourably, and engineering work near the mid-point (neither liked nor disliked) in all clusters.(3) The relative order of the three employment fields was consistent for construction students living in all clusters. However, those in cluster five rated both construction and engineering work relatively more favourably than did their counterparts in other clusters.

For engineering students, engineering work was rated most favourably, construction work near the mid-point, and commercial work work unfavourably in all clusters. Students in cluster six had the most positive view of engineering work and a relatively favourable view of the construction field. Engineering students in cluster four expressed a much more unfavourable view of construction work in comparison with those in cluster six.

A similar pattern was identified for responses to construct 15 ('jobs with no prospects v jobs with good prospects') at the cluster level (see Table 9.3). Commercial students in each cluster evaluated construction work as offering poorer prospects than engineering or commercial work. Commercial and engineering work were perceived as both offering equally good prospects in all clusters, except number eight. Here, commercial work was seen to offer relatively better prospects than engineering work (for engineering work the mean was 3.4; for commercial work it was 3.9).

In all areas, construction students rated both construction and engineering work favourably in terms of job prospects, although engineering work tended to be perceived most favourably.(4) In contrast, commercial work was generally unfavourably rated in terms of prospects in all clusters.

Finally, the engineering students rated the job prospects of commercial work less favourably than those of construction work and rated the prospects of engineering work most favourably. There were slight variations, however, in the engineering students' perceptions of engineering employment. Those in clusters four and eight, for example, rated engineering work positively in comparison with their peers in cluster three.

Comparisons of the ways in which commercial, construction and engineering students evaluated their respective employment fields in terms of 'liking' and 'prospects' revealed a strong tendency for students of the same group to rank the three types of employment similarly, irrespective of cluster of residence.(5) Differences between the three groups were generally greater than those amongst the same group living in different areas. Despite these overall similarities in the pattern of responses, however, some differences between clusters were also identified in the ways members of particular groups rated the three employment fields. Therefore, further analyses were conducted to explore area-based differences in students' perceptions in more detail and to test the two hypotheses.

2. Testing the First Hypothesis

It was hypothesised that, if 'area' effects influenced participation in particular types of vocational training, spatial variations in students' attitudes towards the three employment fields would exist. In particular, spatial variations in attitudes would be related to patterns of participation in the three types of vocational training, such that attitudes towards a given field would be more positive in areas which over-produced, than in those which under-produced, a particular student group.

(i) Differences between commercial students' perceptions according to cluster of residence

The first hypothesis predicted that commercial students in clusters five, seven and eight (areas which over-produced members of this group) would have more favourable views of commercial work than would their counterparts in clusters three, four and six (areas which under-produced the commercial group). The numbers of respondents were sufficient for group analysis of commercial students' grid in four of the eight clusters (numbers four, five, six and eight).

In Chapter 8 it was shown that commercial students evaluated commercial work more positively than did other student groups in terms of five constructs - 'liking' for the job (construct 1), the extent of contact with other people (construct 2), the importance of making people happy (construct 14), the prospects of commercial work (construct 15), and the friendliness of the working environment (construct 19). In addition, a number of constructs were found to covary closely with commercial students' 'liking' for commercial work. These were concerned with the interest of jobs (construct 8), pay (construct 11), cleanliness (construct 7), office status (construct 4) and the extent to which jobs were seen as 'women's' (construct 5).

Construct 15 (concerned with job prospects) was also found to covary with the extent to which commercial students liked commercial work.

Commercial students' evaluations of their chosen employment field thus differed most markedly from the perceptions of construction and engineering students in terms of the ten constructs listed above. It was expected that any spatial variations in attitudes towards commercial work would be identified in the use of these constructs.

Liking for commercial work

Comparisons of the mean scores ascribed to commercial work in terms of these ten constructs, however, did not reveal a clear pattern of differences in line with the first hypothesis. As noted earlier, there was little difference according to cluster of residence in the extent to which commercial students liked commercial work (construct 1). If anything, those living in cluster five (an over-producing ward group) tended to have a marginally less favourable view than those in other clusters, but the difference was not statistically significant (see Table 9.2).

For construct two (the extent to which jobs involved work with machines or with people) some spatial differences were identified (see Table 9.4). Although all groups perceived commercial work as being more involved with people than machines, students from cluster eight held this view less extremely than those from cluster six. The mean

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Sex-stereotyping

There were no significant spatial differences in commercial students' use of construct 4 or construct 5. In all areas commercial work was viewed as mainly office-based rather than manual in character, and as being mainly 'women's' rather than 'men's' jobs. Moreover, little difference was found in the use of construct 7 ('clean versus dirty work'), though those in cluster eight had the most positive view. These constructs were related to the sex-stereotyping of commercial work. For all groups, and for each of three employment fields, ratings on these constructs were found to covary quite closely. Given the strong influence of sex in determining participation in particular types of vocational training, and the marked relationship between sex and attitudes, it is perhaps unsurprising that area differences were not evident for constructs closely linked to the sex-role ascribed to jobs.

These data indicate that differences in attitudes towards commercial work related to the sex-stereotyping of particular employment fields were not related to area of residence in the directions predicted by the first hypothesis. The influence of sex (which operates, at least in part, through sex differences in attitudes) on participation in commercial vocational training appears to have been independent of area of residence. This finding is in line with the conclusions of

Sewell and Orenstein (1966). These authors found that area of residence had little effect upon girls' occupational aspirations because of the limited range of occupations open to women.(6)

Job interest

Spatial variations in commercial students' perceptions of the interest of commercial employment were identified. Those living in cluster eight had a rather more favourable view of the interest of commercial work (measured by construct 8) than did their counterparts in clusters five and six. The difference was largest between those in cluster six and eight. (The mean score on job interest for commercial work in cluster eight was 1.9, in cluster six the figure was 2.5.) This pattern of differences was not, however, clearly related to spatial variations in the over- and under-production of commercial students. According to the first hypothesis, the views of commercial employment held by commercial students should have been most favourable in clusters five and eight, and least favourable in clusters four and six. Although perceptions were, as predicted, least positive in cluster six, those of students in cluster five were not as favorable as in cluster eight. Yet both cluster eight and five over-produced commercial students.

Pay and prospects

Variations in students' perceptions of commercial work according to area of residence were also identified in terms of pay and prospects (constructs 11 and 15). Those in cluster four rated commercial work rather less favourably, in relation to pay and prospects, than did their counterparts in cluster eight. The difference in mean scores was larger for construct 15 (concerning job prospects) than construct 11 (concerning pay). The mean score of commercial work with respect to prospects was 3.9 for students in cluster eight and 3.3 for those in cluster four. In terms of pay, the equivalent figures were 3.9 in cluster eight and 3.6 in cluster four. (In the case of both constructs, a higher mean score signified a more favourable view of commercial work.)

Social aspects

There was no difference according to cluster of residence in commercial students' perceptions of the importance of 'making people happy' (construct 14) as a characteristic of commercial work. In all areas, this aspect was considered important. Slight variations in the use of construct 19 ('jobs with a friendly atmosphere v jobs with an unfriendly atmosphere') were apparent, but did not reach statistical significance. Again, students in cluster eight had a marginally more favourable view than their counterparts as cluster four. Nonetheless, in all areas commercial work was rated very favourably with respect to 'friendliness' of the working atmosphere.

Spatial analyses of commercial students' repertory grid responses provide only limited support for the first hypothesis. Commercial students' perceptions of commercial employment (in terms of the constructs for which differences were predicted) did vary between the clusters in certain respects. In general, commercial work was rated more favourably by students living in cluster eight than by those in clusters four and six, on the more subjective constructs (concerned with interest, prospects, pay and the extent of contact with other people). Further analyses revealed differences in the use of two other constructs, construct 3 (concerned with the experience required) and construct 16 (related to social class ranking - 'high class jobs v working class jobs'). For both these dimensions, commercial students living in cluster eight had more favourable perceptions of the experience required and social class ranking accorded commercial jobs (see Table 9.5).

Cluster eight consisted of a group of wards which contained a very high proportion of males in skilled, semi-skilled and unskilled manual employment, a high proportion of privately rented housing and housing with poor conditions, and a much above average proportion of the population of New Commonwealth origins. It was the most disadvantaged of the eight types of home area identified through the cluster analysis.(7) In contrast, cluster six was a working-class area characterised by a very high percentage of skilled manual and low percentage of non-manual workers. In terms of tenure this cluster contained the highest proportion of people living in council housing.

Cluster four contained above average proportions of non-manual workers, but was similar to cluster eight in terms of housing conditions (which in both areas were poorer than elsewhere). A rather higher percentage of the population than in cluster eight, however, lived in owner-occupied accommodation.

In very socio-economically disadvantaged areas (such as cluster eight), commercial work may be more favourably perceived because it represents an upward social movement of which owner-occupation may be a part. In contrast to jobs undertaken in areas where a relatively high percentage of workers were in semi-or unskilled manual work, commercial jobs may have been perceived as relatively more interesting, better paid, and to offer better prospects than was the case in less disadvantaged areas.

Alternatively, it may be that, in comparison with those in other clusters, commercial students living in disadvantaged areas knew few people in commercial employment. Their more favourable evaluations of commercial jobs may, therefore, have reflected less knowledge about, or contacts with people in commercial work. In disadvantaged areas, commercial work was, perhaps, viewed more positively by girls because, it offered relatively better conditions, pay and prospects, in comparison with the sorts of manual employment available to, or entered by, the majority of females in the locality.(8)

The pattern of variations in perceptions of commercial work conformed to that predicted by the first hypothesis in clusters eight, four and six. Attitudes towards commercial work in the area of over-production (cluster eight) were more positive than in clusters four and six (which under-produced the commercial group).

However, students' attitudes in cluster five (which also over-produced the commercial group), were little different from those of students in clusters four and six (the under-producing clusters). Cluster five, although predominantly a skilled manual area, contained a substantial proportion of the population in non-manual work, and the predominant form of tenure was owner-occupation. In this area, commercial students' assessments of the conditions, pay and prospects of the sorts of commercial employment considered in this study may have been more realistic in comparison with other types of non-manual or of skilled manual work. Female school leavers in relatively advantaged working-class areas (such as cluster five) were probably aware of a greater range of jobs, and, therefore, had rather less favourable views of commercial work than their counterparts in cluster eight (where knowledge of other types of employment may have been more limited).

Spatial differences in the way commercial students perceived their chosen employment field were identified. These occured in the use of the more subjective constructs, and formed a fairly consistent pattern. The local social environment (as defined by such characteristics) may have influenced the development of attitudes towards employment such that, in some environments, a particular kind of work was more highly valued than in other areas. Overall, commercial work was viewed consistently more positively by respondents in the most socio-economically disadvantaged cluster. However, although attitudes were, in part, related in the directions predicted by the proposed 'area' effect, such area differences in attitudes do not appear to have influenced behaviour directly. Although positive attitudes in cluster eight were associated with commercial student over-production, rather less positive attitudes were identified in cluster five though it was also an area in which commercial students were over-produced.

(ii) Differences between construction students' perceptions according to cluster of residence

The repertory grids completed by groups of construction students living in clusters, three, five, six and seven were analysed and the results compared to establish whether any differences existed according to area of residence.(9)

Construction students differentiated jobs in their chosen employment field, from those in other fields, in terms of a number of constructs (see Chapter 8). In particular, they rated construction work highly with respect to manual status (construct 4) and 'dirtiness' (construct 7), and differentiated it from engineering work in terms of the extent of contact with people rather than machines (construct 2). Construction students also perceived construction work as 'easier' (construct 18), requiring fewer qualifications (construct 10), being more interesting (construct 8), having a friendlier atmosphere (construct 19) and as mainly being 'men's', rather than 'womens', work (construct 5). The constructs which covaried most closely with 'liking' for construction work - as measured by construct 1 - were numbers 4, 5, 7 and 8 (mentioned above) and number 20 (whether a job involved an apprenticeship).

According to the first hypothesis, it was predicted that construction students who lived in clusters three, six and seven (which over-produced construction students relative to other clusters) would have had more favourable perceptions of construction work than their counterparts in cluster five (which under-produced this group).

Liking for construction work

Construction students' perceptions of construction work in terms of 'liking' for construction jobs (construct 1) were compared by area of residence. The results indicated that, although in all areas construction students had a favourable view of construction work, those in cluster three and cluster five had rather more positive perceptions than those in clusters six and seven. The difference was largest between cluster five and cluster seven (the mean score accorded construction work was 2.1 in cluster five and 2.7 in cluster seven). Cluster five, however, had under-produced and cluster seven over-produced the construction group. The spatial variation in attitude, therefore, did not accord with the first hypothesis.

Sex-stereotyping

There were no significant differences, between students living in different areas, in the ratings given to construction work for construct 2 ('jobs mainly working with machines v jobs mainly working with people') or construct 4 ('office work v manual work'). In general, construction students in all areas perceived construction work as involving equal contact with machines and with people, and as being very much 'manual' rather than 'office' in character. There was a tendency, however, for those living in cluster three to perceive construction work as involving more contact with machines, and as being more 'manual' than their counterparts in other areas (see Table 9.6).

Construction students in all clusters also perceived construction work as mainly 'men's' jobs. Although there were no statistically significant differences in mean ratings on construct 5 between clusters, those living in cluster three viewed construction work as 'men's' jobs rather more strongly than did those in other clusters.

In line with the findings for the commercial group, these results reveal little variation between different areas in students' perceptions of construction work as measured by constructs most related to the sex-stereotyping of occupations. For all groups, the three constructs, 'office work v manual work' (number 4), 'women's jobs v men's jobs' (number 5), and 'clean jobs v dirty jobs' (number 7) were found to covary quite closely. It appears from these data, therefore, that area of residence was not related to students' perceptions of the factors related to the sex-role attributes of construction work. The influence of sex on participation in construction training (which appears to have operated, at least in part, through variations in attitudes towards different types of work) affected all students, irrespective of area of residence. This factor cannot, therefore, account for the areal patterns of over- and under-production of those entering construction training.

Job interest

Differences between areas were more apparent in the construction students' use of construct 8 ('interesting jobs v boring jobs'). Students from cluster three and cluster six had the most favourable perceptions of the interest of construction work, while those in clusters five and seven exhibited rather less favourable views. The difference was most marked between clusters three and seven (the mean rating in cluster 3 was 2.1, in cluster 7 it was 2.7). Both these clusters, however, over-produced construction students. The pattern of difference in perceptions of construction work between clusters did not, therefore, conform to that proposed by the first hypothesis.

Social class

No differences were identified between clusters in construction students' evaluations of the social status of construction work (as measured by construct 16). In all areas, construction work was perceived as 'working-class' in character (see Table 9.6). This finding tends to accord with those of Hall and Glass (1954) and Martin (1954). These authors noted that overall perceptions of the social class ranking of different jobs differed little according to respondents' own occupational status. Moreover, the findings of Martin (1954) indicated that views about the social class of jobs did not vary significantly between respondents living in areas which were socio-economically very different.

Qualifications

The extent of qualifications required for construction work was perceived differently by students living in particular clusters. Those in clusters three and seven evaluated construction work as requiring rather fewer qualifications than their counterparts in clusters five and six. The difference was greatest between cluster three and cluster six. The mean score accorded construction work in terms of construct 10 ('jobs which need few qualifications v jobs which need many qualifications') was 2.4 in cluster three but 3.0 in cluster six (a high score signified jobs requiring more qualifications). The pattern of differences identified in the use of construct 10, however, was in line with that predicted by the first hypothesis (those in over-producing clusters had the most favourable views).

Job difficulty

Some differences in the use of construct 18 ('difficult jobs v easy jobs') were apparent between areas. Construction students living in clusters five and six tended to perceive jobs in their own employment field as rather more difficult than did those in clusters three and seven, the difference being most marked between cluster five ($\overline{X}$=2.3) and seven ($\overline{X}$=2.8).

Students from cluster five thus perceived construction work as requiring more qualifications, and as being rather more difficult, than students in other areas. It is possible that such differences in perceptions of the difficulty of construction work, and of the qualifications required were related to the under-production of construction students in this cluster. This possibility received some support from the pattern of differences identified in the use of construct 20 ('apprenticeship jobs v non-apprenticeship jobs'). As might be expected, in all clusters students scored construction work very highly on the 'apprenticeship' pole of the scale. Nonetheless, students in cluster five held this view most strongly ($\overline{X}$=1.0) and those in clusters three and seven less strongly ($\overline{X}$=1.6 in cluster 3 and $\overline{X}$=1.7 in cluster 7).

Social aspects

There were no differences according to area of residence in construction students' perceptions of the 'friendliness' of the working atmosphere of their own employment field (measured by construct 19).

The results of spatial analyses of construction students' use of selected constructs in which differences were predicted to occur, provides only limited support for the first hypothesis. Although students in cluster five (an under-producing cluster) evaluated construction work most favourably in terms of construct 1 ('job's I'd like v jobs I wouldn't like'), they perceived construction work rather less positively in terms of interest, as more difficult, needing more qualifications and almost always requiring apprenticeships. Further analyses indicated that students in cluster five also rated construction work most highly in terms of the amount of experience and responsibility required (see Table 9.7) and with respect to job prospects. Although only the difference with respect to the amount of experience required (construct 3) was statistically significant, the trend was in the same direction.

Spatial differences in construction students' attitudes to construction work did not, necessarily, relate to the extent to which they would 'like' to do a job, and to aspects related to the sex-stereotyping of this field.

There were, however, differences according to area of residence in the way construction work was evaluated in terms of other constructs. Generally, differences were identified in the use of the more subjective constructs. The results of analyses of students' perceptions according to cluster of residence indicated that those in cluster five had rather different views from those in clusters three and seven. In cluster five the difficulty, experience, responsibilities and qualifications required by construction work were seen as greater than in other clusters. These differences in perceptions may, in part, account for the relatively lower entry into construction training in this area. In Chapter 8 it was noted that construction students appeared to like construction work in part because it was easier and required less experience and fewer qualifications than engineering work.

(iii) Differences between engineering students' perceptions according to cluster of residence

The number of engineering students for whom repertory grid data had been obtained was sufficient for analysis in clusters three, four, five, six, seven and eight. According to the first hypothesis, it was predicted that attitudes towards engineering work would have been most positive in clusters which over-produced engineering students (numbers five and six), and least favourable in clusters which under-produced this student group (numbers three, four and seven).

In Chapter 8 it was demonstrated that engineering students differentiated engineering work from other fields in terms of the qualifications required (construct 10), job responsibility (construct 6), experience needed (construct 3), job difficulty (construct 18) and the extent to which the work involved 'using your mind a lot' (construct 17). They also had a more favourable view of the pay (construct 11) and prospects (construct 15) of engineering than of other work. A further five constructs were found to covary closely with assessments of 'liking' engineering work. These were concerned with interest (construct 8), the extent of technical work involved (construct 12), the amount of contact with machines (construct 2), the 'dirtiness' of the jobs (construct 7) and the importance of apprenticeships (construct 20).

Evidence of spatial variations in engineering students' attitudes towards engineering work would be expected to be identified in the use of constructs which differentiated engineering from other kinds of work.

Liking for engineering work

As noted earlier, there were few differences between clusters in the way engineering students rated engineering work on construct 1 ('job's I'd like v jobs I wouldn't like'). In all areas students had a very positive view of the engineering field.

Job interest

Little difference was apparent between clusters in engineering students' perceptions of the interest of engineering work (as measured by construct 8).(10) In all but one cluster, engineering work was rated very positively. The exception was cluster eight (see Table 9.8). Here students had a markedly less favourable view of the interest of engineering work, rating jobs in the field on average near the mid-point of the scale. The difference was most marked between cluster eight ($\overline{X}$=2.7) and cluster seven ($\overline{X}$=1.7). This finding was not in line with the first hypothesis, however, because cluster seven under-produced engineering students, whereas cluster eight neither under- nor over-produced members of this group.

Cluster eight (as reported earlier) was the most socio-economically disadvantaged of the ward groups. It contained a lower percentage of males in skilled manual work than was the case in other areas. It differed from cluster seven (another relatively disadvantaged area) in terms of tenure, social class composition and the percentage of New Commonwealth immigrants in the population.

Experience, responsibility, qualifications and difficulty

A consistent pattern of differences was identified between clusters in engineering students' perceptions of the experience needed (construct 3), responsibility involved (construct 6), difficulty (construct 18) and qualifications required (construct 10) for engineering work. Those living in cluster eight rated engineering work less positively than did those in other areas, while those in cluster four had the most favourable views (see Table 9.8). This pattern of differential perceptions does not, however, support the first hypothesis. It was predicted that attitudes towards engineering work would be less favourable in cluster four (an under-producing area) than in clusters five and six. Students in cluster four, however, had very favourable evaluations of engineering work. Moreover, cluster eight neither over- nor under-produced engineering students, yet views here were less positive than in other areas.

Pay and prospects

In terms of pay (construct 11) there were no significant differences between clusters. Engineering work was perceived as well paid in all areas. In cluster 4, however, students had the most positive view of the level of pay and their counterparts in clusters seven and eight the least positive view.

Although students in two of the under-producing clusters had a relatively less positive view of the prospects of engineering work (clusters three and seven), those in the third under-producing cluster (number four) had a very positive view. Thus, the spatial pattern of differences in the use of construct 15 ('jobs with no prospects v jobs with good prospects') only gives limited support for the first hypothesis.

Other aspects

There were no significant differences according to cluster of residence in engineering students' use of construct 7 ('clean jobs v dirty jobs'). Engineering work was perceived as 'dirty' in all clusters. With respect to the technical nature of the work (construct 12), however, some variation was identified. Although in all areas engineering work was rated as very technical, this view was held most strongly in cluster four($\overline{X}$=1.5) and rather less strongly in cluster six ($\overline{X}$=2.0). Surprisingly, however, views of the extent to which engineering jobs involved working with with machines rather than with people (construct 2) did not differ in the same way. Students in all clusters generally perceived engineering work as involving more contact with machines than with people. However, those in clusters four and eight had a less extreme view of the amount of contact with machines than did their counterparts in other areas.

These variations between clusters in perceptions of the technical nature of engineering work and of the use of machines did not correspond to spatial patterns of over- and under-production for the engineering group.

Some consistencies have been identified in the pattern of differences between clusters in perceptions of engineering work. Nonetheless, analyses of variation in engineering students' perceptions of their own employment field according to area of residence provided little evidence to confirm the first hypothesis. Students living in the two clusters which over-produced engineering students (numbers five and six) did not exhibit more favourable perceptions of engineering work than did their counterparts in clusters which under-produced this group (three, four and seven). Moreover, members of cluster four tended to have the most positive views of engineering employment and those in cluster eight the least favourable perceptions. Yet cluster four under-produced engineering students, while cluster eight did not. Differences in attitudes identified according to area of residence did not correspond to the spatial patterns of over- and under-production for this group. Areal variations in attitudes cannot, therefore, account for differences between clusters in over- and under-production of the engineering group.

SECTION 2

Variations in Construction and Engineering Students' Perceptions of Each Other's Employment Fields

The second hypothesis proposed that construction students' attitudes towards engineering work would have been relatively more favourable in clusters in which engineering students were over-represented, than in clusters in which they were under-represented. Similarly, engineering students' attitudes towards construction work were predicted to have been more favourable in clusters in which construction students were over-represented, than in clusters in which they were under-represented.

1. Testing the Second Hypothesis

For all student groups, two constructs, one concerned with 'liking' for a particular job (construct 1) and one with job interest (construct 8) were found to be closely related to student participation in their chosen employment field. In addition, for each group a number of other constructs were related to the way they differentiated jobs in their own employment field from those in other fields. It would be expected that, if student attitudes did vary in accordance with the second hypothesis, differences would be identified in the way construction and engineering students evaluated jobs in each others' fields in terms of constructs closely related to perceptions of the employment field concerned.

(i) Differences between construction students' perceptions of engineering work according to cluster of residence

It was predicted that construction students would have a relatively more favourable view of engineering work in clusters one, five and six (areas which over-produced engineering students) than in clusters three, four and seven (areas of under-production for the engineering group). Comparisons of construction students' responses were possible using repertory grid methods for four of these clusters - two areas of over-production (clusters five and six) and two areas of under-production (three and seven).

Liking for engineering work

Construction students' use of construct 1 ('jobs I'd like v jobs I wouldn't like') to evaluate engineering work differed according to cluster of residence. In general, construction students were fairly indifferent towards engineering work, rating it near the mid-point of the scale. They neither liked nor disliked the idea of doing engineering jobs (see Table 9.9). However, respondents who lived in cluster five gave engineering work a fairly positive rating ($\overline{X}$=2.5). Construction students' views were significantly less favourable in cluster six ($\overline{X}$=3.2) than in other areas. The difference was most marked between construction students in cluster five and cluster six. Yet, these were both areas where engineering students were over-represented. The spatial pattern of differences identified in the use of construct 1 did not, therefore, support the second hypothesis.(11)

Job interest

In terms of job interest (construct 8), construction students in cluster five again expressed the most favourable evaluation of engineering work. In fact, they rated engineering work as marginally more interesting than construction work ($\overline{X}$=2.3 and $\overline{X}$=2.6 respectively). By contrast, respondents in one of the clusters which under-produced engineering students (cluster three) rated engineering work relatively less favourably, and construction work much more favourably, with respect to job interest($\overline{X}$=2.7 and $\overline{X}$=2.1 respectively). These differences are in accordance with those predicted by the second hypothesis.

However, in cluster seven (the other area which under-produced the engineering group), construction students rated engineering work marginally more positively than construction work in terms of interest. For those who lived in cluster six the pattern was reversed (see Table 9.9). Cluster six, however, had over-produced engineering students and it was predicted that perceptions of engineering work in this area would have been relatively more favourable than in cluster seven. Analysis of spatial variations in perceptions of job interest thus provide only partial confirmation of the second hypothesis.

Engineering students differentiated engineering work in terms of a variety of constructs, including difficulty (construct 18), the extent to which 'you use your mind a lot' (construct 17), the qualifications needed (construct 10) and the experience required (construct 3). Construction students' perceptions of engineering work in terms of these constructs were examined to establish whether their views differed according to area of residence (see Table 9.10).

Experience

The results revealed no significant differences according to cluster of residence in the amount of experience construction students thought engineering work required. In all clusters, engineering work was perceived as requiring more experience than construction work. The difference between the two fields was seen as greatest by students in clusters three and seven (both areas which over-produced the construction and under-produced the engineering group).

These findings accord with those presented in Chapter 8. There it was found that one of the factors related to construction work concerned perceptions of its less demanding nature in terms of experience, required.

Qualifications

With respect to qualifications, construction students perceived engineering work as requiring more qualifications than construction work, irrespective of cluster of residence. However, those in cluster seven perceived the qualifications required by engineering work as rather fewer than did their counterparts in cluster six. In terms of the extent to which 'you use your mind' (construct 17), engineering work was rated very highly in all areas. Nonetheless, construction students in cluster three had the most favourable rating ($\overline{X}$=1.8) and those in cluster seven a slightly less favourable view ($\overline{X}$=2.2). Both these clusters, however, under-produced engineering students. This pattern of differences between clusters in perception of engineering work did not support the predictions of the second hypothesis.

Job difficulty

However, for construct 18 ('difficult jobs v easy jobs') construction students in cluster five (which over-produced the engineering group) had the most favourable view, while those in an under-producing cluster (number seven) expressed a rather less positive view. These differences accord with the second hypothesis. Although in all areas construction students perceived construction work as rather less difficult than engineering work, those in cluster five rated both fields more highly in terms of difficulty than their counterparts in cluster seven.

Pay and prospects

With respect to pay (construct 11), there were no significant differences between clusters in construction students' evaluations of engineering work. In all areas engineering work was perceived as relatively well paid (though not better paid than construction work).

There were some difference between clusters in students' view of the prospects of engineering work (as measured by construct 15). Generally, this field was rated slightly more highly in terms of prospects than was construction work. Students in cluster five gave the most favourable rating to engineering work, and those in cluster six expressed the least positive view. Again, therefore, the spatial pattern of differences did not generally accord with that predicted by the second hypothesis.

Other aspects

The remaining constructs found to differentiate engineering jobs related to the sex-role, the technical nature of the work and the importance of apprenticeships. In terms of these constructs, few differences were apparent in the perceptions of engineering work held by students living in different areas (see Table 9.12).

Irrespective of cluster of residence, construction students were united in their perceptions of the general use of machines in engineering work and its technical nature. In all areas, engineering work was viewed as a 'male' preserve, as requiring apprenticeships, and generally as 'dirty' in character.

These findings support those noted in Section 1. No evidence was identified that students who lived in different areas varied in their evaluations of the sex-role and related attributes of different fields of employment.

In general, therefore, the results of spatial analyses of construction students' perceptions of engineering work did not accord with the predictions of the second hypothesis. There was limited evidence that construction students' attitudes towards engineering work were more favourable in one of the areas (cluster five) which over-produced engineering students, than in one of the areas which under-produced this group (cluster seven). This pattern did not hold, however, for the other over- and under-producing clusters.

(ii) Differences between engineering students' perceptions of construction work according to cluster of residence

According to the second hypothesis, it was predicted that engineering students would have had a relatively more favourable view of construction work in clusters two, three, six and seven (areas which over-produced construction students) than in clusters one, five and eight (which under-produced this group).

Comparisons by cluster of engineering students' views were conducted where student numbers were sufficient for analysis. Six of the eight clusters were involved. These included three of the over-producing clusters (numbers three, six and seven) and two of the under-producing clusters (five and eight). Cluster four (which neither over- nor under-produced construction students) contained sufficient students for the analysis.

It was predicted that any differences between clusters in engineering students' perceptions of construction work would be evident in their use of constructs closely related to the way construction students differentiated their own employment field (see Section 1). The ratings ascribed to construction work by engineering students living in different areas were compared for constructs in which differences were predicted to occur.

Liking for construction work

Analyses indicated that engineering students in clusters which over-produced the construction students, tended to rate construction work more favourably in terms of 'liking' than did their counterparts in clusters which under-produced this group (see Table 9.13). This is in line with the predictions of the second hypothesis. The most favourable assessment of construction work was given by engineering students from cluster six ($\overline{X}$=2.6) and the least favourable in cluster four ($\overline{X}$=3.5). Although cluster six tended to over-produce the construction group, cluster four neither over- nor under- produced members of this group.

Job interest

For job interest (the construct most closely related to 'liking' jobs in a particular field), students in clusters eight and four expressed a less favourable view of construction work than those in other areas. Students in these clusters also had a less positive view of construction work in terms of construct 1 (noted above). Neither of these areas over-produced the construction group.

In contrast, construction work was rated most positively by engineering students in cluster seven (an area which did over-produce construction students), followed by cluster six. However, students in cluster three did not have a particularly favourable perception of the interest of construction work, although this cluster had also over-produced members of the construction group.

The pattern of differences in perceptions of construction work between engineering students living in different areas in terms of 'interest' and 'liking' provides partial support for the second hypothesis. Members of cluster eight (an under-producing area) did, as predicted, hold less positive views of construction work than their counterparts in areas where the construction group were over-represented (clusters three, six and seven). Engineering students in cluster six had very positive perceptions of construction work. This area over-produced both construction and engineering students. Cluster six contained the largest proportion of males in skilled manual work and a very high proportion of the population lived in council housing. In such a traditional stable, working-class area it is, perhaps, not surprising that perception of these two types of skilled manual work were, in general, favourable.(12)

Amongst the constructs used to differeniate construction work were number 2 ('jobs mainly working with machines v jobs mainly working with people'), 4 ('office work v manual work'), 5 ('women's jobs v men's jobs') and 7 ('clean jobs v dirty jobs'). Engineering students' evaluations of construction work in terms of these constructs were compared according to cluster of residence (see Table 9.14).

Generally, there were few differences between clusters in the way engineering students used these constructs. In all clusters, construction work was rated as involving less work with machines than engineering work (construct 2). In most clusters, construction work was rated near the mid-point of the scale (involving work both with people and with machines), though in cluster five it was rated as involving more work with machines ($\overline{X}$=2.8) than was the case in clusters four and eight ($\overline{X}$=3.3 in both clusters).

Sex-stereotyping

There were no significant differences in perceptions of construction work in terms of construct 4 ('office work v manual work'). In all areas it was rated very highly on the 'manual' pole of this construct. Moreover, engineering students in each cluster rated construction work as more 'manual' in character than engineering work.

Construction work was also rated highly on the 'mainly men's jobs' pole of construct 5 and no differences were identified according to cluster of residence amongst engineering students' views. Although construction work was perceived as 'dirty' in character (construct 7), engineering students in cluster seven and cluster eight (areas with a high concentration of males in semi- or unskilled manual work) perceived construction work as relatively less dirty than their counterparts in other areas. The difference in views was most marked between cluster eight ($\overline{X}$=3.6) and cluster four ($\overline{X}$=4.4). This finding suggests that views about the 'cleanliness' of different jobs were related to the social class composition of an area. Those in predominantly disadvantaged working-class clusters used this construct less extremely than those in more socially mixed areas such as cluster four. Although not in line with the second hypothesis, there is, nonetheless, some evidence of area variations in some aspects of students' attitudes.

Qualifications

Construction work was also differentiated in terms of construct 10 ('jobs which need few qualifications v jobs which need many'), construct 18 ('difficult jobs v easy jobs') and construct 16 ('high class jobs v working-class jobs'). Engineering students in cluster four and those in cluster eight rated construction work as requiring relatively fewer qualifications than their counterparts in other areas (see Table 9.14). These differences were significant. In all areas, engineering work was perceived more favourably than construction work (in terms of qualifications needed). The difference between the two fields was seen to be most marked by students in clusters four and eight.

Job difficulty

In contrast, engineering students' perceptions of the difficulty of construction work varied little between the clusters. In all areas it was rated as less difficult than engineering work, though the difference between the two fields was seen to be smallest in cluster six (the traditional working-class area) and greatest in cluster four (a non-manual area with poor housing conditions).

Social class

Similarly, there were few differences in views on the social class ranking of construction work. In all clusters, construction work was rated as more 'working-class' than engineering work. However, students in cluster four rated construction work as slightly more working-class than their counterparts in cluster seven ($\overline{X}$=4.1 and 3.7 respectively). In addition, students in cluster four differentiated construction and engineering work much more sharply in terms of social class than their counterparts in other areas. (The mean score

given to construction work was 4.1, whereas engineering work scored 3.2, the higher score indicating a belief that construction work is more working-class.) It appears that in areas characterised by a mixed social class composition (such as cluster four), there was a tendency to distinguish jobs more extremely in terms of their social status.

These differences in perceptions did not, however, relate to the patterns of over- or under-production of construction students (described in Chapter 6). Nor did they provide support for the second hypothesis.

Social aspects

Non-significant, but slight, spatial variations in perceptions of the 'friendliness' of the working atmosphere of construction work were identified. Engineering students in two clusters which over-produced construction students (numbers three and seven), rated construction work more positively than their counterparts in other clusters. Nonetheless, in all areas both construction and engineering work were perceived as having friendly working atmospheres by engineering students, and in no cluster was either field rated as markedly different from the other.

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Apprenticeships

Students in clusters three and seven were also more likely to see construction work as always requiring an apprenticeship than were students in other areas. The difference was most marked between cluster three ($\overline{X}$=1.3), which over-produced construction students, and cluster eight ($\overline{X}$=1.8), an area which under-produced the construction group.

These results indicate that some differences between areas in engineering students' perceptions of construction work did exist. These differences were identified in the use of the more subjective constructs but not in those related to the sex-role attributed to construction work. Only limited support was provided, however, for the second hypothesis as a result of these analyses. Engineering students in one of the clusters which over-produced the construction group (number seven) generally exhibited more favourable views of construction work than their counterparts in cluster eight (which had over-produced the engineering group). This accords with the predictions of the second hypothesis. For clusters three and five, however, the results of spatial analysis did not support the second hypothesis.

Therefore, although in some clusters, differences in perceptions of construction work in terms of certain constructs corresponded to patterns of under- or over-production of construction students, in other areas they did not do so. From the evidence presented, it is not possible to conclude that more or less favourable attitudes were consistently related to patterns of student over- or under-production. This suggests that the 'area' effect, which appeared to have influenced student under- and over-production in particular clusters, was unlikely to have operated through area differences in attitudes.

CONCLUSIONS

Generally, spatial analyses of variations in students' perceptions of their own employment fields provide only limited support for the first and for the second hypotheses. Although some significant differences were identified between clusters in the way students evaluated jobs in their own and in other fields, these differences were not always related to the patterns of student over- and under-production noted in Chapters 5 and 6.

In this study, evidence of variations in over- and under-production of particular student groups has been identified (see Chapters 5 and 6). These findings are suggestive of an 'area' effect operating to promote or depress participation in certain types of vocational training in particular neighbourhoods. However, this 'area' effect does not appear to have operated through an impact upon the attitudes of the local population. This finding is by contrast to the ways in which it has generally been suggested that 'area', 'neighbourhood' or 'community' influences act (see Rogoff, 1965; Eggleston, 1974; Herbert, 1976; Timms, 1978). Although attitudes were closely related to participation in particular kinds of vocational training, they were not, in general, associated with spatial variations in the distribution of particular student groups.

Of three studies which have attempted to establish whether a link between attitudes and area characteristics existed, two found that parental attitudes towards education were related to social class composition (see Robson 1969; Panton, 1982). Moulden and Bradford's (1984) work, in contrast, examined pupils' attitudes to education and occupational aspirations. Although residential environment was found to be a significantly related to pupil attainment, this effect was not found to operate through attitudes. Moreover, residential environment was not found to be related to occupational aspirations.

The findings from the present study likewise suggest that area of residence was related to participation in particular kinds of vocational training (indicating the possible operation of an 'area' effect). However, the results of analyses undertaken in this chapter suggest that this proposed 'area' effect did not operate through students' attitudes. It is, of course, possible that variations between clusters in parental or peer group attitudes towards different kinds of employment may have been responsible for the spatial patterns of student under- or over- production. This hypothesis cannot be tested, given the nature of the data collected in this study. It seems unlikely, however, that any such 'area' effects, related to parents' or peer group attitudes, would have affected students' choices of vocational training without having had an identifiable effect on students' own attitudes.

The results of the spatial analysis of students' attitudes are of importance. It has been demonstrated (in Chapter 8) that attitudes were closely related to students' vocational training choices. Nonetheless, it appears that 'area' effects on participation in different types of course did not operate primarily through this factor. Although some variations between clusters in students' attitudes towards particular kinds of employment were identified, these variations were not consistently related to differences between clusters in student over- or under-production. This conclusion goes against the mechanisms by which it has been suggested (in past studies) that 'area' or 'neighbourhood' effects were likely to act. It appears, therefefore, that other factors must account for the spatial differences in participation in vocational training identified in this study. A few possible explanations for between cluster differences in the under- and over- production of the three student groups will be considered in the concluding section of the thesis. Firstly, however, the results of explanatory analyses designed to establish the relative importance of the different factors identified as of potential importance in explaining student entry into particular types of vocational training are presented.

NOTES

Chapter 9

(1) Clusters of student over- and under-production were identified in Chapter 6. Two methods were used for this purpose (regression and chi-square analysis). An examination of the mean of standardised residuals from regression analysis for wards comprising each cluster indicated which had over- or under-produced a particular student group. Chi-square analysis was used to consider the extent of over- or under-production of one student group relative to another within each cluster. For nearly all clusters the results of the two methods were in general agreement. In no cluster did the two methods give a conflicting result (see Table 6.8).

(2) Using analysis of variance, relationships between cluster of residence and attitudes to employment were examined for all students on two of the constructs (numbers 1 and 8), while including the student group as an additional factor. The number of students involved in the analysis of variance was much larger than in the repertory grid analysis (because student group was controlled for statistically). This strategy meant that all of the eight clusters were included in the analysis of variance. Constructs 1 and 8 were examined because they were most closely related to entry into each of the three types of training considered in this study. The result of theses additional analyses indicated that cluster of residence was not significantly related to attitudes, when account was taken of students' course. Moreover, although there was some evidence of interactions between the effects of course and of cluster of residence upon students' attitudes, these were not significant.

(3) This pattern is in line with those identified in comparing the three student groups' responses in Chapter 8. It reflects the marked sex differences in attitudes towards different employment fields.

(4) This finding is in line with those of the aspatial analysis reported in Chapter 8.

(5) These findings indicate that the strong link between attitudes and training choice did not depend directly upon areas of residence. The consistent pattern of variations between the three groups (irrespective of area of residence) in evaluations of the three employment fields suggest that the link between attitudes and training entry was probably direct and not influenced to any great extent by residential area. eight

clusters. These results are described in a later section of this chapter.

(6) Sewell and Orenstein's (1966) study is discussed in in Chapter 4.

(7) See Chapter 6 for further details of the characteristics of the different ward groups which comprised each cluster.

(8) The results of analyses of differences in attitudes according to social class indicated that, amongst the commercial group, those whose fathers were in semi- or unskilled manual work had more positive perceptions of commercial work than those from skilled manual or non-manual backgrounds (see Chapter 8). For those of lower social status (in terms of occupational origins) the sorts of commercial work considered in this study may have represented an upward social movement. Similarly, in areas dominated by such groups, attitudes towards commercial work were apparently more positive.

(9) As noted previously, in some clusters construction student numbers were insufficient for analysis using the SERIES program.

(10) Construct 8 (which measured job interest) was the construct which covaried most closely with 'liking' for jobs for all student groups.

(11) Interestingly, construction students in cluster five also had the most positive views of construction work (as measured by construct 1) while those in cluster six had the least favourable view (X=2.0 and X=2.8 respectively). These findings indicate that construction students in cluster six had a less favourable view of both construction and engineering work. They still preferred construction to engineering work, however. In contrast, their counterparts in cluster five had a favourable view of both fields, but rated construction work most positively.

(12) Engineers' perceptions of engineering work were also very favourable in cluster six.

CHAPTER 10

EXPLAINING PARTICIPATION IN COMMERCIAL, CONSTRUCTION AND ENGINEERING TRAINING

INTRODUCTION

The results of the preceding ecological, structural and attitudinal investigations of participation in particular kinds of vocational training and the characteristics of students and of their home areas, have revealed a number of significant relationships. Certain factors were found to differentiate the three student groups and appeared to play a part in the explanation of vocational training choices. These factors are summarised in Table 10.1.

From the ecological analyses it was found that particular student groups were over-produced in some ward clusters and under-produced in others. These results suggest that 'neighbourhood' or 'area' effects could have had an impact upon participation in particular types of training.

Analyses of socio-structural factors have also demonstrated that sex was closely related to entry into commercial, construction and engineering training. Parents' jobs were also found to have influenced students' choices, as did subjects studied at school.(1)

From the attitudinal investigation it was clear that students' attitudes towards the three employment fields were strongly related to entry into particular kinds of vocational training.

It seemed likely that these various significant factors would themselves be related. In the first section of this chapter, therefore, a brief summary is presented of the results of analyses designed to explore the interrelationships amongst potentially important factors. In the second section, the study considers the extent to which it is possible to account (in a statistical sense) for student participation in particular kinds of vocational training by means of factors identified as potentially influential, and to establish their relative importance.(2)

SECTION 1

Relationships Amongst Explanatory Variables

It has been demonstrated already that 'liking' for, and interest in, the three employment fields were closely related to sex, with females having favourable, and males unfavourable, perceptions of commercial work. Conversely, males had very positive views of engineering and construction work, whereas females did not.(3)

Correlation and chi-square analysis indicated that sex was significantly related to the possession of qualifications in subjects related to the three employment fields.(4) Males were much more likely to have studied construction and engineering subjects at school than were females. In contrast, males were highly unlikely to have studied commercial subjects at school (see Table 10.2).

Sex was weakly, but significantly, associated with the likelihood that a student had a parent/sibling working in a particular employment field. Males were more likely than females to have had a parent/sibling working in the construction or engineering industries, and less likely to have had one engaged in commercial employment (see Table 10.3).

In order to investigate the link between sex and area of residence, the eight clusters of 'like' wards were classified on the basis of student over- or under-production. Three variables were created, one related to over- and under-production of commercial students, one to over- and under-production of construction students, and one to the over- and under-production of the engineering group.(5) Female students were found to have been under-represented in clusters which over-produced the construction group ($r=-0.21$, $p<0.0001$). This finding reflects the relationships between commercial and construction student distributions noted in Chapter 5. As expected, female students were over-represented in clusters which had over-produced the commercial group ($r=0.10$, $p<0.05$). Sex was not, however, related to residence in clusters which had over- or under-produced engineering students.

Analysis of the interrelationships between sex and other factors related to participation in particular types of vocational training, indicated that sex was most closely related to variations in attitudes towards the three employment fields. Attitudes were themselves very strongly associated with participation in vocational training. These findings support the view that the sex-stereotyping of attitudes towards employment plays a major part in explaining sex differences in participation in different kinds of vocational training.

2. Subjects Studied at School and Other Factors

As noted previously, the sex of students was significantly related to the vocationally linked subjects they had studied at school. There was also a significant association between subjects studied and attitudes towards the three employment fields. Students who had studied commercial subjects at school rated commercial work more favourably in terms of 'liking' and interest than those who had not studied such subjects (see Table 10.4). Similarly, those who had studied construction subjects rated construction work more favourably with respect to 'liking' and job interest than did other students. Moreover, those who had studied engineering subjects rated engineering work more positively in terms of 'liking' and interest than those who had not done so.

However, there were also weak, but significant associations between studying engineering subjects and 'liking' for, and interest in, construction work ($r=0.24$, $p<0.0001$ and $r=0.11$, $p<0.05$, respectively), and between studying construction subjects and 'liking' for engineering employment ($r=0.10$, $p<0.05$).

These results indicate that more favourable attitudes towards particular employment fields were, to some extent, related to the sorts of subjects undertaken at school. More favourable attitudes towards particular employment fields may have influenced students' subject choices at school. Alternatively, those who had taken particular vocationally related subjects may have developed more positive attitudes as a result of their school experiences, and then chosen to enter training in a similar field.

Subjects studied at school were also significantly related to parents'/siblings' employment fields. Correlation and chi-square analysis indicated that those who had studied subjects relevant to construction jobs while at school were more likely to have had a parent/sibling working in the construction industry than were other students. The association was, however, quite weak ($r=0.10$, $p<0.05$). In contrast, students who had taken engineering subjects at school were more likely to have had a parent/sibling in the engineering industry ($r=0.13$, $p<0.01$) than were others, and less likely to have had one in construction work ($r=-0.11$, $p<0.05$). Finally, those who had studied commercial subjects were more likely to have had a parent/sibling in commercial work ($r=0.12$, $p<0.01$) than those who had not.

Although the links between the study of vocationally relevant subjects and the employment fields of parents/siblings were quite weak, the findings were consistent across student groups. It seems, therefore, that the sorts of jobs held by other members of the family may have influenced students' school subject choices. This influence may have been direct, through the advice of parents/siblings, or indirect, through the impact of the example of other family members on a student's own interests and job ambitions. These ambitions could, in turn, have affected choices of school subjects.

There was little evidence of a relationship between cluster of residence and the study of particular school subjects. The study of subjects related to engineering employment was weakly negatively correlated with residence in those clusters which had over-produced the commercial group ($r=-0.11$, $p<0.05$), while the study of commercial subjects was weakly positively related to residence in clusters which had over-produced the commercial group. However, there were no relationships between the study of particular vocationally related subjects at school and residence in clusters which over- or under-produced the construction or engineering groups.

3. Parents'/Siblings' Jobs and Other Factors

Associations between sex and parents'/siblings' jobs, and between subjects studied at school and parents'/siblings' jobs have already been described. The factor of parents'/siblings' jobs was also found to be related to students' attitudes towards the three employment fields. (The relationships were, however, weaker than those noted between sex or subjects studied at school and attitudes.) Thus, those who had a parent/sibling in engineering employment gave engineering jobs a more favourable rating in terms of 'liking' than was the case for other students. Moreover, students with a parent/sibling engaged in construction work rated construction work more favourably than did other students (see Table 10.5). Those with a parent/sibling in commercial work expressed a more favourable view of commercial jobs than others.

These findings indicate that family traditions of employment may have had an impact upon training choices partly through their influence upon students' attitudes towards particular kinds of employment.

There were no statistically significant associations between cluster of residence and the nature of parents'/siblings' jobs.

4. Cluster of Residence and Other Factors

A number of significant, though weak, relationships between cluster of residence and other potentially influential factors have already been described. In addition, analyses identified a link between cluster of residence and attitudes towards construction employment. Thus, overall, students' perceptions of construction work in terms of 'liking' and job interest were more favourable in clusters which had over-produced, than in those which had under-produced this group ($r=0.21$, $p<0.0001$ and $r=-0.17$, $p<0.01$ respectively).

Conversely, attitudes towards commercial work were slightly less favourable in clusters which had over- rather than under-produced the construction group ($r=-0.21$, $p<0.0001$). In areas which over-produced commercial students, however, attitudes towards construction work tended to be less favourable ($r=0.11$, $p<0.05$). These results reflect the relationships between patterns of over- and under-production of the commercial and construction groups within inner London (see Chapters 5 and 6).(6) There were no significant associations between over- or under-production of the engineering group and other factors.

5. Attitudes Towards Employment and Other Factors

A number of associations between attitudes towards the three fields of employment and other factors have already been outlined. Partial correlation analysis was used to establish whether the association between attitudes and participation in different kinds of vocational training was reduced, when account was taken of these other interrelationships. This was necessary because of the strong link between attitudes and vocational training choices, and the relationships between attitudes and other significant factors.

The partial correlation between 'liking' for commercial work and entry into commercial training was calculated, controlling for the impact of commercial subjects studied at school and parents/siblings in commercial work. The original zero-order correlation between 'liking' for commercial work and entry into commercial training ($r=0.86$) was much reduced when account was taken of these two factors. Nonetheless, the link remained strong and highly significant ($r_{ij.kl}=0.40$, $p<0.0001$).(7) Similarly, the correlation between entry into a construction course and 'liking' construction work ($r=0.47$, $p<0.0001$), became weaker ($r_{ij.kl}=0.40$, $p<0.0001$).(8) The correlation between entry into engineering training and 'liking' for engineering employment ($r=0.57$) was also reduced when account was taken of parents'/siblings' jobs and subjects studied at school ($r_{ij.kl}=0.49$, $p<0.0001$).(9)

Thus, although the factors of subjects studied at school and parents'/elder siblings' jobs were both related to students' attitudes towards employment, they did not fully account for the strong link between attitudes and vocational training choices.

Sex was very closely related to attitudes and to vocational training choices. When this factor was also controlled, however, the results showed that the link between 'liking' for commercial work and entry into a commercial course remained ($r_{ij.klm}=0.44$, $p<0.001$).(10) Similarly, 'liking' for construction work was still highly significantly linked to entry into construction training ($r_{ij.klm}=0.24$, $p<0.001$), and 'liking' for engineering work remained correlated with entry into engineering training ($r_{ij.klm}=0.33$, $p<0.001$).(11)

When account was taken of sex, subjects studied and parents'/siblings' jobs, it was also found that 'liking' for engineering work was negatively related to entry into construction training (rij.klm=-0.28, p<0.001) and 'liking' for construction work negatively related to entry into engineering courses (rij.klm=-0.14, p<0.05).(12) These results support the conclusion that students' attitudes towards different kinds of employment were strongly related to vocational training choices.

SECTION 2

Explanatory Analyses

The preceding analyses have demonstrated that many of the factors identified as having had an impact upon participation in particular kinds of vocational training were, themselves, interrelated. A method was required which could take into account these links, and enable the separation of the effects of different factors. In this way their relative importance could be ascertained.

Methods of loglinear analysis were adopted to explain participation in the particular kinds of vocational training of interest to the present study. Logit models were chosen because they were particularly suited to the characteristics of the data and could be used to predict a two category dependent variable (in this case entry or non-entry into a specific type of training) by a number of categorical independent factors and selected covariates (examples of the use of such models in the explanation of youth unemployment have been provided by Breen, 1984).

In this study, the independent factors were: sex; whether or not students had studied vocationally related subjects at school; whether or not students had a parent/sibling working in their chosen field; and cluster of residence. Attitude towards a particular employment field, as measured by construct 1 ('jobs I'd like v jobs I wouldn't like'), was used as a covariate.(13) A variety of models was tested to establish how well particular combinations of variables fitted the data (these are described in Appendix 10.1.)

1. Explaining Participation in Commercial Training

The first model (A) used to predict entry into commercial, rather than construction or engineering training, included all the variables indicated by the preceding analyses to be of potential importance in accounting for entry into commercial courses. These were: sex of student; whether their cluster of residence had over- or under-produced the commercial group; whether they had studied relevant vocational subjects at school; whether they had a parent/sibling in commercial work; and 'liking' for commercial jobs.

The results indicate a very strong association between this set of predictor variables and entry into commercial training. The model provides a reduction in error variance of between 83 and 90 per cent. The chi-square statistics indicate an almost perfect fit between the model and the data.

An examination of the Z-values for the estimates of the parameters of the different independent variables showed that only having a parent/sibling in commercial work made a separate and statistically significant contribution to students' likelihood of entering commercial training. This characteristic increased the likelihood of entry by a factor of five to one, when account was taken of the influences of other variables (see Appendix 10.2). 'Liking' for commercial work was the only other factor which neared statistical significance (Z=1.73).

The factor of student sex did not make a separate significant contribution to the probability of entry into commercial training. This finding suggests that the relationship between sex and entry into commercial training was indirect and operated through the medium of other factors included in the analysis (supporting the conclusions reached in Chapters 7 and 8).

When sex was excluded from the set of predictor variables (Model B), the results indicate that a very good fit still existed between the model and entry into commmercial training. The measures of association were, however, much reduced (see Appendix 10.1). This was because of the absence of females on engineering and construction courses amongst the repertory grid sample, and the virtual absence of males on commercial courses. Thus, although sex did not make a separate contribution to the explanation of entry into commercial training, it had a substantial influence on the measures of association.

In this analysis two factors made a separate and significant contribution to the explanation of participation in commercial training. These were the study of commercial subjects at school and having a parent/sibling in commercial employment. The removal of sex from the model increased the importance of subjects studied at school. (As demonstrated earlier, sex was closely related to the sorts of subjects studied at school.) The study of commercial subjects increased the chances of entry into commercial training by a factor of eight to one, while having a parent/sibling in commercial work increased chances by a ratio of 3.5 to one (see Appendix 10.2).

In Model C both sex and attitudes to commercial work were excluded. Of the three factors used to predict entry, two (subjects studied at school and parents'/siblings' jobs), were important. Again, the chi-square test indicated that the model gave a good fit.

Model D, the final model tested, reintroduced the measure 'liking' for commercial work. This strategy was adopted because the attitude measure had neared significance in Model A, and attitudes was one of the mechanisms by which sex appeared to have affected training choices. The variable relating to cluster of residence was removed, since it had not been found important in any of the previous models. The result was an improvement in the goodness-of-fit to the data, and a slight increase in the measures of association (see Appendix 10.1). Again, however, only the factors related to study of commercial subjects at school and having a parent/sibling in commercial work were found to make a separate and significant contribution to the explanation of entry. The attitude measure, though found to near significance in this model, did not make a separate contribution (earlier analyses have shown a significant link between attitudes and subjects studied at school and parents'/siblings' jobs).

Although the model (A) which included sex in the set of predictor variables showed the highest measures of association, it did not add to the explanation of how sex differences in participation operated. The present analysis suggests that the influence of sex operated partly through the sorts of vocational subjects chosen at school, but this does not provide a complete explanation. There was also strong evidence of a relationship between attitudes and sex (see Section 1). However, when account was taken of the influence of other factors (themselves linked with attitudes) 'liking' for commercial work did not have a separate and significant impact. The measure related to parents'/siblings' jobs, in contrast, did make a separate and significant contribution in all the models considered.

These results indicate that the choice of vocationally relevant subjects at school, and parents'/siblings' occupations, help to explain entry into commercial training. Nonetheless the reduction of error variance achieved when sex was not included in the models was only within the range of 14 to 20 per cent. (This is because the majority of commercial students had not studied relevant subjects and did not have a parent/sibling in commercial work.) Other factors, not included in the analysis (such as careers advice, sources of information, the example of friends, and knowledge of the availability of commercial type jobs) probably also played a part in determining individual students' commercial training choices.

2. Explaining Participation in Construction Training

The first model (Model E) used to account for entry into construction training included all the variables of potential importance identified in the preceding analyses. These were: sex; whether a student lived in a cluster which had over- or under-produced the construction group; whether subjects relevant for construction work had been studied at school; whether a parents/sibling worked in the construction industry; and 'liking' for construction work.

As with the analysis of commercial training, the results of chi-square tests indicated an extremely good fit between the model and the data. The measures of association showed a reduction in the error variance by 28 to 29 per cent. This figure is much lower than that achieved for the equivalent commercial training analysis, due to the differing impact of sex. No females in the repertory grid sample had entered either construction or engineering training. Therefore, the factor of sex greatly increased the measures of association in the analysis of entry into commercial courses. Although all construction students were male, this was also the case for the engineering sample. For this reason the inclusion of sex in the model did not give as high measures of association as was obtained in the equivalent analysis of commercial training.

The results from Model E indicated that, when account was taken of the impact of other factors, students who had a parent/sibling in construction work were nearly four times as likely to have entered construction training as those who had not (see Appendix 10.2). The study of subjects relevant to construction work also increased the probability of entry into construction courses by a factor of nearly three to one. Attitude towards construction work also made a separate and statically significant contribution, improving the likelihood of entry by 2.6 to one.

Sex of students was not found to have made a separate, significant contribution in this model (Z=-0.44). However, the factor related to cluster of residence neared significance.

A further model (F), excluding sex, was tested. The results from this analysis also indicated an extremely good fit to the data, though the measures of association were reduced (in line with the results from the analysis of commercial training entry). In this analysis, the significance of subjects studied at school was increased. (As noted earlier, the study of subjects relevant for construction work was closely associated with sex of students.) In this model, students who had taken relevant subjects for construction work were four times more likely to have entered construction training than were those who had not. Almost equal importance was attributed to subjects studied at school as to parents'/siblings' jobs.

Cluster of residence was also of significance. Students who lived in a cluster which had over-produced the construction group had an increased probability of entry into construction courses by a ratio of 1.6 to one. This finding indicates that cluster of residence was a factor of some importance, though its impact was much weaker than that attributed to subjects studied at school or to parents'/siblings' jobs. As noted in Section 1, there was a relationship between sex and cluster of residence, a finding confirmed by comparing these results with those of Model E. When sex was not included in the model, the effects of cluster of residence reached statistical significance.

The importance of attitudes towards construction work was reduced in Model F when sex was excluded. This probably reflects the close links between course entered, attitudes and sex of students (discussed in Chapter 8).

When attitudes and sex were both excluded a good fit between the model (G) and the data was still achieved. In this model, it was found that all of the three factors included - parents'/siblings' jobs, cluster of residence and sujects studied at school - remained significant.

One further model was tested (Model H) using data only for the construction and engineering groups. This model was used to ascertain the extent to which it was possible to account for the different training choices of sponsored apprentices.

The results indicated an extremely good fit to the data, and the measures of association revealed a reduction in error variance by between 11 and 18 per cent. The most important variable was parents'/siblings' jobs. Those who had a parent/sibling in construction work were four times as likely to have entered construction training as those without a family member in this field. The study at school of subjects relevant for construction jobs increased the probability of entry by a ratio of 2.8 to one (see Appendix 10.2). Positive attitudes towards construction employment were also of importance, increasing the chances of entry by 2.4 to one.

3. Explaining Participation in Engineering Training

The initial model (I) used to account for engineering training entry by means of all the potentially important factors achieved a very good fit to the data (see Appendix 10.1). The measures of association indicate a reduction in error variance by between 28 to 31 per cent.

The most highly significant factor was the study of subjects relevant to engineering work while at school. This increased the likelihood of entry into an engineering training by four to one. Also of importance was the factor related to parents'/siblings' jobs. This increased the likelihood of entry into engineering training by a ratio of nearly three to one.

None of the three factors (sex, attitude towards engineering work or cluster of residence) made a separate significant contribution to the explanation of entry into engineering training courses, when account was taken of the influence of other predictor variables.

The removal of the variable sex (Model J) also achieved a very good fit to the data. Nonetheless, the measures of association were reduced (see Appendix 10.1). This finding is in line with results from the investigation of entry into commercial and of entry into construction training. Again, when the sex was ommited, the importance attributed to subjects studied at school was increased (as noticed earlier, the study of subjects related to engineering work was closely associated with sex). The probability of entry into engineering, rather than commercial or construction, training was increased by a ratio of 5.8 to one for students who had studied subjects related to engineering work while at school (see Appendix 10.2). The contribution of the factor related to parents'/siblings' jobs remained similar to that in Model I (increasing the chances of entry by 3.3 to one). Neither cluster of residence nor attitudes made a separate significant contribution.

The removal of cluster of residence (Model K), marginally improved the measures of association between the predictor set and engineering entry, but adversly affected the chi-square tests of goodness-of-fit to the data.

As was done in the analysis of construction training entry, a final model (L) was tested using data only for the construction and engineering groups, to examine apprenticeship entry in isolation. This model achieved a very good fit to the data, though the measures of association showed that the reduction of error variance achieved was smaller than the equivalent figures for the explanation of entry into construction training (between 6 and 11 per cent). This finding indicates that entry into engineering training was less satisfactorily accounted for by the set of predictor variables than was entry into construction training.

These results again demonstrate that, all other things being equal, students who had studied subjects relevant for engineering jobs while at school were four times as likely to have entered an engineering course than those who had not. However, the variable related to having a parent/sibling in an engineering job no longer reached statistical significance. Neither cluster of residence nor 'liking' for engineering work had a separate and significant impact in this analysis.

These results are in contrast to those found for the explanation of apprentices entry into construction courses, where parents'/siblings' jobs, subjects studied at school and attitudes were important.

CONCLUSIONS

Analyses of the interrelationships amongst factors of potential importance in determining participation in particular kinds of low-level vocational training demonstrate that, at the level of the individual student, both sex and attitudes towards the three employment fields were highly related to each other, and to the remaining factors considered.

The investigation of individual students' training choices (by means of explanatory logit modelling) indicate that, in combination, the set of potentially important variables gave quite a substantial reduction in error variance when predicting entry into a particular course. The inclusion of sex in the explanatory models improved their fit to the data. However, because the factor of sex presumably operated through the mechanism of other factors, models were also tested which excluded this factor.

For the prediction of entry into commercial courses only two variables were consistently found to be of significance. These were the study of relevant subjects at school and having had a parent/sibling in commercial work. In terms of the theories of occupational choice presented in Chapter 7, these results suggest that both the 'channellising in school' and the 'parents' jobs' models were important. The first operated apparently through the mechanisms of subjects studied at school and, in the case of sponsored students through employer selectivity. The second operated through family traditions of employment and sex-role models. These results emphasise the significance of socio-structural factors as determinants of vocational training choices, and are in broad agreement with the findings reported by Douglas et al (1968), Weir and Nolan (1978), and Ryrie (1983) when considering factors affecting school leavers' occupational decisions in the transition from school to work.

The majority of students who had entered commercial training, however, did not have a parent/sibling in commercial work and had not studied vocationally related subjects at school. Although these factors were undoubtedly of importance, therefore, they only provide a partial explanation of commmercial choices. Other factors, such as sources of information, the nature of careers guidance, availability of commercial jobs within the study area, and narrow range of alternative occupations available to female school leavers with average qualifications, also probably played a part in determing the commercial training choices of sudents.

Sex-stereotyping of attitudes towards employment fields traditionally entered by a particular sex , and the choice of particular subjects at school, helped to account for the marked sex differences in the take-up of commercial, construction and engineering courses identified in this study.

Explanatory analysis of entry into construction training provided evidence that the two factors found to have had a significant impact upon commercial choices were also important for the construction field (namely the study of vocationally relevant subjects at school and having a parent/sibling in the chosen employment field). These analyses again confirm the importance of socio-structural factors.

However, although significant, the study of subjects relevant for construction work was less important than parents'/siblings' jobs in the explanation of entry into construction courses. It appears that family traditions of employment were especially important for students who entered construction training. This may reflect the importance of fathers/elder brothers as role models and emphasises the importance of influences related to home background operating through an impact on attitudes and aspirations (see Douglas et al, 1968; Weir & Nolan, 1978).

Alternatively, obtaining an apprenticeship in the construction industry may have been more difficult for those who did not have a family member in the industry. Thus, it is possible that construction employers were more impressed by applicants with family contacts than by the possession of related qualifications (see Ashton & Maguire, 1980; IMS, 1981; Lee & Wrench, 1981).

It is also possible that those who had a parent/sibling working in the construction industry were simply more likely to have heard about vacancies by word-of-mouth than were other school leavers. For this reason such potential apprentices may have had an advantage in comparison with other school leavers.

Analysis of construction training entry also indicated that positive attitudes towards construction employment had a significant impact on training choices. Moreover, there was an indication that cluster of residence also had an impact. Students who lived in clusters which had over-produced the construction group had a greater chance of entering a construction course than those who lived in areas which had under-produced this group. This may reflect the importance of neighbourhood traditions of employment and the example of local friends and contemporaries. Nonetheless, such 'area' effects were weaker than those attributed to the socio-structural factors.

In line with the results of analysis of commercial and of construction training entry, the investigation of engineering entry also found that both subjects studied at school and parents'/siblings' jobs had had a separate and significant impact upon entry into this field.

The effect of studying subjects related to engineering work while at school was stronger than that due to parents'/siblings' jobs. This finding is in contrast to that noted for construction training entry. Although of significance in some models, family traditions of employment were not as important as the study of relevant school subjects for the explanation of entry into engineering courses. This result suggests that, in comparison with their construction counterparts, engineering employers were more likely to have relied upon students' particular qualifications when taking on apprentices.

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Nonetheless, as with entry into commercial training, the majority of construction and engineering students had not studied subjects of direct vocational relevance while at school, and did not have a parent/sibling working in their chosen field. Therefore, although these two socio-structural factors were important in explaining students' particular vocational training choices, other factors not considered in these analyses, such as sources and type of careers advice and guidance, the personal qualities sought by employers (for example, motivation, reliability, self-presentation), and knowledge and perceptions of alternative occupational/training opportunities, are also likely to have been influential.

Overall, these findings indicate that factors related to the home environment (specifically the occupations of significant others), and those related to subjects studied at school had a considerably greater impact upon students' particular vocational training choices than did neighbourhood environment. Thus, despite the findings of significant spatial variations in student over- and under-production in the ecological analyses, when vocational training choices were considered at the level of the individual student, and account was taken of the impact of socio-structual factors, the apparent importance of home area was very limited. Living in a cluster which had over- or under-produced a particular student group did not have a separate significant effect in the explanation of entry into two of the three vocational fields included in this study. This finding confirms Johnston's (1978) argument that to study the impact of 'area' effects adequately, it is necessary to consider these effects in relation to behaviour at the level of the individual.

The importance of these findings for school practice is considerable. The newer methods of recording and assessing different kinds of achievement, and the use of student profiles, may prove valuable in helping students in the difficult task of choosing an area of work. In particular, the use of profiles may benefit less-academic students who perform poorly in public examinations. At present there is little formal recognition of such students' skills and abilities. Yet the evidence suggests that employers often place an emphasis on non-academic criteria in recruiting employees (see Ashton & Maguire, 1980; Gordon, 1982). Profiles of achievement in school designed to include non-academic, as well as academic achievement and skills, and which were recognised by employers, should help them to make a better judgement of potential entrants. The findings from these explanatory analyses also have a number of implications for the provision of careers advice and guidance in connection with the process of option choices made in secondary school. These are considered in the conclusion to the study.

NOTES

Chapter 10

(1) The study of vocationally related subjects was found to have been associated with vocaational choice. Details of the classification of subjects used are given in note 10 of that Chapter 7.

(2) These analyses are based on students included in the repertory grid survey because no information regarding attitudes was available for the whole sample. Moreover, the repertory grid sample was representative of the student body as a whole.

(3) See Chapter 8, Section 1.

(4) See Chapter 7, Section 4.

(5) The classification of clusters adopted was that used in the analysis of attitudes and 'area' effects in Chapter 9.

(6) Analyses in Chapter 9 took into account membership of a particular student group when investigating the links between attitudes and area of residence. This was necessary because of the differential distribution of the three student groups at the cluster level. Part of the association between attitudes and cluster of residence noted here, reflects the over- and under-production of particular groups in specific clusters.

(7) Where i=entry into commercial course, j='liking' for commercial work, k=parent/sibling in commercial work, l=commercial subject(s) studied at school.

(8) Where i=entry into construction course, j='liking' for construction work, k=parent/sibling in construction work, l=construction subject(s) studied at school.

(9) Where i=entry into engineering course, j='liking' for engineering work, k=parent/sibling in engineering work, l=engineering subject(s) studied at school.

(10) Where i=entry into commercial course, j='liking' for commercial work, k=parent/sibling in commercial work, l=commercial subject(s) studied at school, m=sex of student.

(11) Where i=entry into construction course, j='liking' for construction work, k=parent/sibling in construction work, l=construction subject(s) studied at school, m=sex of student.

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(12) Where i=entry into engineering course, j='liking' for engineering work, k=parent/sibling in engineering work, l=engineering subject(s) studied at school, m=sex of student.

(13) 'Liking' for a particular employmnt field was the construct most closely related to students' vocational training choices.

CHAPTER 11

CONCLUSIONS

When this study was commenced, relatively little attention had been paid by previous educational or sociological researchers to the investigation of the determinants of participation in non-academic further education. Low-level vocational training, especially that of female school leavers, was a particularly neglected area. The present study, therefore, was designed to address specifically the question of what factors influenced participation in low-level vocational training, and included the choices of girls as well as boys within its design.

The task set in this thesis was to descibe and account for student entry into particular kinds of vocational training within the inner London area. This area was chosen because of the wide variety of further education institutions and courses, and the relatively good employment prospects for young people available within inner London at the time the study commenced.(1)

The study has concentrated upon participation in vocational training in three fields for which courses were available on a national basis: commercial, construction and engineering. The courses selected for investigation were those entered by large numbers of young people during the 1978/1979 period and available to school leavers with average levels of educational qualifications.

1. Aims

A number of broad aims governed the study. These were:

(i) To identify patterns of participation in low-level vocational training within the inner London area.

(ii) To describe and compare the characteristics of students who had undertaken different kinds of training.

(iii) To assess the relative importance of a variety of factors (socio-economic, attitudinal and area-based) which may have affected students' choices of vocational courses.

One focus of particular interest to this study was to establish whether there was any evidence to suggest that 'area' or 'neighbourhood' effects had influenced participation in particular kinds of training. Special attention was paid to the question of 'area' effects because this factor had, in general, been neglected in studies of the determinants of occupational achievement. Also of interest was the way in which any such 'area' effects might have affected training choices.

The structure of the thesis has conformed to these three broad aims. In the first section an ecological approach was adopted for the study of student distributions and characteristics of home areas. Here, attention was focused upon the spatial patterns of participation in low-level vocational training within the inner London area. The methodology employed in this stage of the investigation was drawn from geography and urban sociology. The intention was to establish whether there was any evidence that 'area' effects could in part explain participation in different kinds of vocational training.

In the next section, the study moved from the area level to that of the individual student. The influence of socio-structural factors upon vocational training choices was considered in detail. The approach to these analyses was derived from the traditions of educational and sociological research. The intention was to focus on the second major aim of the study, comparing the characteristics of students undertaking different courses. Methods derived from psychology were adopted for the analysis of students' attitudes, so that the influence of attitudes upon participation in the three types of training could be investigated.

The third section considered the relationship between attitudes and 'area' effects. A final set of explanatory analyses was undertaken to assess the relative importance of the factors identified as potentially influential (through the ecological, structural and attitudinal investigations), and the extent to which it was possible to account for participation in specific types of vocational training.

Following the three-part structure described above, a brief summary of the major results of the study will be outlined in this chapter. A more general discussion of the findings, and their relationships with previous work, will then be presented.

2. Summary of Major Findings

(i) Ecological analyses

Analyses of maps of the distribution of students within inner London revealed pronounced spatial variations in the spatial patterns of participation in vocational training. Generally, and by student group, there was evidence of concentrations of students in some places and an absence of them in other parts of the inner city area. An examination of the relationships between student distributions and socio-economic characteristics of home areas indicated significant associations between spatial patterns of participation in vocational training and measures of social class composition, patterns of tenure and the level of educational qualifications possessed by local residents.

Multiple regression analysis demonstrated that a significant proportion of the variance in student distributions at the ward level was accounted for by the concentration of skilled manual workers in an area, the numbers of young people, and the proportion of the population living in council housing. Socio-economic characteristics were, however, found to be related differently to the distributions of the three student groups. Higher levels of statistical explanation were achieved for analyses of the distributions of the construction and commercial student groups, than for the engineering group. It appeared that spatial patterns of entry into construction and commercial training were more closely related to the socio-economic characteristics of residential areas than was the case for engineering students.

Cluster analysis was used to distinguish eight groups of 'like' wards. These eight clusters were used to examine student distributions in greater detail. Analyses of distributions at the cluster level also produced evidence that over- and under-production of the three student groups varied between different 'types' of area. In some clusters students were more likely to have entered particular kinds of vocational training than was the case in other clusters.

Overall, therefore, the results of ecological analyses indicated that the characteristics of the home area were related to spatial patterns of participation in low-level vocational training. School leavers in certain types of area were more likely to have opted into particular kinds of training than school leavers in other areas. These findings were suggestive of the operation of an 'area' effect as one factor which influenced participation in different types of vocational training within the inner London area.

(ii) Student characteristics

The investigation of students' characteristics considered the possible influences of sex, social class background, parents'/siblings' occupations, students' educational qualifications, and their job ambitions and expectations upon participation in low-level vocational training. Four hypotheses about the influence of these structural characteristics were tested.

Overall, girls accounted for only around a third of the total intakes to the selected courses. This reflected marked sex differences in entry into sponsored and non-sponsored training. Sex was found to be strongly related to participation in different kinds of vocational training. The hypothesis that student choice of vocational training was related to the sex-stereotyping of occupations was supported. Girls were over-represented on commercial courses, and virtually unrepresented on skilled manual courses in the construction and engineering fields. These results support those of the DES (1978), Redpath and Duncan (1981) and Pratt et al (1984).

The investigation of students' social class backgrounds indicated the importance of social structure in determining the level of occupational and training choices. School leavers of skilled manual origins were much more likely to have entered the vocational courses included in the present study than were those of other social class backgrounds. This finding is similar to those derived from the ecological analyses. Students were found to have been over-produced in areas characterised by a high proportion of skilled manual workers. Students' fathers were also predominantly in skilled manual work. It is possible that these two influences were mutually reinforcing. The chances of entering low-level vocational training may have been increased for those of skilled manual backgrounds who lived in predominantly skilled manual areas. Alternatively, the apparent 'area' effect may merely reflect the 'mirror' image aspect of spatial relationships (discussed in Chapter 4). It may have been because of the strong link between social class background and vocational training choices at the level of the individual student that students were over-represented in areas which contained a high proportion of males in skilled-manual work.

These findings are in line with the results of numerous studies of social mobility and the strength of the links between fathers' and sons' occupational status (see, for example, Goldthorpe et al 1980, or Stewart et al, 1980). They are also in agreement with the conclusions of studies of the occupational choices of male school leavers which have noted the importance of family traditions of skilled manual employment (see Douglas, 1968; Thomas and Wetherall, 1974; Weir and Nolan, 1978; Ryrie, 1983). In all these studies a strong link was identified between the social class of jobs entered by school leavers and their own social class background.

However, the relationship between social class background and students' vocational training choices differed considerably for the two sexes. The link between the social class of the father's job and that of the student's vocational choice was very close for males, and the data indicated little social mobility. For female students, agreement between social class ranking of father's occupation and of vocational choice was rare, and there was some indication of upward social mobility in comparison with the social class of mother's occupation.

Variations in the social class backgrounds of students, however, did not account for student participation in particular types of training. The majority of students from each group were of skilled manual origins. Likewise, ecological analyses indicated that areal variations in the over- and under-production of particular student groups were not eliminated when differences in the social class composition of home areas were statistically controlled. Thus, although for the majority of students social class was related strongly to the level of vocational training and the level of jobs entered, it did not explain the choice of a particular vocational course.

The analysis of parents'/siblings' jobs indicated that school leavers' participation in particular kinds of vocational training was influenced by the type of job in which their parents were engaged and, to a lesser extent, by the type of jobs held by any elder siblings. A substantial minority of each student group had a parent/sibling working in their chosen employment field. As was found in the analysis of the impact of social class backgrounds, however, this influence was affected by the sex of students. The results indicated that a substantial minority of male school leavers who entered construction and engineering training had a father working in their chosen employment field. For commercial students the proportion with a parent working in their chosen field was smaller and, where this occurred, was most often the mother.(2) Nonetheless, the majority of students of each group had neither a parent nor an elder sibling working in their chosen field. Therefore, although family traditions of employment were likely to have been of considerable importance, such traditions did not account for the vocational training choices of the majority of students.

Analyses of students' qualifications did not support the view that their particular occupational choices were primarily influenced by perceptions of their own ability (as proposed by the 'channellising in school' model).(3) This is not to say that, in broad terms, academic qualifications were unimportant. None of the students in this sample had obtained 'A' levels, and few possessed five or more 'O' levels or their equivalent. Nevertheless, low-level vocational training did not, as expected, attract school leavers of average ability only (where average ability was defined as possessing CSE grades of three or four in the main). There was quite considerable variation within each student group in the level of qualifications obtained at school. Some students had no qualifications whereas others had several 'O' levels.

This finding does not fully accord with the conclusions of Ryrie (1983), who stated that level of qualifications was probably the major determinant of occupational choices. However, Ryrie also noted that, for entry into occupations in the middle range, level of qualifications might be of lesser importance. The indications from the present study that level of qualifications obtained at school was not closely related to entry into low-level vocational training is in accordance with the findings of Weir and Nolan (1978). These authors noted that the possession of SCEs did not improve the employment prospects of their sample of Scottish school leavers.

The factor of level of qualifications obtained at school did not differentiate the three student groups forming the focus of this study. For this sample, therefore, level of qualifications did not account for particular training choices. Amongst students who were sponsored by employers, some with no qualifications (or only those of a low level) had obtained apprenticeships. In terms of employer selectivity, therefore, the findings suggest that level of qualifications was not a decisive factor in obtaining jobs which involved sponsored training. These findings are in line with those reported by Ashton and Maguire (1980); Roberts (1982); and Gordon (1984). All these authors reported that employers often placed greater reliance upon their own tests, and upon non-academic criteria when recruiting school leavers, particularly those for apprenticeships.

Analyses of the subjects studied by students at school (in terms of their relevance to later vocational training choices), provided evidence of a close relationship with sex. In general, girls had not studied subjects of relevance to jobs in the skilled manual trades, and boys had not studied commercial subjects. Even so, only a minority of the commercial group had taken commercial subjects, and only a minority of construction and engineering students subjects relevant to their chosen fields. In line with the conclusions of Pratt et al (1984), the findings of this study suggest that the impact of sex on students' vocational training choices was not due primarily to differences in subjects studied at school, though girls' vocational choices would undoubtedly have been limited by their lack of technical qualifications.

For construction and engineering students, there was evidence of a significant link between later vocational choices and the study of related subjects at school. This link was not, however, an overwhelming one. The majority of students in both groups had not, on leaving school, obtained any qualifications directly relevant to their selected trade. Although a substantial minority of both groups had taken relevant subjects for jobs in their chosen employment field, a number had also taken subjects of use for employment in each other's trades.

The results of analyses of students' job ambitions indicated that these ambitions were closely related to training choices. Again, there was strong evidence of sex-stereotyping in job ambitions. Amongst this sample, the employment aspirations and expectations of boys and girls were very different. These findings are in accordance with those reported by Fogelman (1979), Sharpe and Roberts (1983) and Pratt et al (1984).

The investigation of students' attitudes towards specific jobs indicated that the three groups shared certain common perceptions. Students in this sample exhibited a broad agreement in their views of different jobs. These findings provide support for Kelly's (1955) 'communality corollary' and accord with those reported by Reeb (1979) and Edmonds (1979). In terms of Coxon and Jones' (1978) investigation of occupational perceptions, this study supports their conclusions - that people's 'images' of particular jobs do not differ markedly.

These analyses also provided considerable support for the view that sex-stereotyping in attitudes towards different kinds of employment influences students' job ambitions, and their job and training choices. The marked difference between the sexes in participation in commercial, construction and engineering training appears to have been closely linked with 'traditional' perceptions of the sex-role attributes of different jobs. The impact of sex upon participation in low-level vocational training, therefore, appears to have operated, in part, through differences in the two sexes' attitudes towards particular types of employment.

It seems probable that (as Sharpe, 1976; and Willis, 1977 suggested), for youngsters of working-class origins, the sex-stereotyping of occupations may be more sharply defined. Amongst the sample of construction and engineering students in this study, analysis of their use of the constructs included in the attitude survey indicated that those related to the sex-role attributes of particular jobs were strongly associated with job preferences. For these students it appeared to be important to enter employment which had a strong 'masculine' identity. Conversely, for girls on commercial courses, attributes related to a 'male' sex-role were negatively related to job preferences.

The hypothesis that perceptions of different types of employment varied between the three student groups, and were related to their training choices, was confirmed. Each student group had more favourable evaluations of jobs in their chosen field than of jobs in other groups' employment fields. Differences between the three groups' perceptions were especially marked in terms of job interest and preference. There was also some evidence that the factors associated with preference for particular jobs differed for the three groups.

(iii) Attitudes and 'area' effects

Although there was a close link between attitudes and participation in particular types of vocational training, there was little evidence that 'area' effects upon student participation operated through the mechanism of variations in students' attitudes between different types of residential area. It was hypothesised that students' attitudes towards their chosen employment field would have been more positive in clusters which had over-produced, rather than under-produced members of a particular vocational group. An examination of spatial variations in students' attitudes toward the three employment fields, however, indicated that attitudes were generally unrelated to patterns of student over- and under-production.

These results are in conflict with the mechanisms proposed for the operation of 'area' effects in past studies (see the discussion in Chapter 4). It should be remembered, however, that such studies rarely tested the supposed link between attitudes and 'area' effects. The present findings are, however, in agreement with those reported by Moulden and Bradford (1984). These authors found evidence of a relationship between residential environment and educational achievement, but concluded that this effect did not operate through variations in attitudes towards education.

It seems possible that factors other than attitudes may have had an impact upon the vocational choices of school leavers living in different areas of inner London. For example, the links between schools and careers offices may have differed in different areas. This, in turn, could have influenced the sorts of vocational guidance given in particular schools. Contacts between local employers and particular schools or careers offices may also have been a factor which partly accounted for the areal variations in participation in different types of sponsored vocational training identified in this study.

The range of subjects on offer to pupils in particular schools (particularly the availability of subjects related to the three fields of training considered here) could also have affected spatial patterns of participation in different kinds of vocational training. There is considerable evidence of marked variations between schools within the ILEA in the numbers and percentages of pupils entered for examinations in the sorts of subjects of relevance for entry into low- level commercial, construction and engineering training. In part this is likely to reflect differences in the intakes to schools and their academic ethos (see Rutter et al, 1979). Those schools where few pupils enter higher education may place a greater emphasis on the provision of a vocationally oriented curriculum.

In addition, the skills and interests of particular members of staff, and the facilities available may limit the range of vocational subjects on offer in particular schools. Alston and Runham (1985) noted (in a recent study of the first year curricula in secondary schools) that, in single-sex schools, a shortage of facilities and of staff was sometimes cited as the reason for a lack of provision of subjects traditionally entered by pupils of the opposite sex. This was particularly common for Craft, Design and Technology in girls' schools, and for Home Economics in boys' schools. Given that Alston and Runham's investigation took place in 1985, after the institution of the Authority's initiative on Equal Opportunities, it seems highly likely that, during the period 1973 to 1978, secondary pupils' opportunities to study particular kinds of vocationally relevant subjects were different, and significantly dependent upon their sex.(4) This would be especially likely if they attended single sex schools (see Grant, 1983).

It was not possible, however, to test all these various possibilities in the context of the present study, given the time and resources available.

3. The Explanation of Particular Vocational Training Choices

Explanatory analysis of students' particular training choices indicated that there were significant links amongst many of the factors identified as potentially important. In particular, attitudes towards the three employment fields, sex of students and subjects studied at school were strongly associated. In accounting for students' selection of the three types of training considered in this study, two socio-structural factors were found to have been of major importance. These were: having a parent/sibling working in the chosen field, and the study of vocationally relevant subjects at school. Both of these factors made separate and statistically significant contributions to the explanation of participation in commercial, construction and engineering training.

These findings indicate that the level of students' vocational training choices was closely linked to social class background and, broadly, to the level of educational qualifications obtained at school (themselves both closely interrelated). Nonetheless, factors related to the type of jobs in which parents/siblings were engaged, and to the type of subjects studied at school, were important in the explanation of the particular choice of course.

The sex of students was closely associated with vocational ambitions and training choice but, although it increased the fit of explanatory models, it was not found to have had a separate and significant impact, when account was taken of other factors. It appears that sex operated as a determinant of training choices through its relationship with other factors, such as attitudes and subject choices at school.

These results support the 'channellising in school' and 'parents' jobs' models of occupational choice. The study of subjects relevant for jobs in a particular field was related to positive attitudes towards employment in that field. Moreover, attitudes towards a given employment field were more positive amongst students who had a parent/sibling working in that field. One of the ways in which these two significant factors may have operated is through their impact upon attitudes towards different kinds of employment. It is also possible that the study of vocationally relevant subjects may have been due to pre-existing favourable attitudes and vocational intentions.

Douglas et al's (1968) study emphasised the importance of home background, especially parents'/siblings' attitudes and expectations as influences upon boys' attitudes and occupational aspirations. Similarly, Weir and Nolan (1978) stated that *"The importance of the individual's contacts with other significant people in his environment is that these contacts develop and maintain his attitudes towards particular types of training or employment. This influence cannot be underestimated in this type of decision-making."* (p.2). The present study also indicates the importance of home background, particularly family occupational patterns, as determinants of vocational choices.

For sponsored training, having a parent/sibling working in their chosen field was found to improve potential entrants' chances of obtaining an apprenticeship in that field. This was probably due, in part, to greater knowledge about the work involved and qualifications required, the mechanisms of applying for jobs, and the advantages of hearing about vacancies by word-of-mouth and of personal recommendation to employers.

For sponsored students, the study of vocationally relevant subjects is likely to have increased their attractiveness to potential employers. Although not a pre-condition of recruitment (the majority of students had not studied vocationally relevant subjects at school), all other considerations being equal, an employer would probably choose an applicant who had studied related subjects in preference to one who had not. Some employers may also have used such information as a method of sifting applications (see, Dore, 1976; Gordon, 1982).

The study of school subjects relevant to training choices was less important than parents'/siblings' occupations for the explanation of entry into construction training. The reverse was the case for entry into commercial and engineering courses. This indicates that the employers of construction students placed less emphasis on subjects studied than did those of engineering students. However, parents'/siblings' occupations were of more importance. This may reflect different emphases in the recruitment of apprentices, and a greater reliance upon informal mechanisms such as word-of-mouth recruitment or personal recommendation in the construction industry (see Lee and Wrench, 1981; IMS, 1981). It also seems likely that this reflects differences amongst employers in attitudes towards the value of 'academic' qualifications as a guide to youngsters' suitability for particular kinds of work.

The area of residence (as defined by the cluster analysis) also made a significant contribution to the prediction of entry into construction courses (taking account of other factors, students living in clusters which had over-produced the construction group were more likely to have entered construction courses than were those in clusters of under-production). This may have reflected the importance of informal mechanisms of recruitment, and the example of neighbourhood friends and contemporaries.

It was thus confirmed, through the analysis of individual students' choices, that 'area' effects played a separate and significant part in accounting for participation in construction training. No such effects related to cluster of residence, however, proved statistically significant in the explanation of commercial and engineering training choices, when account was taken of the influences of other factors. Despite the evidence of spatial differences in student over- and under-production identified for all student groups, therefore, 'area' effects did not make a separate and significant impact in analyses of individual students' vocational training choices for two of the three fields considered. Moreover, although 'area' effects were influential for construction entry, their contribution was much smaller than that due to parents'/siblings' occupations and subjects studied at school.

It seems that the individual student's home background, specifically their family's occupational traditions, was considerably more influential in determining particular vocational choices than the characteristics of the neighbourhood in which he or she lived. In this study, therefore, the home environment has been shown to have had a greater impact than the environment of the neighbourhood.

The strength of home influences identified in the present study is particularly noteworthy, given the diverse employment structure and wide range of employment and training opportunities available in inner London (when the study commenced), in comparison with other areas. If, as it appears, family occupational traditions are a major source of influence in determining school-leavers' job/training choices, it is perhaps not surprising that studies of social mobility and occupational achievement have identified such close links between the social class of parental occupations and that of offsprings' employment choices.

The results indicate that socio-structural factors were considerably more important than area of residence as determinants of low-level vocational training choices. In addition, when the impact of socio-structural factors was controlled, evidence for the existence of 'area' effects (suggested by means of the ecological and spatial analyses) was much reduced. These results point to the importance of analysing the characteristics and the behaviour of individuals, when studying 'area' effects - a strategy recommended by Johnston (1978) and followed in the present study. When account was taken of other factors which affected individual students' behaviour, the apparent importance of home area was reduced or eliminated (as demonstrated in Chapter 10). This is because such a strategy controls for the 'mirror image' aspect of spatial relationships (discussed in Chapter 4).

4. Implications for Future Research

The findings of this study may provide some pointers to potentially fruitful lines for further investigation of participation in low-level vocational training. It provides evidence that, although an inter-disciplinary approach may require complex analysis, the attempt to integrate findings from a variety of traditions into a coherent whole, offers the broad perspective which is necessary for an understanding of the variety of potential sources of influence upon occupational and training choices.

A number of constraints upon the research design, however, limited the scope of the present inquiry. The study has focused upon students attending colleges of further education, because permission was not granted to interview school pupils in the process of making their vocational and training choices. The investigation of the factors which affected such these college students' vocational choices may have been affected by an element of 'post hoc rationalisation'.

Future studies, which examine pupils in their last years of schooling, might be in a position to establish whether the same factors as those identified as influential in this study, operated as influences on this younger age group. A further weakness of the present study was that it was not possible to assess the possibly powerful influence of ethnic background as a factor affecting, or limiting job ambitions, vocational choices and opportunities. (At the time the investigation commenced, ethnic background was too sensitive an issue for permission to be granted for inclusion in the student questionnaire.) The collection of ethnic data has now become more commonplace, due to the implementation of policies monitoring equal opportunities, and future studies could focus on the ways in which the influence of ethnic background may relate to other determinants of vocational and occupational training choices.

One further factor which was not considered in this study was the influence of parents' attitudes towards their children's vocational choices. The evidence provided here indicates that parents'/siblings' occupations, and students' attitudes, had an impact on such choices. Given this, it appears likely that interrelationships between these two factors and the possible influence of parents' attitudes are worthy of consideration in future investigations.

5. Policy Implications

This study has a number of implications for those concerned with policy making within the vocational further education and training fields. These implications can, however, only be stated in very general terms, because of the marked and rapid changes in the employment prospects available to young people both nationally and within inner London since 1978/1979. Youth unemployment has risen sharply during the intervening years, from around five per cent in July 1978 to reach a figure of more than 15 per cent in July 1985 in the ILEA area.(5) Conversely, the availability of sponsored training in the construction and engineering fields has been substantially reduced because of cut-backs in the recruitment of apprentices. These factors, and the institution of the Youth Training Scheme (entered by 60% of young people who left school at the age of 16 in 1985), have dramatically changed the structure of the post-school opportunities available to young people.

Nonetheless, some of the findings of the study may be of continuing relevance. In particular, it seems probable that the impact of socio-structural factors, such as parents'/siblings' occupations and the study of vocationally relevant subjects at school, may have become even more important in determining access to the reduced numbers of jobs involving sponsored training in the construction and engineering industries.(6)

The findings on the strength of family influences, and the importance of subjects studied at school, as determinants in the process of particular vocational choices, point to the need to improve the quality and quantity of careers guidance and counselling provided at school. It is perhaps more important than previously that, within schools, young people should receive up-to-date careers guidance and advice (well in advance of option choices) about the different kinds of further education, training and local employment opportunities, and the weight attached by colleges/employers to the study of particular subjects. Grant (1983) noted that "*The fact that much careers guidance in schools is given in the fourth and fifth years does not help*" (p.226). Adopting a policy of early advice and guidance may help to ensure that young people do not inadvertently reduce their prospects of entering particular jobs or courses by undertaking inappropriate combinations of subjects.

The institution of a system of pupil profiles, recognised by employers and educational institutions, may also help to ensure that account is taken of the skills and personal qualities possessed by school leavers and considered important by employers when selecting recruits (see Ashton and Maguire, 1980), but which are not recognised by the present public examination system.

In addition, if employers (particularly those in the construction and engineering industries) are encouraged to register vacancies with Job Centres and the Careers Service, this might help youngsters who did not have family contacts in the field to obtain information about job opportunities. There is evidence that informal mechanisms of recruitment (via family/friends) may work to the particular disadvantage of those from ethnic minority backgrounds (because such groups are at present under-represented in the skilled trades - see

Williams, 1978; Lee and Wrench, 1981), and those whose parents are unemployed (see Holland, 1981).

The massive sex differences in participation in the three types of training identified in this study are in line with the findings of studies of school leavers' employment ambitions and expectations (see Fogelman, 1979; Raby and Walford, 1981; Pratt et al, 1984).

Sex differences in vocational training choices were closely linked to job ambitions, and reflected the pervasive influence of sex-stereotyping in attitudes towards, and perceptions of, different types of employment. These findings indicate the need to encourage schools to provide youngsters with examples of women and men in non-traditional work as part of the careers advice given. Some schools already at present do make an effort to institude visits from those in non-traditional work (for example, females in construction and engineering jobs to talk to pupils), but this practice is not widespread. Such a strategy would provide alternative role-models, and might help to counter the stereotypes portrayed in the media.

Sex differences in the sorts of vocational subjects studied at school were also of importance. In particular, girls were (and still are) grossly under-represented in examination entries for Craft, Design and Technology (CDT) and related subjects, and over-represented in commercial subjects. Girls' and boys' different attitudes are likely to have been a major factor in determining subject choices. For example, it has been found that, even at transfer to secondary school, boys are much more likely to name CDT and related subjects as favourite areas of study than are girls (see Runham, 1985). Nonetheless, there is some evidence that school policies, curriculum content, timetabling of subjects and the attitudes of CDT teachers may also play some part in accounting for the poor take-up of CDT and related subjects by girls (see Pratt et al, 1984, Catton, 1985).

Only with policies aimed specifically at giving both girls and boys equal experience of CDT and related subjects at school will it be possible to ensure that girls do not continue to leave school technologically illiterate. As Grant (1983) noted *"To disenfranchise women from the politics of technology by denying them an adequate technological education is to deny them a most basic freedom"*. (p.217) The provision of adequate experience of technology-based subjects at school should also improve girls' post-school educational, training and employment prospects.(7) In combination with early careers advice and information about local employment, training, and further education opportunities, it is possible that a gradual change might be effected in the traditional sex divisions in participation in the sorts of vocational training considered in this investigation.

The strength of parental influences has been noted earlier. Clearly, some parents, especially those who were in non-manual or skilled manual jobs, or who themselves had experience of further/higher education, may have been more aware of employment, education and training opportunities, and of the mechanisms of applying for jobs than were parents who were unemployed or in semi- or unskilled-manual work. Some young people are likely to derive great benefit from their parents' ability to provide them with advice about getting jobs or about educational and vocational training opportunities. Others do not have such advantages. Parents who are unemployed or in semi- or unskilled-manual jobs are likely to have been least able to provide their children with information or advice about jobs and training opportunities.

The finding on the importance of parental influences has implications for the careers advice provided for pupils while they are still at school. Those young people who are already disadvantaged educationally, because of particular characteristics of their home environment (see Essen and Wedge, 1982; Sammons et al, 1983; on the cumulative effects of disadavantage), are also likely to be additionally disadvantaged in their search for work and their awareness of job and training opportunities. For this reason, it is especially important that 'at risk' groups receive full and clear careers advice and guidance, and information about local further education, vocational training and job opportunities while they are still at school.

If such groups were to be given special attention in the processes of vocational preparation, it might improve their post-school educational, training and employment prospects. At present, those who are most 'at risk' in the transition from school to work are those who lack a family tradition of employment upon which to model their own choices and to provide sources of advice, and those who leave school with few, if any, qualifications. Having said this, the provision of informed and adequate guidance for all youngsters has become a matter of increasing concern, due to the current high levels of youth unemployment. In the present rapidly changing economic climate, with growing government intervention in post-school training and educational provision, parental and family sources of advice may well prove less useful to school leavers than was formerly the case. This is because such sources are becoming out-of-date. In general, parental advice is likely to be based upon perceptions of past, rather than present educational, training and job opportunities. Similarly, young people's expectations, if based upon family traditions of employment, may prove unrealistic in the face of the structure of post-school opportunities currently available.

There is evidence that employers' attitudes towards vocational training are often negative. A recent report for the Manpower Services Commission and the National Economic Development Office (written by Coopers and Lybrand), alleged complacency and ignorance about training, among a majority of Britain's top employers (see Jackson, 1985). Few companies saw training as central to their business. The report argued that the most effective statutory approach would be a national system of 'individual training credits' built up by each individual, from their own contributions and those of employers, and to be spent on training and topped up as necessary with government grants.(8) Such a system, were it adopted, might go some way towards the ideal of providing further education for all young people in employment. It is also possible that such developments would help to weaken the current strong links between home and educational background and participation in vocational further education described in this study.

The results of the present study do not prove encouraging for those concerned with improving the opportunities available to school leavers. To a large extent, entry into particular types of vocational training is determined by sex, and by home and educational background. The majority of young people who enter employment do not receive any post-school training or further education. Those most likely to benefit from the sorts of provision considered in this study were not the most disadvantaged, in terms of their social class background and educational achievements at school. There is clearly room for improvement.

Any of the improvements to careers advice and guidance suggested here will, however, depend partly upon the provision of resources to enable careers workers to keep up-to-date with changes in the structure of local further education, training and employment opportunities. It is likely that additional time may be necessary for careers advisors to undertake the liaison work which is needed to foster the development of links between schools, colleges and local employers.

NOTES

Chapter 11

(1) It must be remembered that, in the inner London area, the level of youth unemployment was considerably lower in 1978/1979 than at present. It is likely that, were the present study repeated now, the opportunities available to school leavers would be found to be markedly different. For this reason it is likely that labour market opportunities, perceptions of such opportunities, and the impact of Youth Training Schemes, would be found to have a considerable effect upon school leavers' participation in low-level vocational training. At the time of the study, however, such factors were not found to have been influential in determining particular vocational training choices.

(2) A substantial proportion of students' mothers were not engaged in full-time work. This factor was probably responsible for the smaller proportion of commercial students who had a parent working in their chosen field.

(3) See Chapter 7.

(4) The students involved in the 1979 questionnaire study were at secondary school during the years 1973 - 1978.

(5) Figures on unemployment for those in th 16 to 19 age group were derived from Job Centres and expressed as a percentage of the total in the age group within the ILEA area. Due to changes in the definition of unemployment figures since 1978, the figures for 1985 are likely to be a conservative estimate of the proportion of unemployed young people, because only those eligible to claim benefit are now included in official unemployment figures.

(6) There is some evidence that employers, faced by increasing numbers of applicants for a smaller number of posts, sift applications more rigorously, prior to interview, and place greater emphasis on the possession of particular qualifications, or the study of vocationally relevant subjects, than was the case during the study period. Others may now make greater use of word-of-mouth recruitment and personal recommendation, in preference to advertising vacancies, to avoid being inundated by a vast number of applications (see IMS, 1981; Varlaam, 1982; Gordon, 1984).

(7) Within the ILEA many schools are currently reviewing their practices to ensure that equal opportunities are made available

NOTES

Chapter 11

(1) It must be remembered that, in the inner London area, the level of youth unemployment was considerably lower in 1978/1979 than at present. It is likely that, were the present study repeated now, the opportunities available to school leavers would be found to be markedly different. For this reason it is likely that labour market opportunities, perceptions of such opportunities, and the impact of Youth Training Schemes, would be found to have a considerable effect upon school leavers' participation in low-level vocational training. At the time of the study, however, such factors were not found to have been influential in determining particular vocational training choices.

(2) A substantial proportion of students' mothers were not engaged in full-time work. This factor was probably responsible for the smaller proportion of commercial students who had a parent working in their chosen field.

(3) See Chapter 7.

(4) The students involved in the 1979 questionnaire study were at secondary school during the years 1973 - 1978.

(5) Figures on unemployment for those in th 16 to 19 age group were derived from Job Centres and expressed as a percentage of the total in the age group within the ILEA area. Due to changes in the definition of unemployment figures since 1978, the figures for 1985 are likely to be a conservative estimate of the proportion of unemployed young people, because only those eligible to claim benefit are now included in official unemployment figures.

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(7) Within the ILEA many schools are currently reviewing their practices to ensure that equal opportunities are made available

to pupils of both sexes as part of the Authority's recent Equal Opportunities initiative.

(8) See the discussion of the Coopers and Lybrand report by Jackson, M., Employers 'ignorant of need for training' in the Times Educational Supplement, 20th December, 1985, p6.

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CITY OF LONDON POLY.

PARTICIPATION IN VOCATIONAL FURTHER EDUCATION: A STUDY OF FACTORS INFLUENCING ENTRY INTO COMMERCIAL, CONSTRUCTION AND ENGINEERING TRAINING IN INNER LONDON.

PAMELA MARY SAMMONS. VOL II

Submitted in partial fulfilment of the requirements for the CNAA degree of Doctor of Philosophy.

City of London Polytechnic.

December, 1985.

APPENDIX 1.1

THE FIGURES

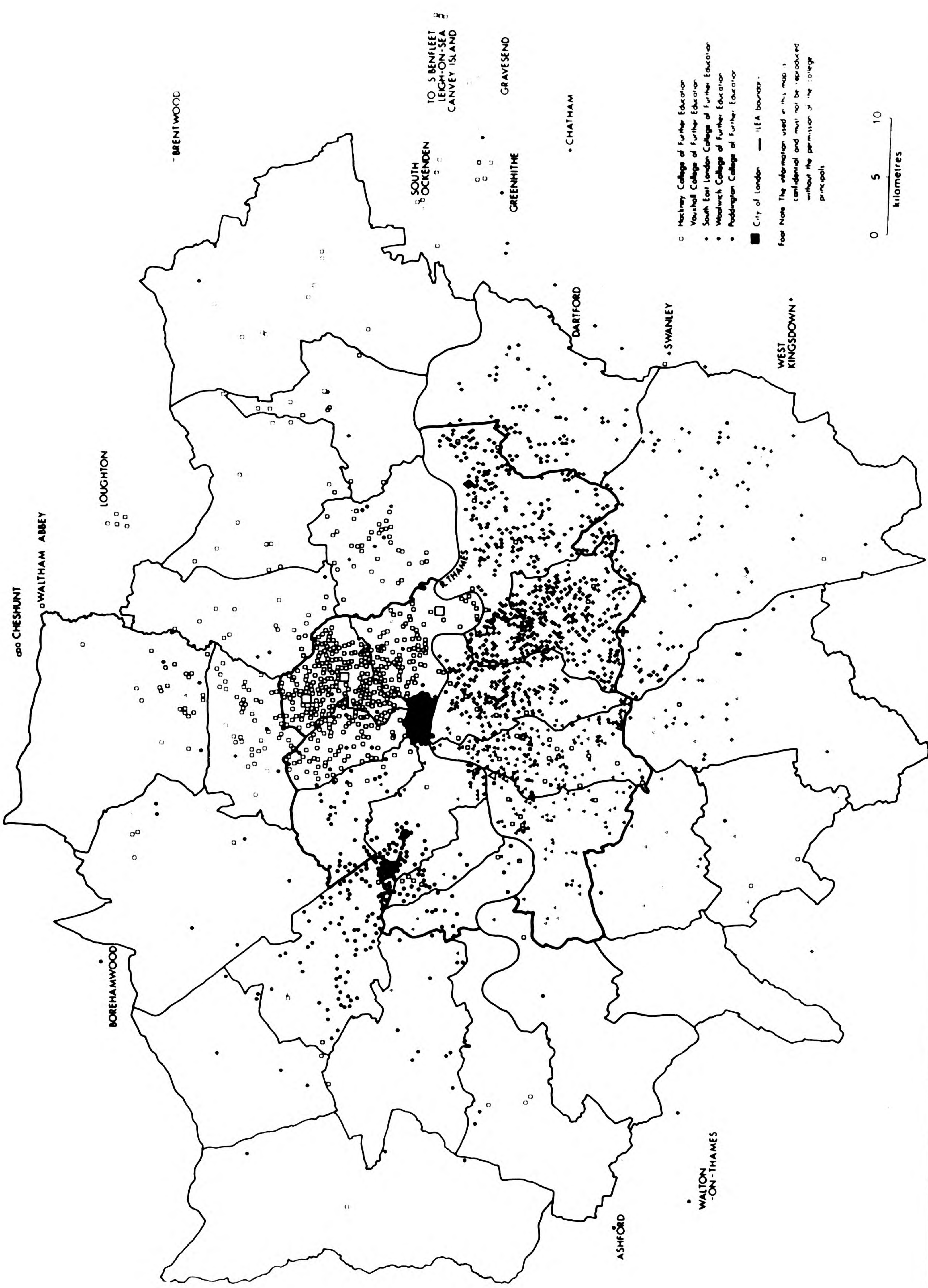
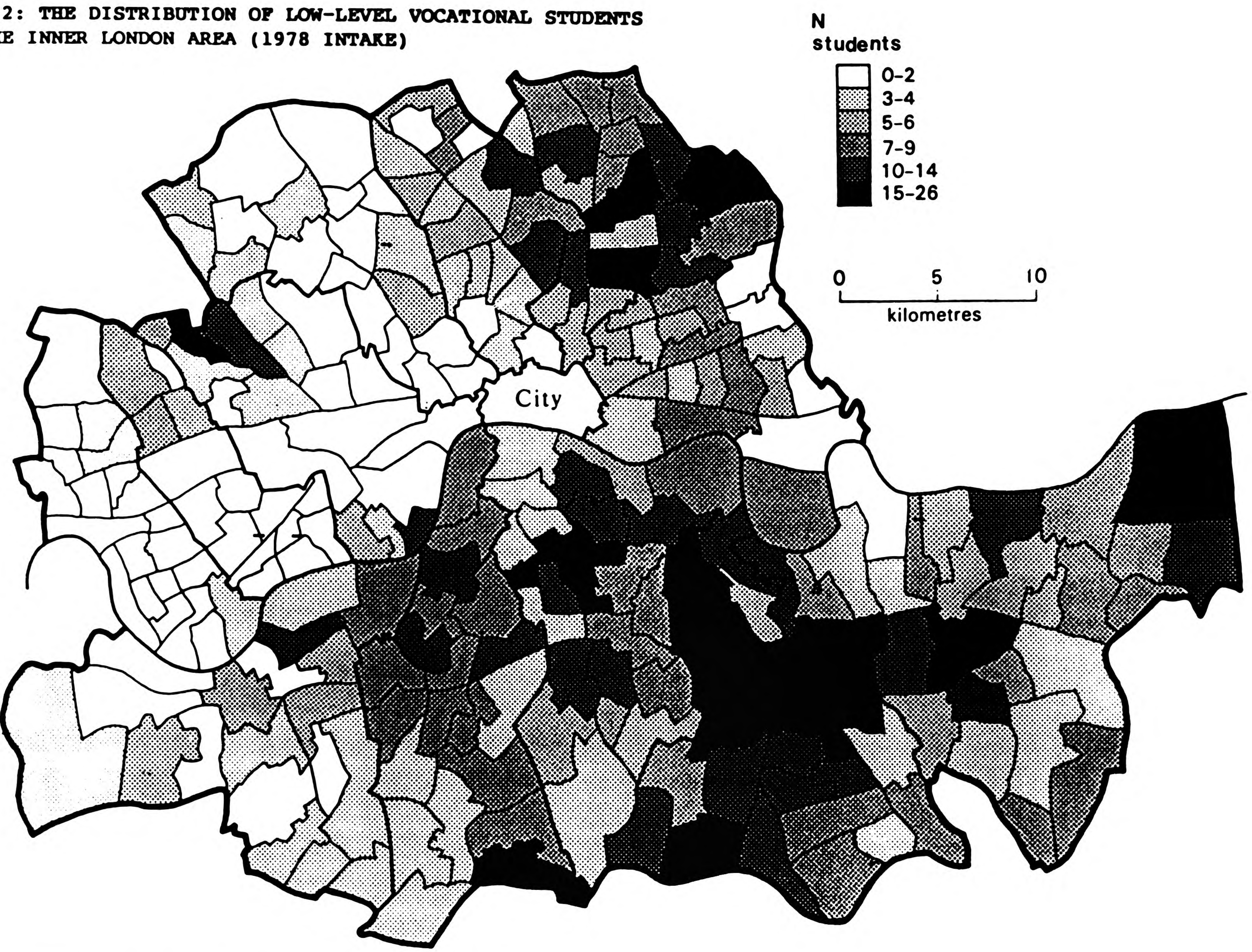


FIGURE 5.1: CATCHMENT AREAS OF THE FIVE FURTHER EDUCATION COLLEGES INCLUDED IN THE SURVEY (1978 INTAKE)

FIGURE 5.2: THE DISTRIBUTION OF LOW-LEVEL VOCATIONAL STUDENTS WITHIN THE INNER LONDON AREA (1978 INTAKE)



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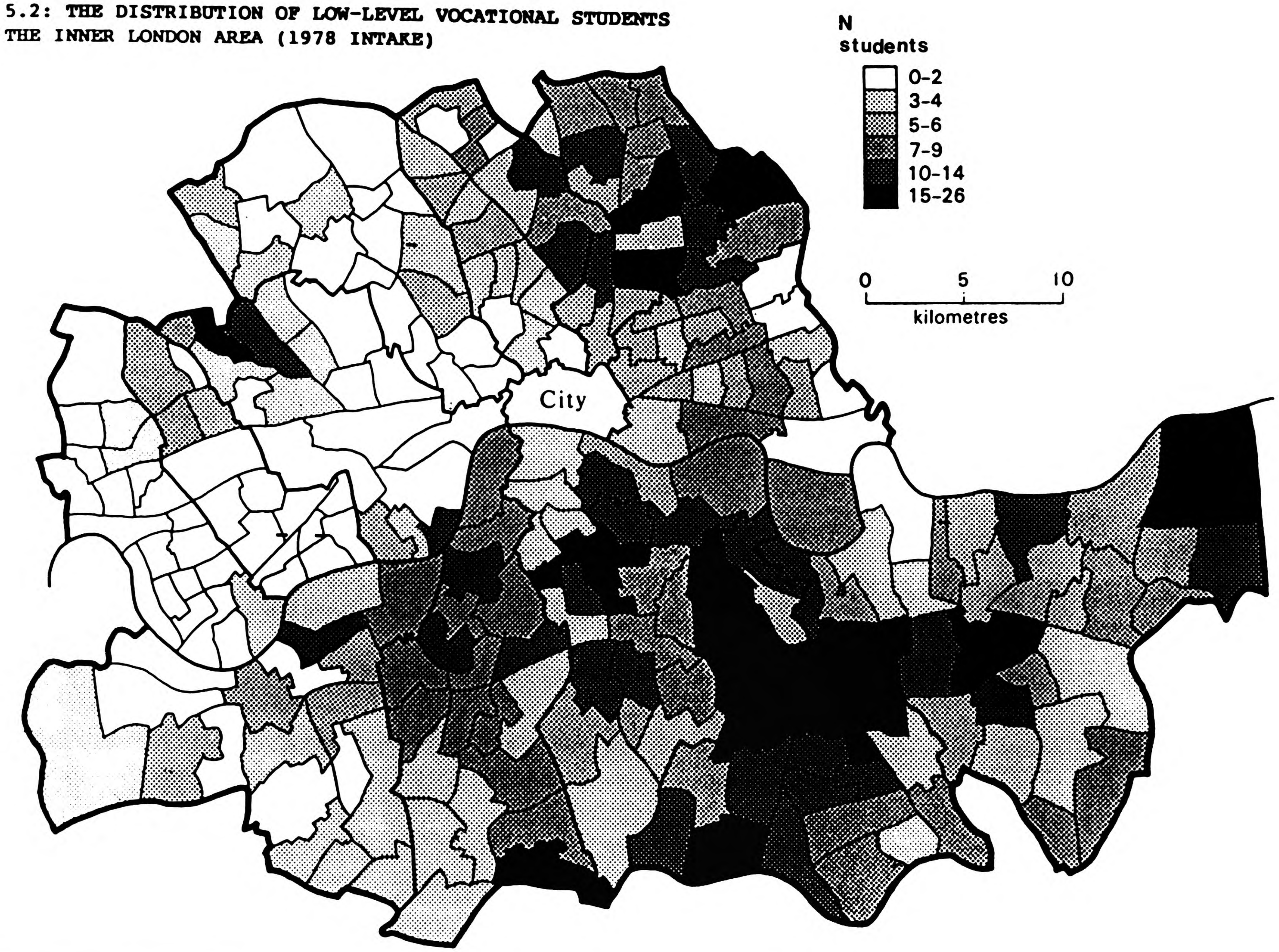


FIGURE 5.3: NUMBERING SYSTEM USED TO IDENTIFY INDIVIDUAL WARDS WITHIN THE INNER LONDON STUDY AREA (1971 BOUNDARIES)

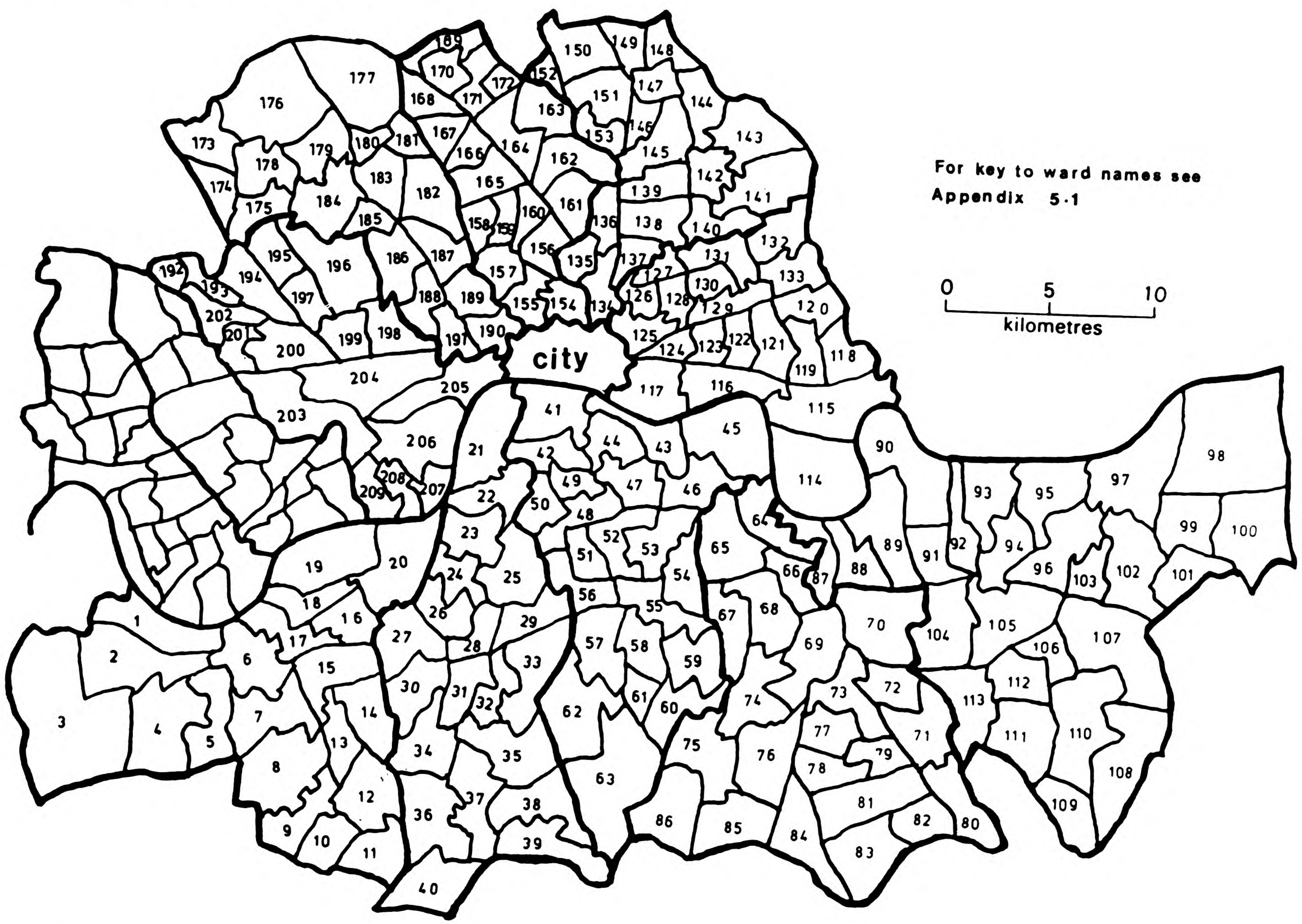


FIGURE 5.4: THE DISTRIBUTION OF LOW-LEVEL VOCATIONAL STUDENTS WITHIN THE INNER LONDON AREA (1979 INTAKE)

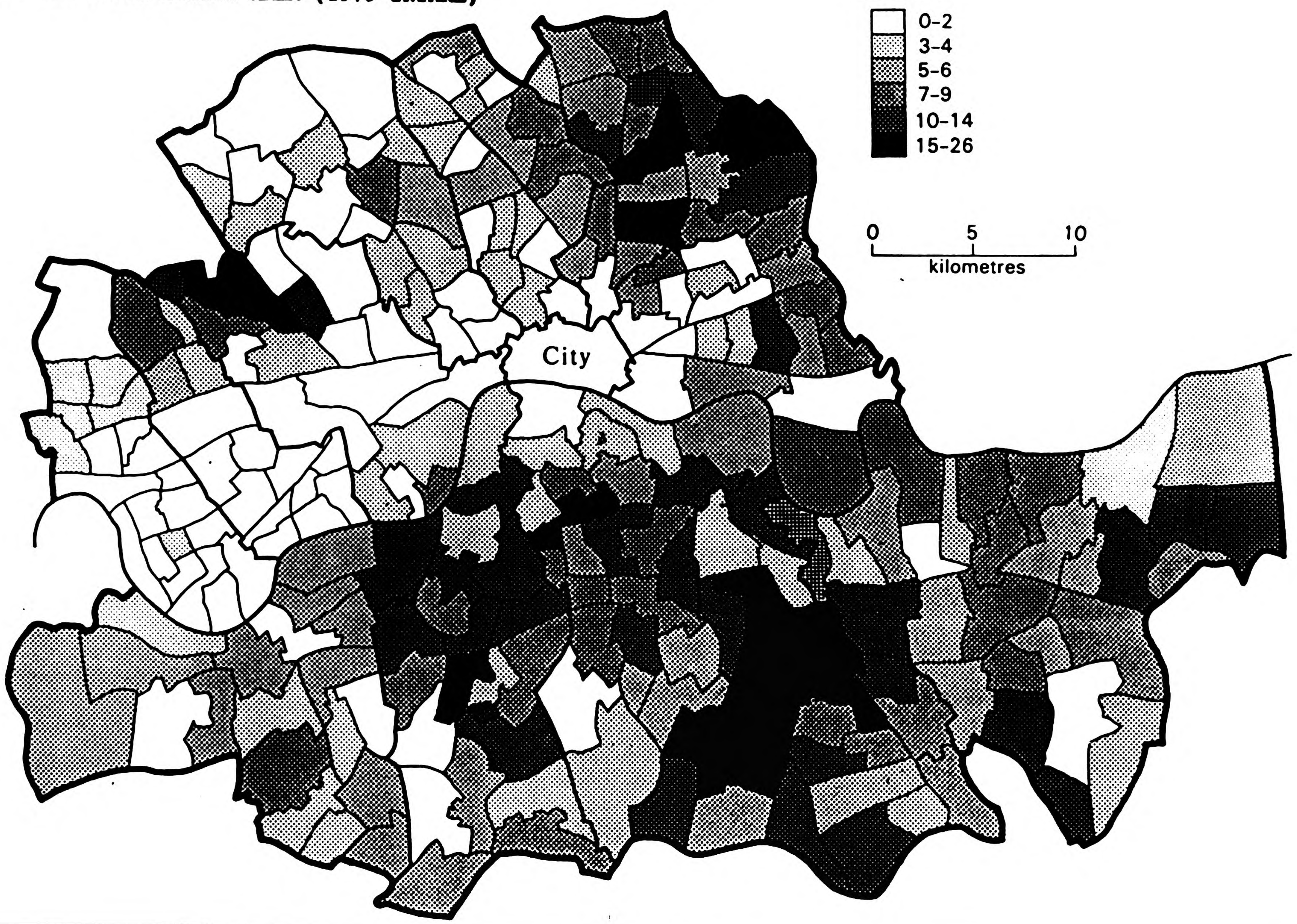


FIGURE 5.5: VARIATION IN COMMERCIAL STUDENT NUMBERS WITHIN THE INNER LONDON STUDY AREA (1978 & 1979 COMBINED INTAKES)

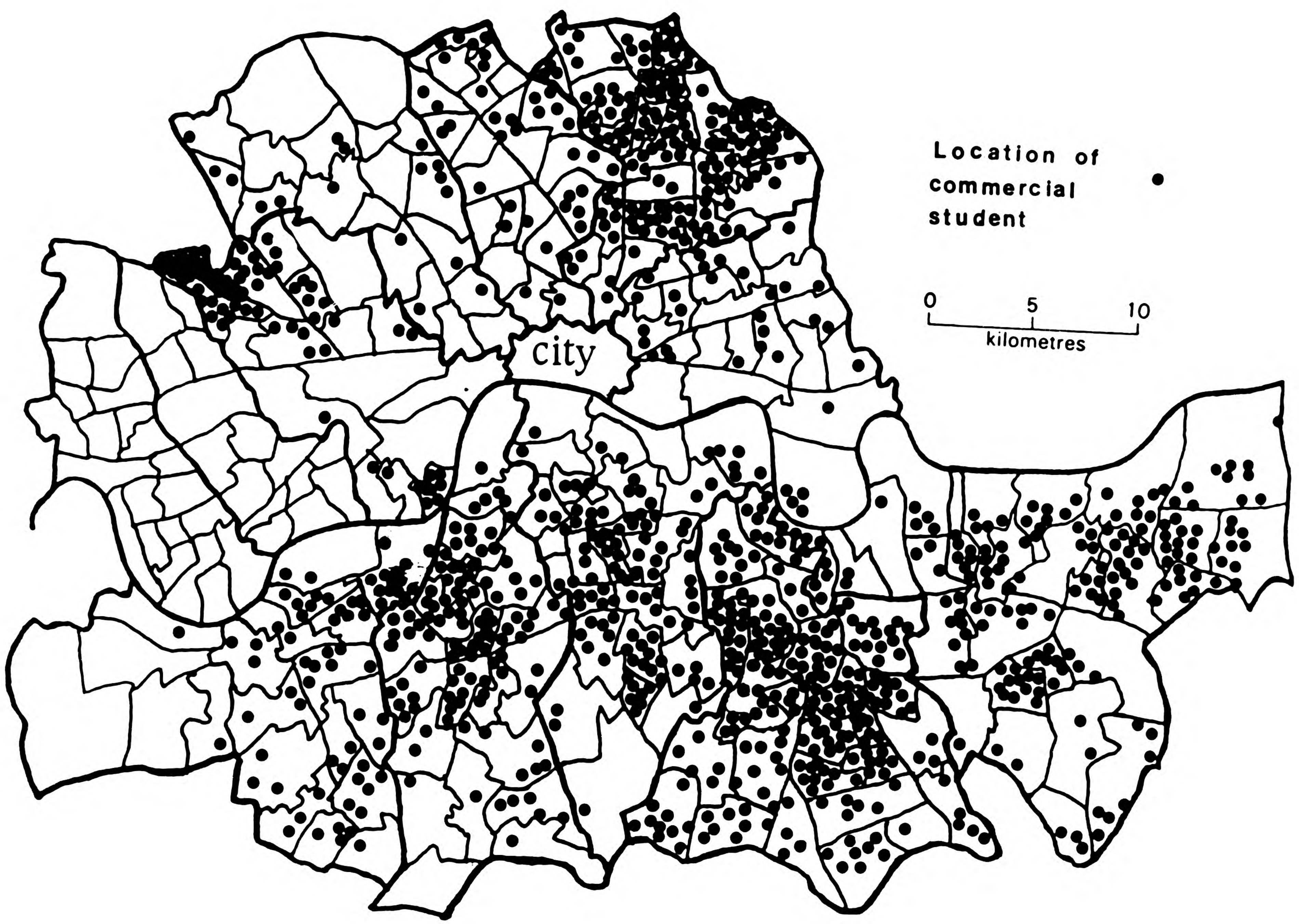


FIGURE 5.6: VARIATION IN CONSTRUCTION STUDENT NUMBERS WITHIN THE INNER LONDON STUDY AREA (1978 & 1979 COMBINED INTAKES)

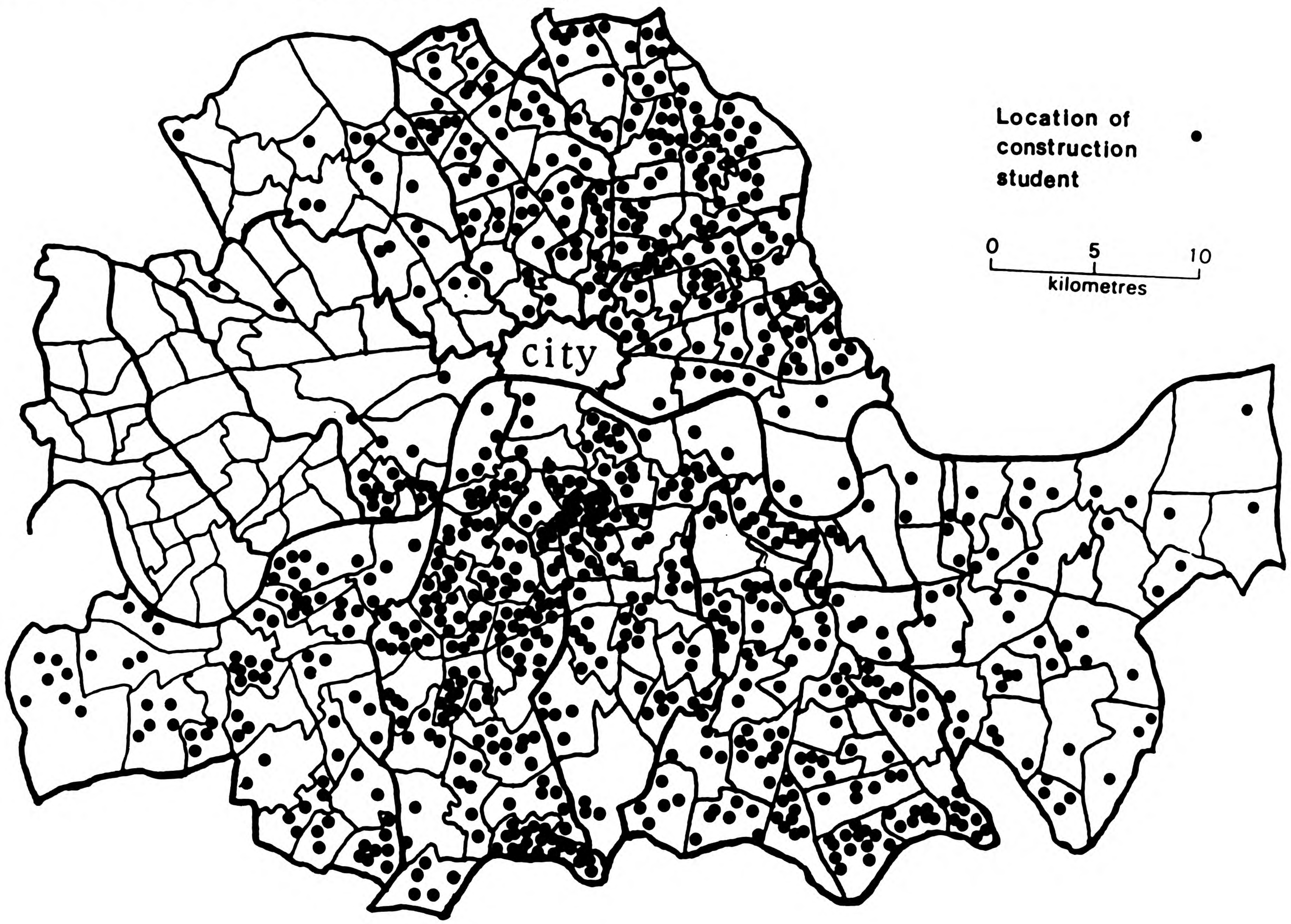


FIGURE 5.6: VARIATION IN CONSTRUCTION STUDENT NUMBERS WITHIN THE INNER LONDON STUDY AREA (1978 & 1979 COMBINED INTAKES)

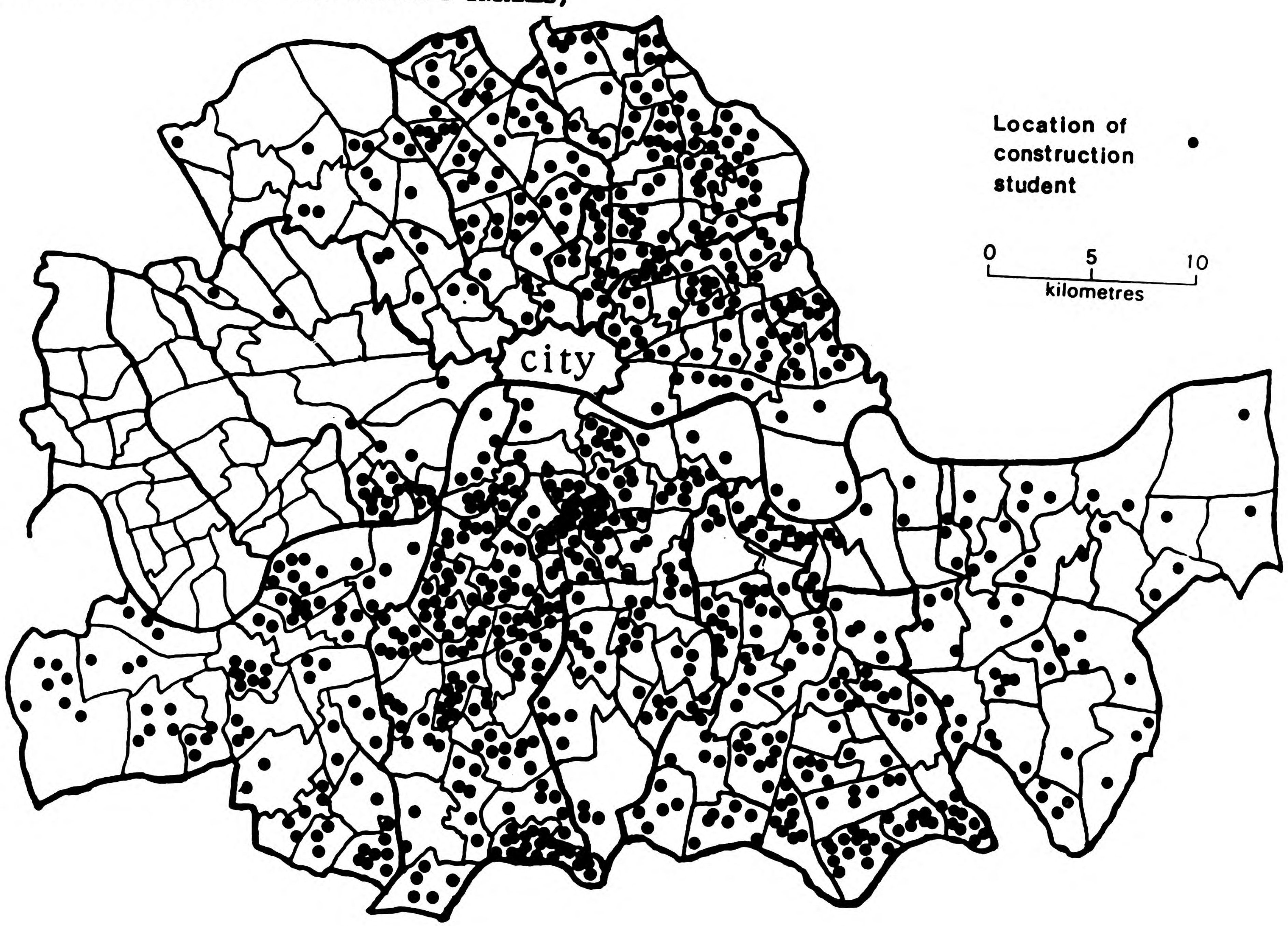


FIGURE 5.7: VARIATION IN ENGINEERING STUDENT NUMBERS WITHIN THE INNER LONDON STUDY AREA (1978 & 1979 COMBINED INTAKES)

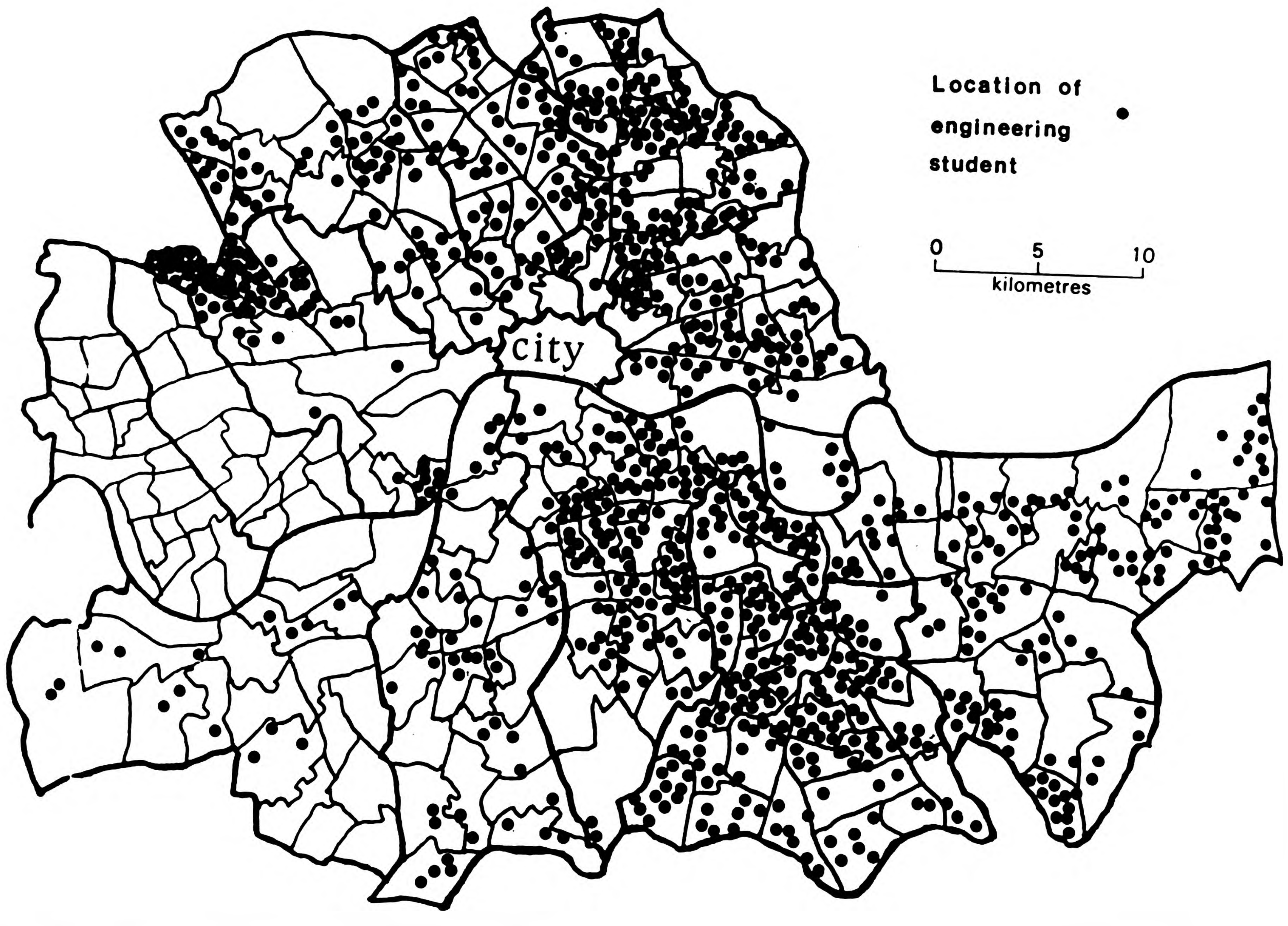


FIGURE 5.8: THE DISTRIBUTION OF POSITIVE AND NEGATIVE STANDARDISED RESIDUALS AT THE WARD LEVEL FOR TOTAL OF VOCATIONAL STUDENTS (1978 & 1979 COMBINED INTAKES)

FIGURE 5.9: THE DISTRIBUTION OF POSITIVE AND NEGATIVE STANDARDISED RESIDUALS AT THE WARD LEVEL FOR COMMERCIAL STUDENTS (1978 & 1979 COMBINED INTAKES)

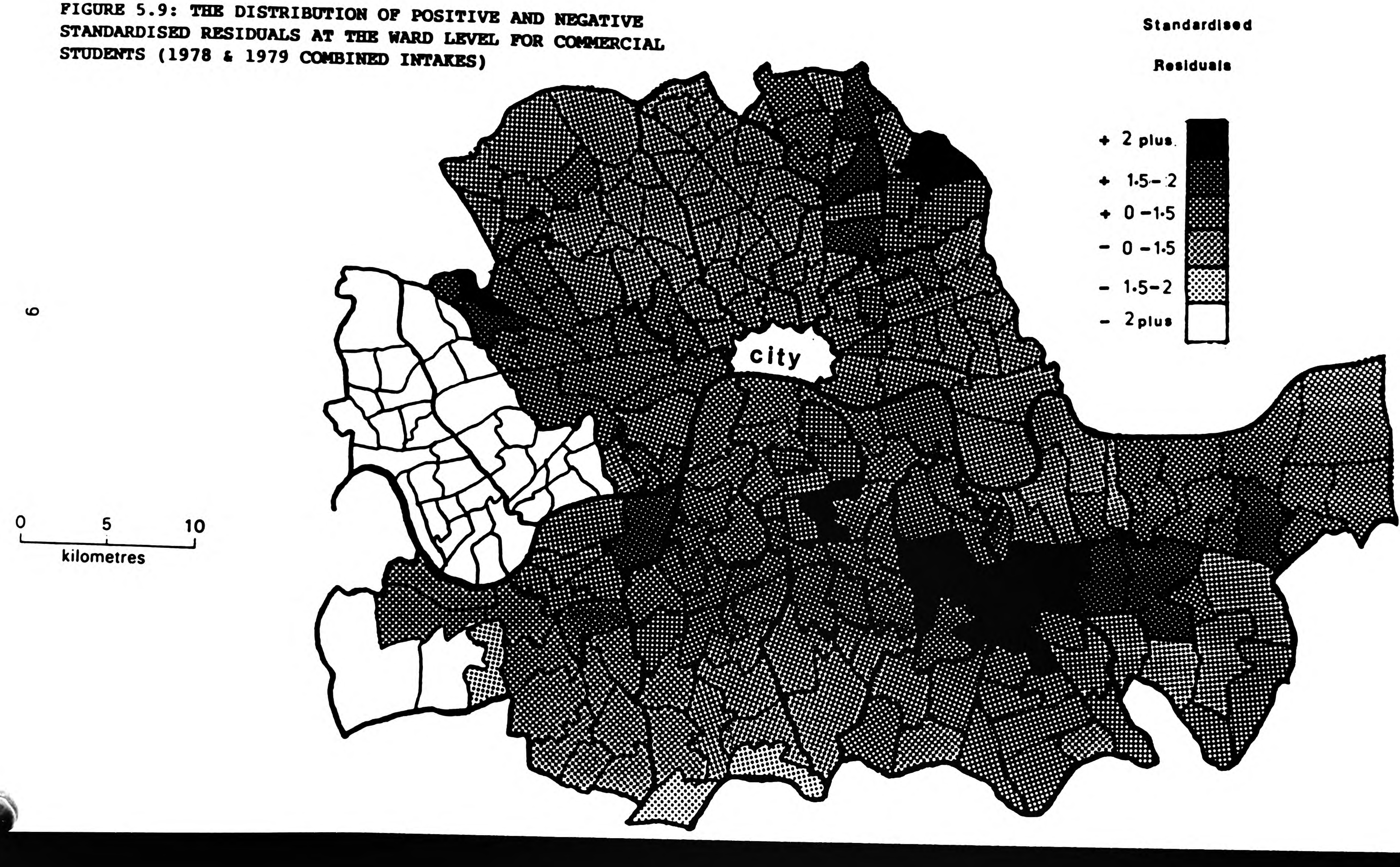


FIGURE 5.10: THE DISTRIBUTION OF POSITIVE AND NEGATIVE STANDARDISED RESIDUALS AT THE WARD LEVEL FOR CONSTRUCTION STUDENTS (1978 & 1979 COMBINED INTAKES)

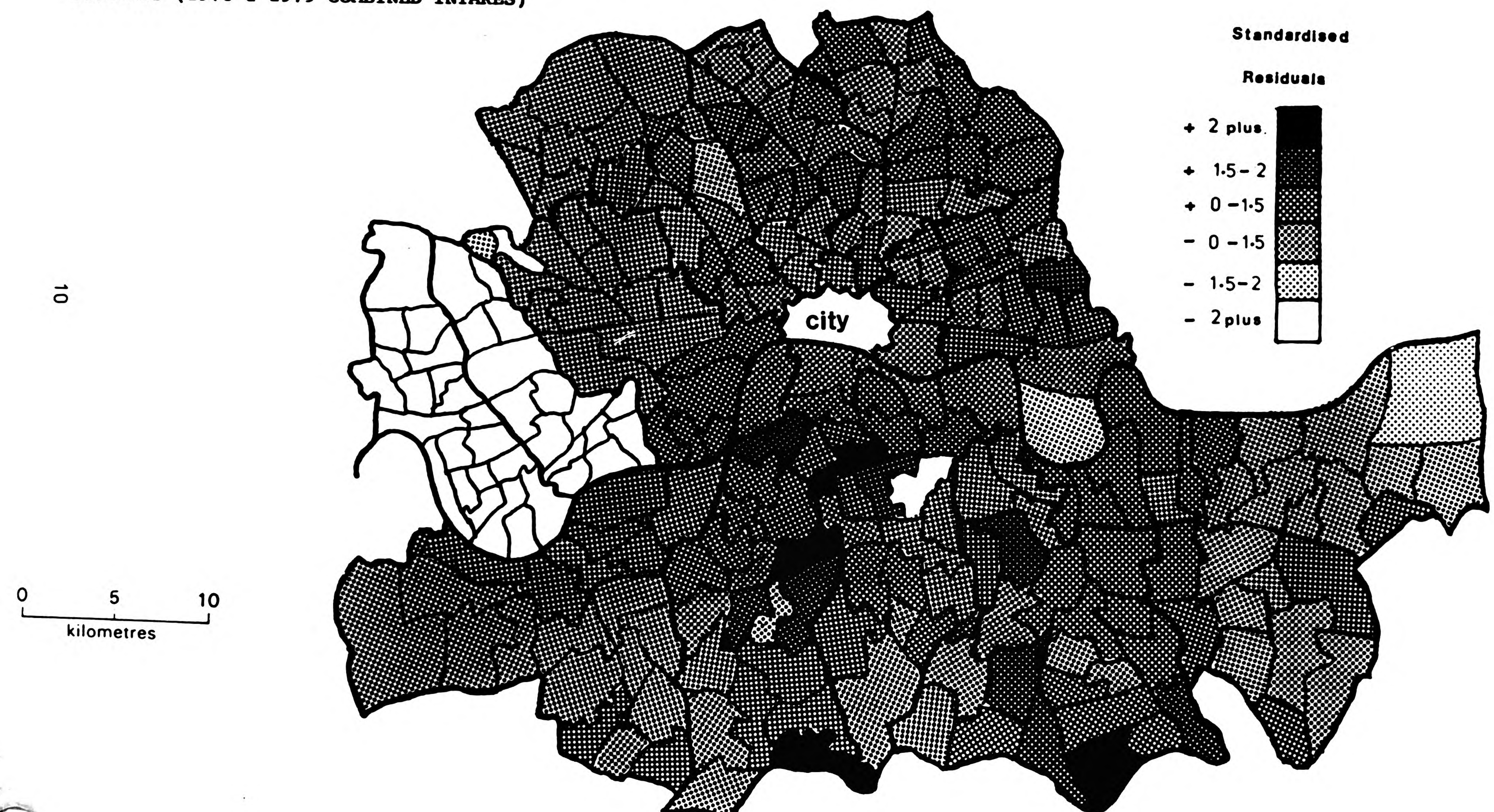


FIGURE 5.11: THE DISTRIBUTION OF POSITIVE AND NEGATIVE STANDARDISED RESIDUALS AT THE WARD LEVEL FOR ENGINEERING STUDENTS (1978 & 1979 COMBINED INTAKES)

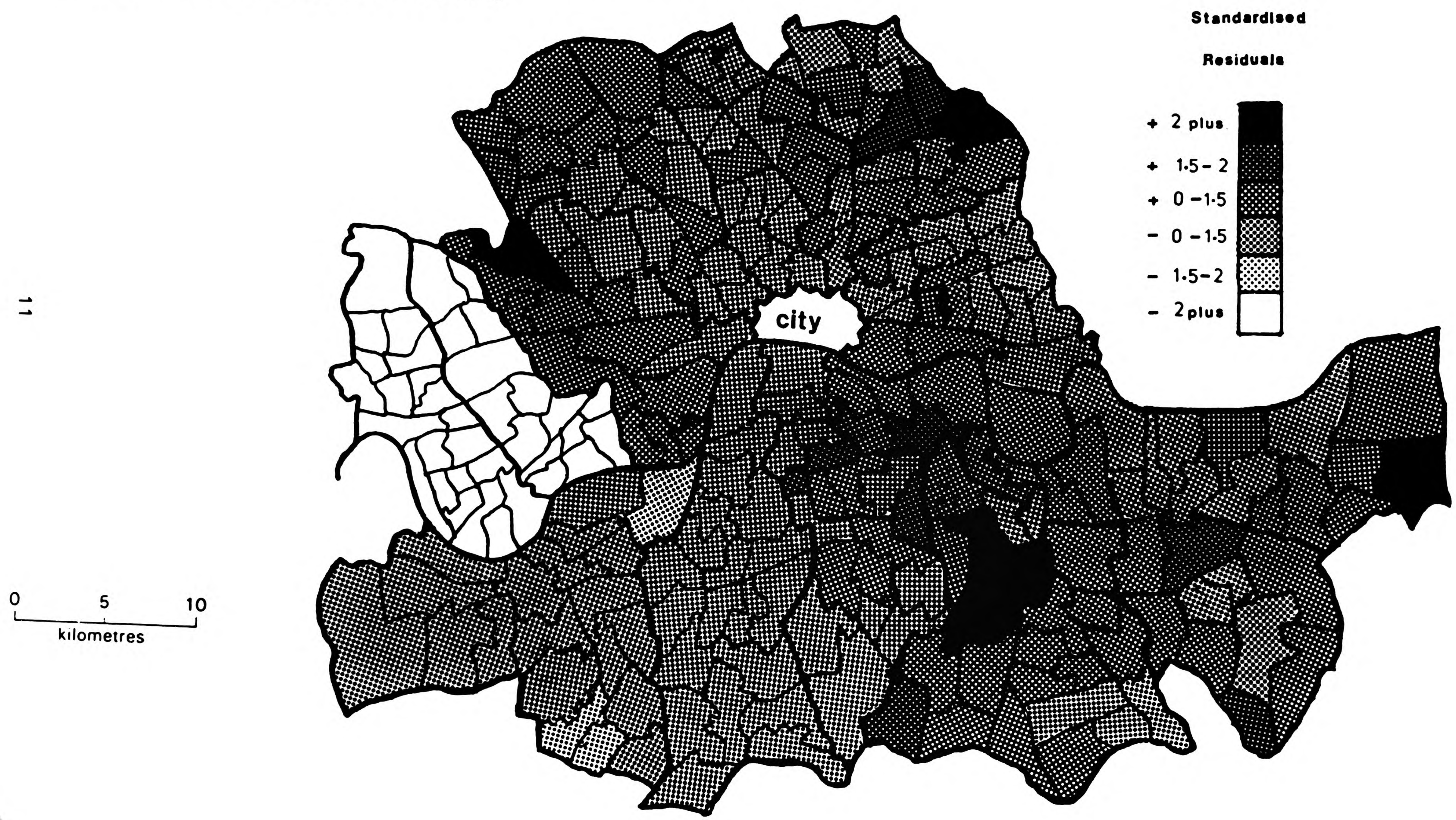


FIGURE 5.12: THE DISTRIBUTION OF CONSTRUCTION FIRMS WITHIN THE INNER LONDON STUDY AREA (1978)

Figure 6.1.a : Mean percentage of economically active males in professional and managerial work by cluster

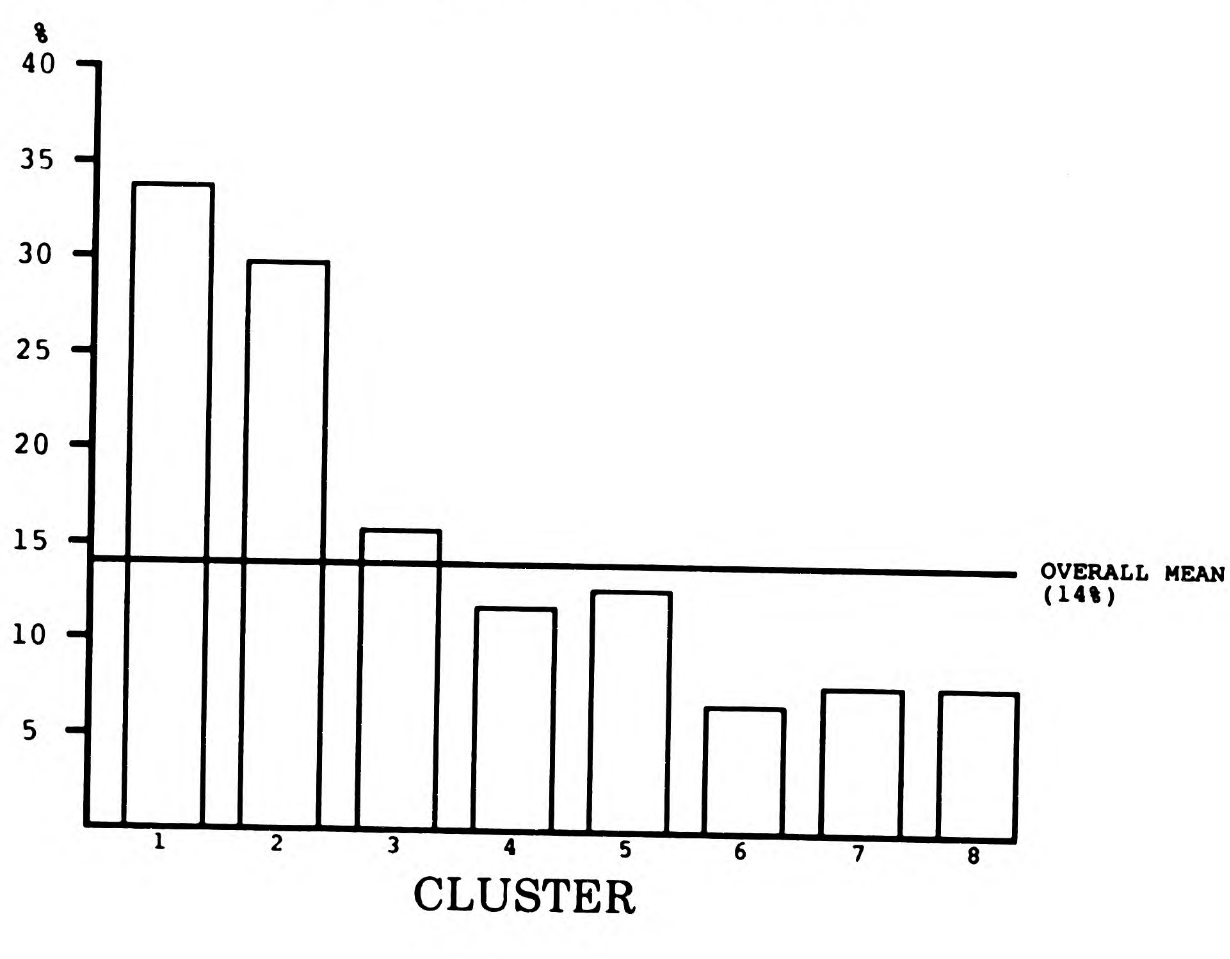


Figure 6.1.b : Mean percentage of economically active males in other non-manual work by cluster

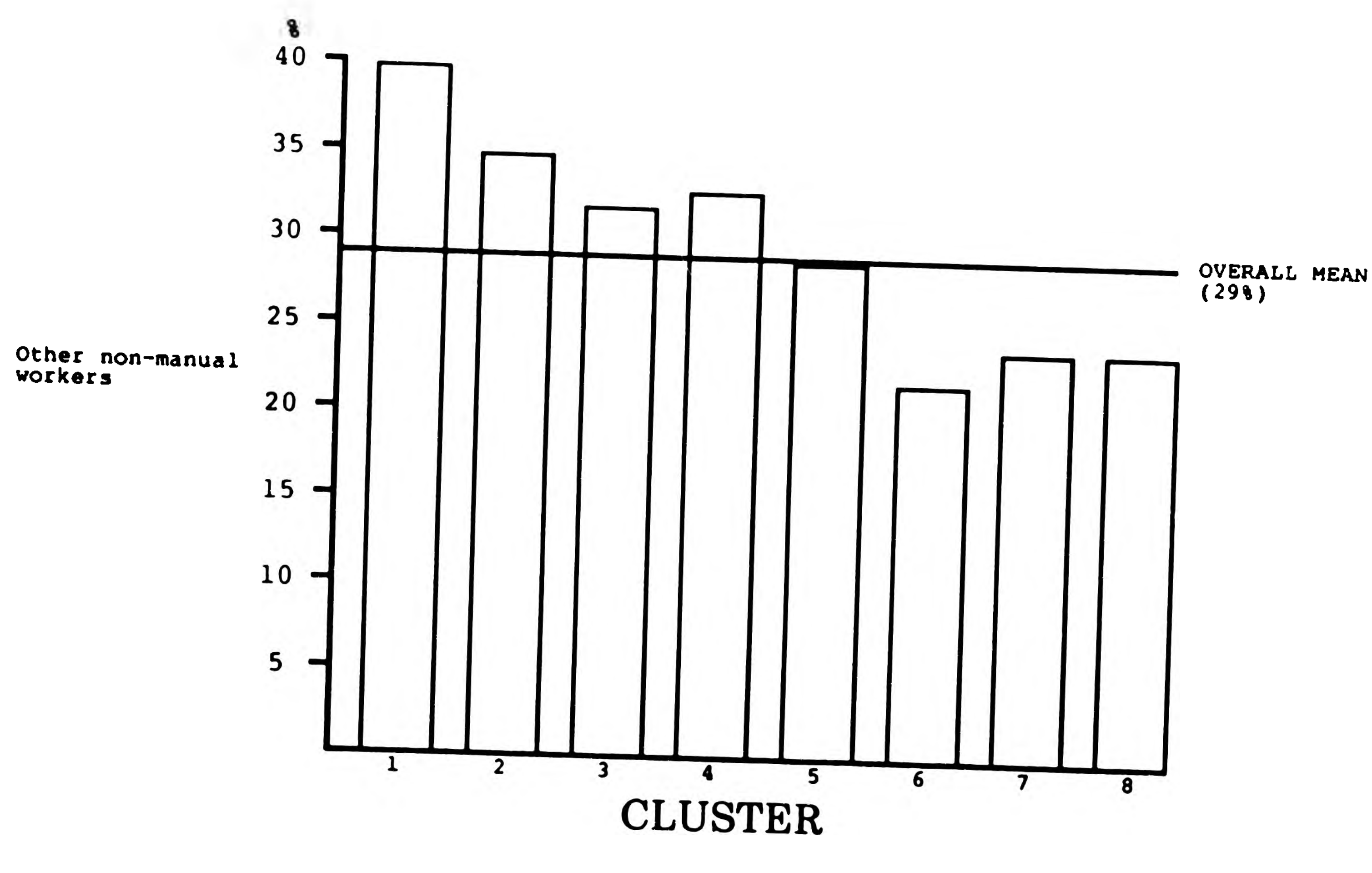


Figure 6.1.c : Mean percentage of economically active males in skilled manual work by cluster

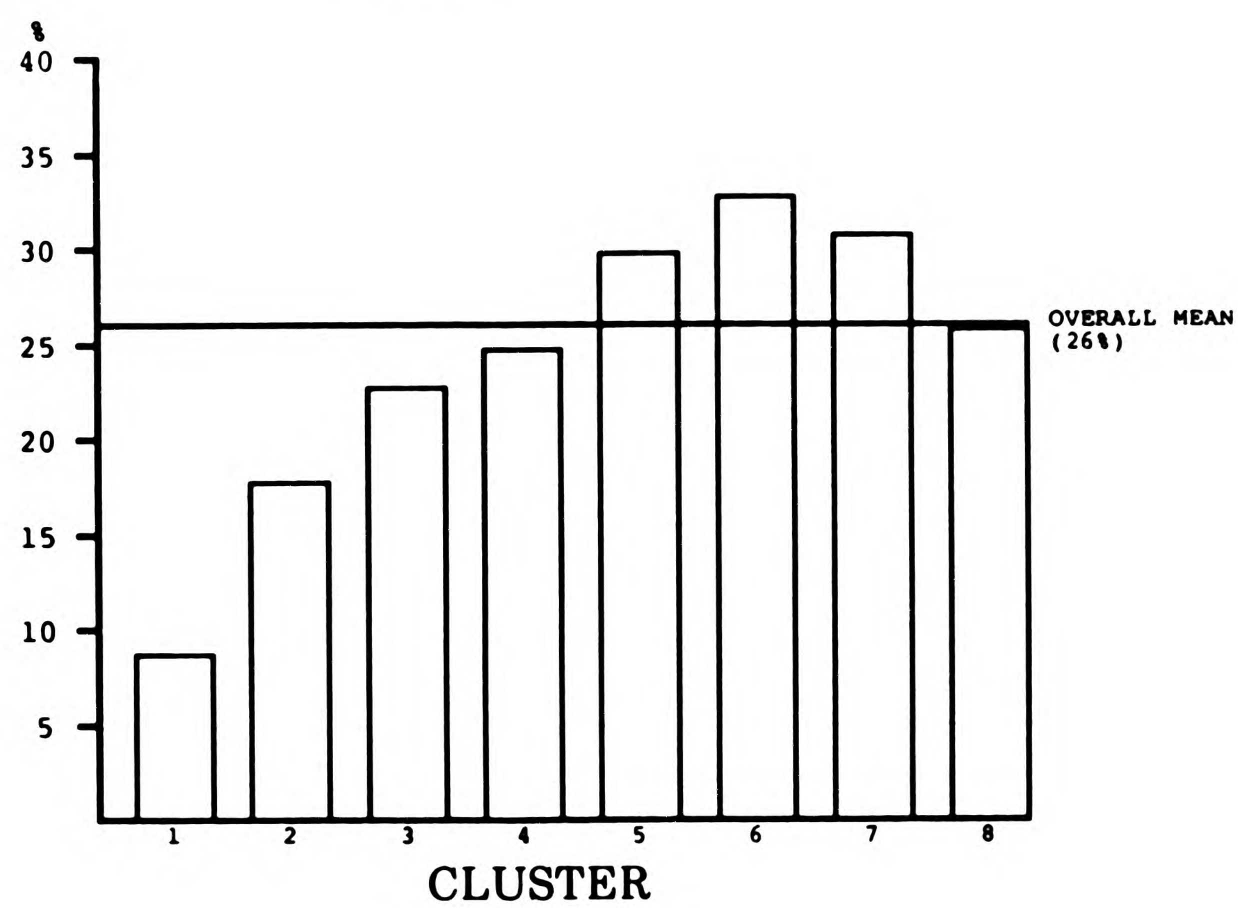


Figure 6.1.d : Mean percentage of economically active males in semi-skilled manual work by cluster

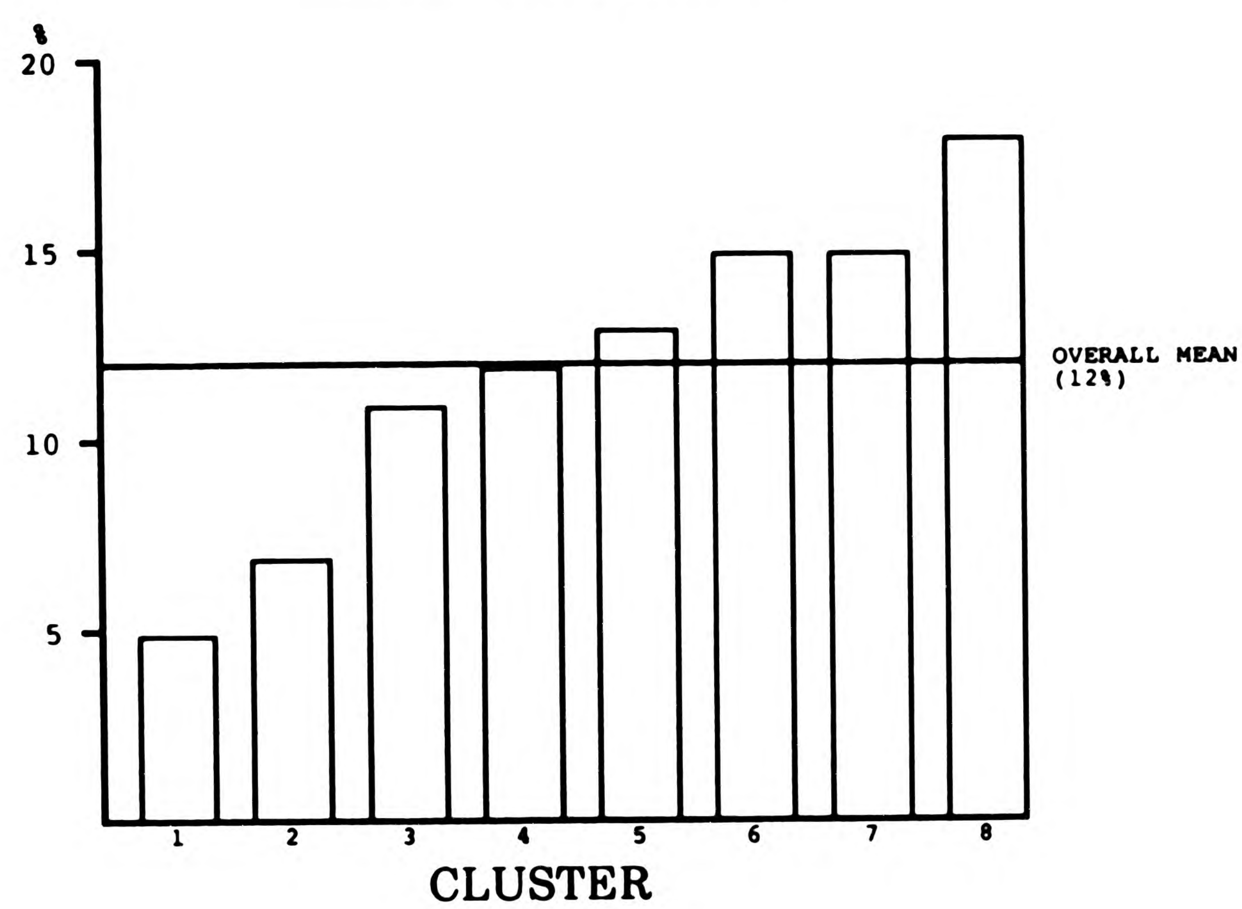


Figure 6.1.e : Mean percentage of economically active males in unskilled manual work by cluster

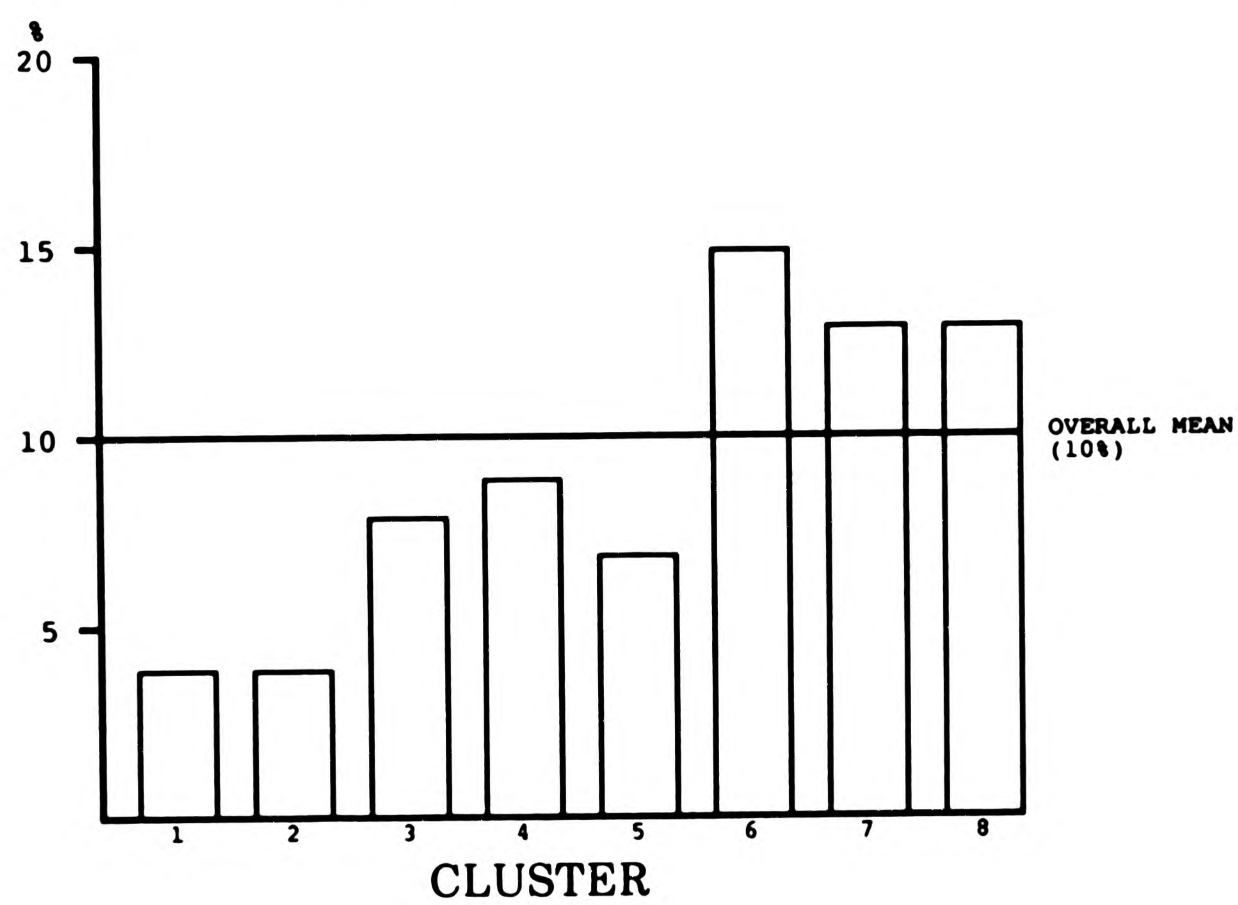


Figure 6.1.f : Mean percentage of population living in privately rented accommodation by cluster

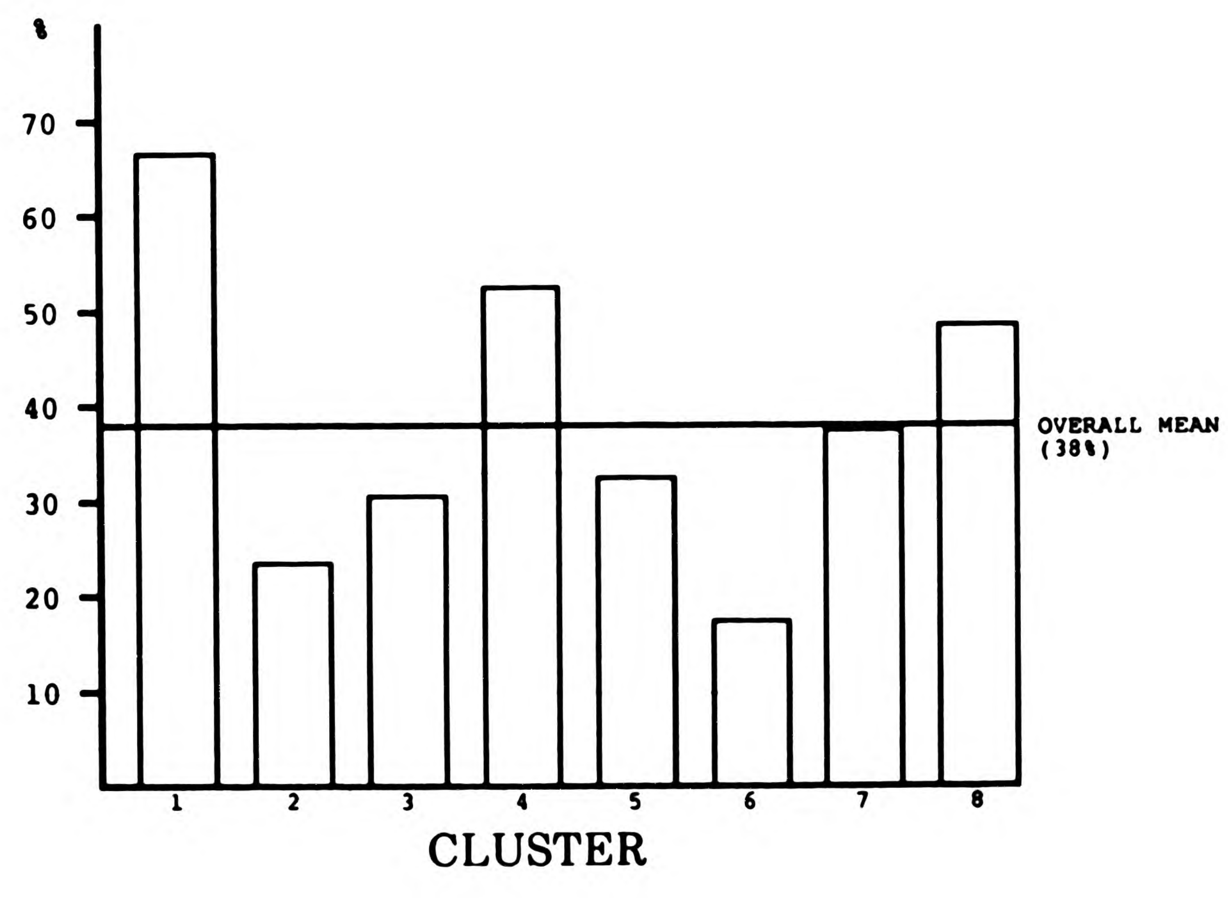


Figure 6.1.g : Mean percentage of population living in council housing by cluster

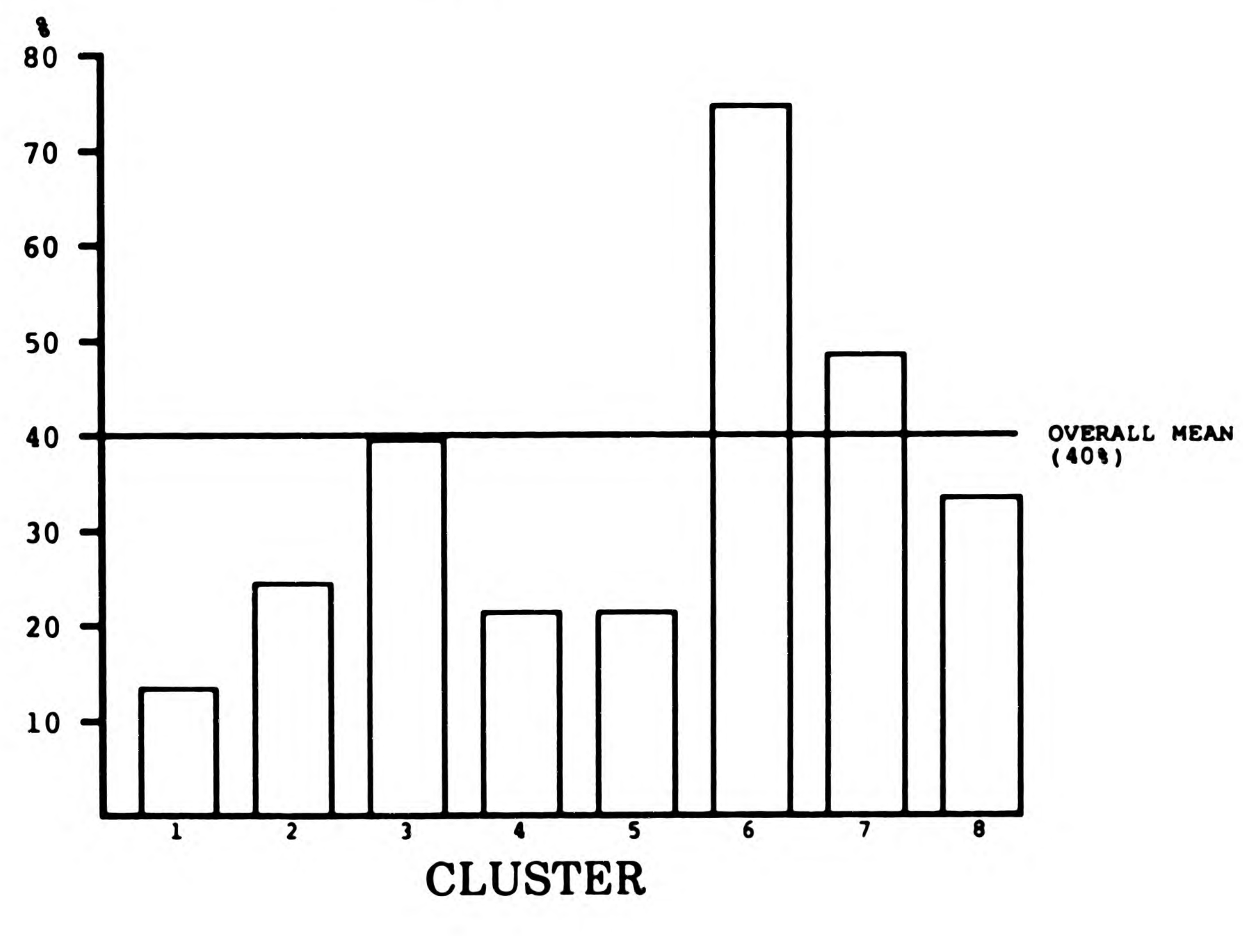


Figure 6.1.h : Mean percentage of population living in owner occupied housing by cluster

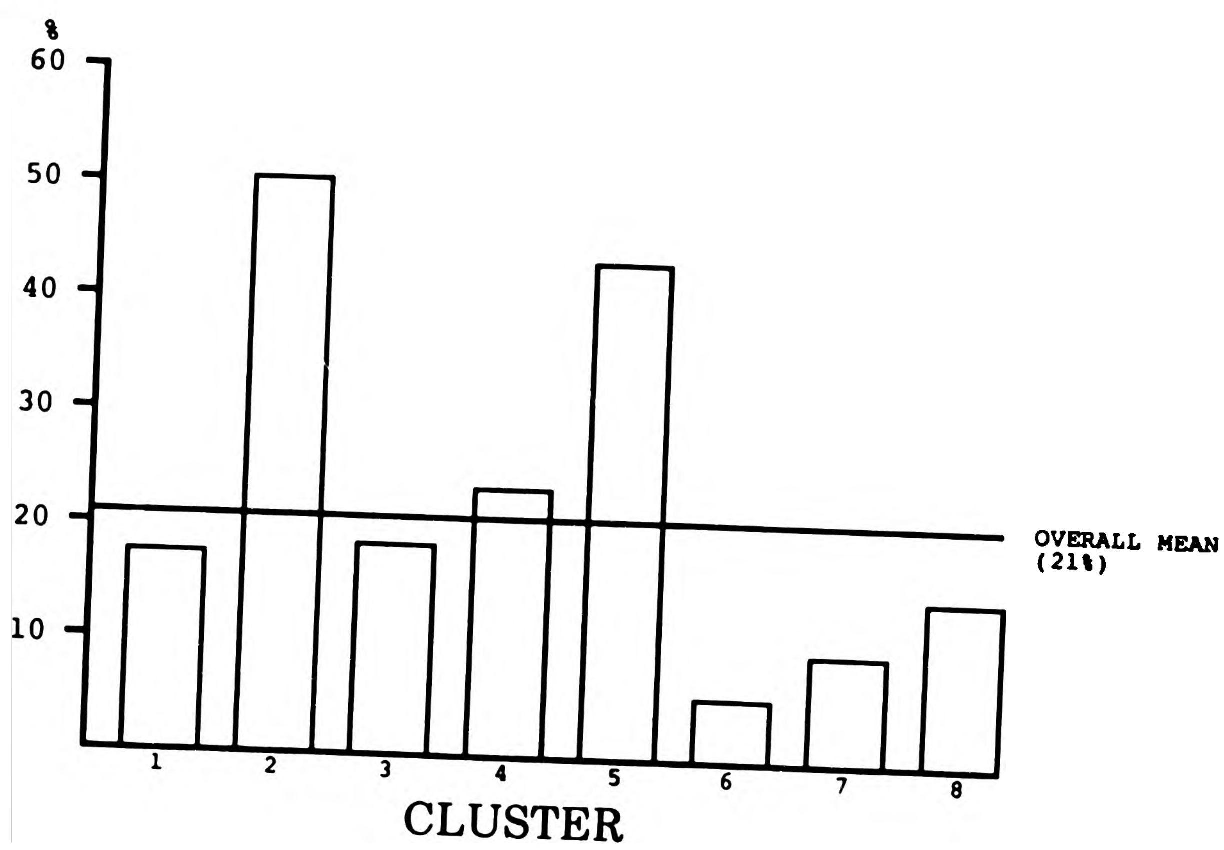


Figure 6.1.i : Mean percentage of population with degrees or their equivalent by cluster

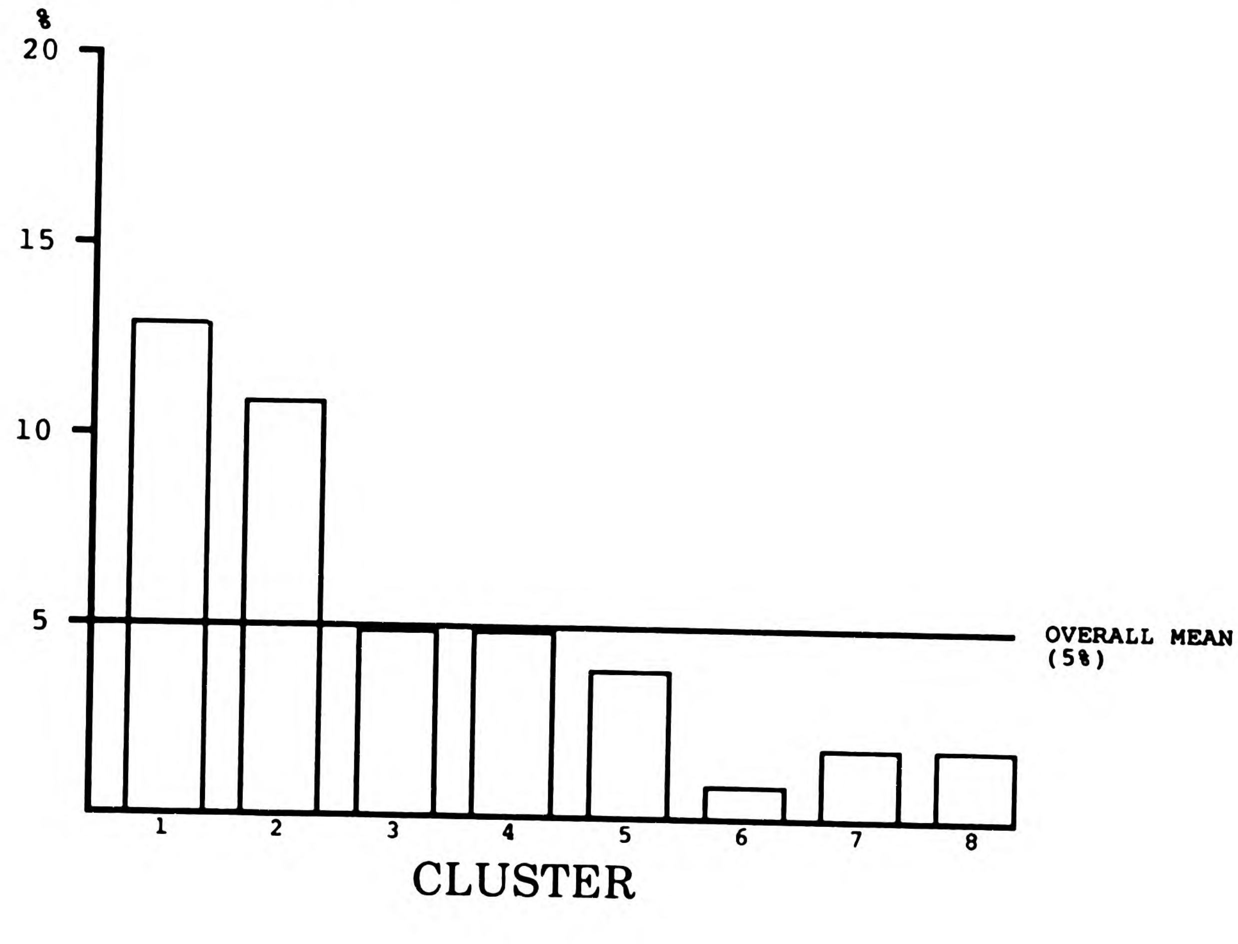


Figure 6.1.j : Mean percentage of population with 'A' levels by cluster

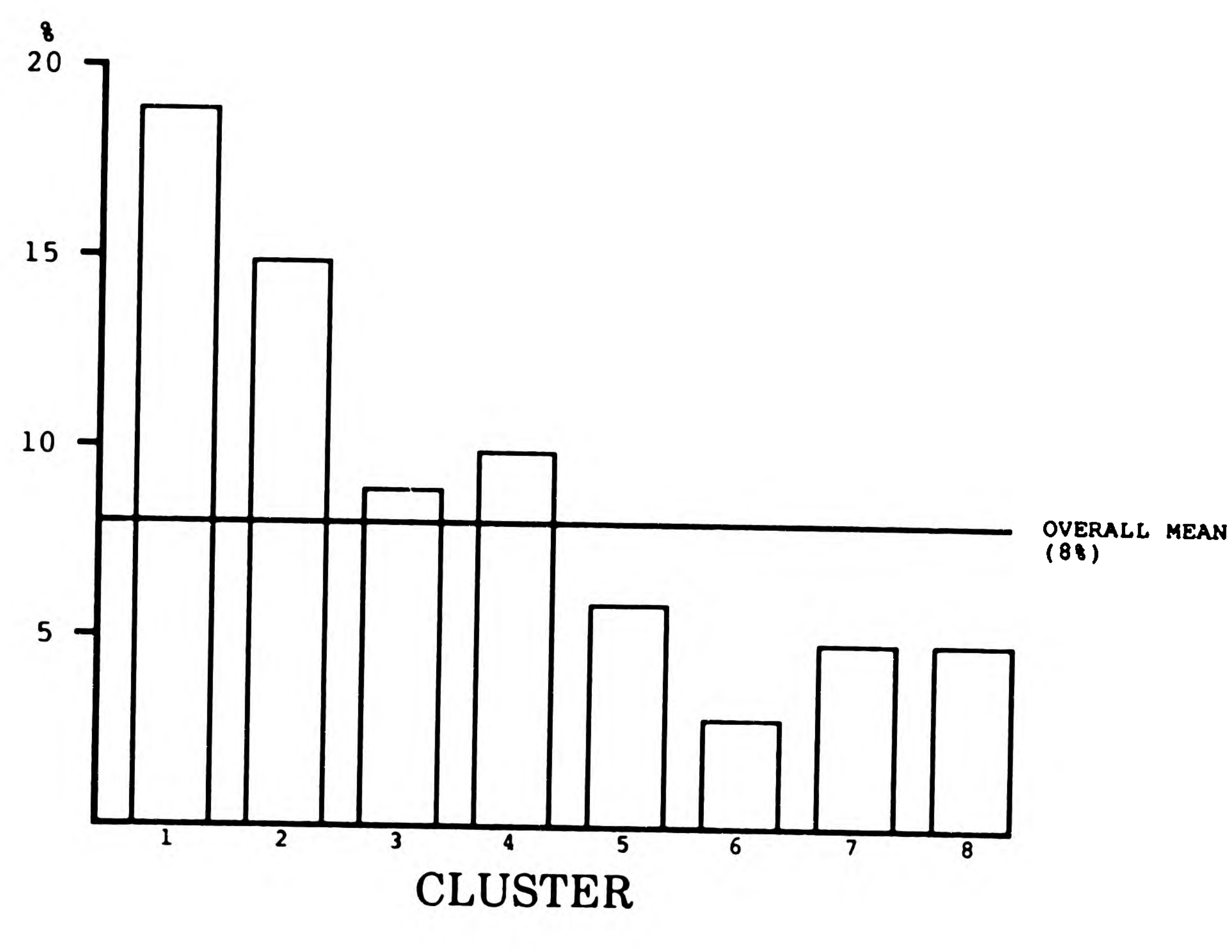


Figure 6.1.k : Mean percentage of population born in the New Commonwealth by cluster

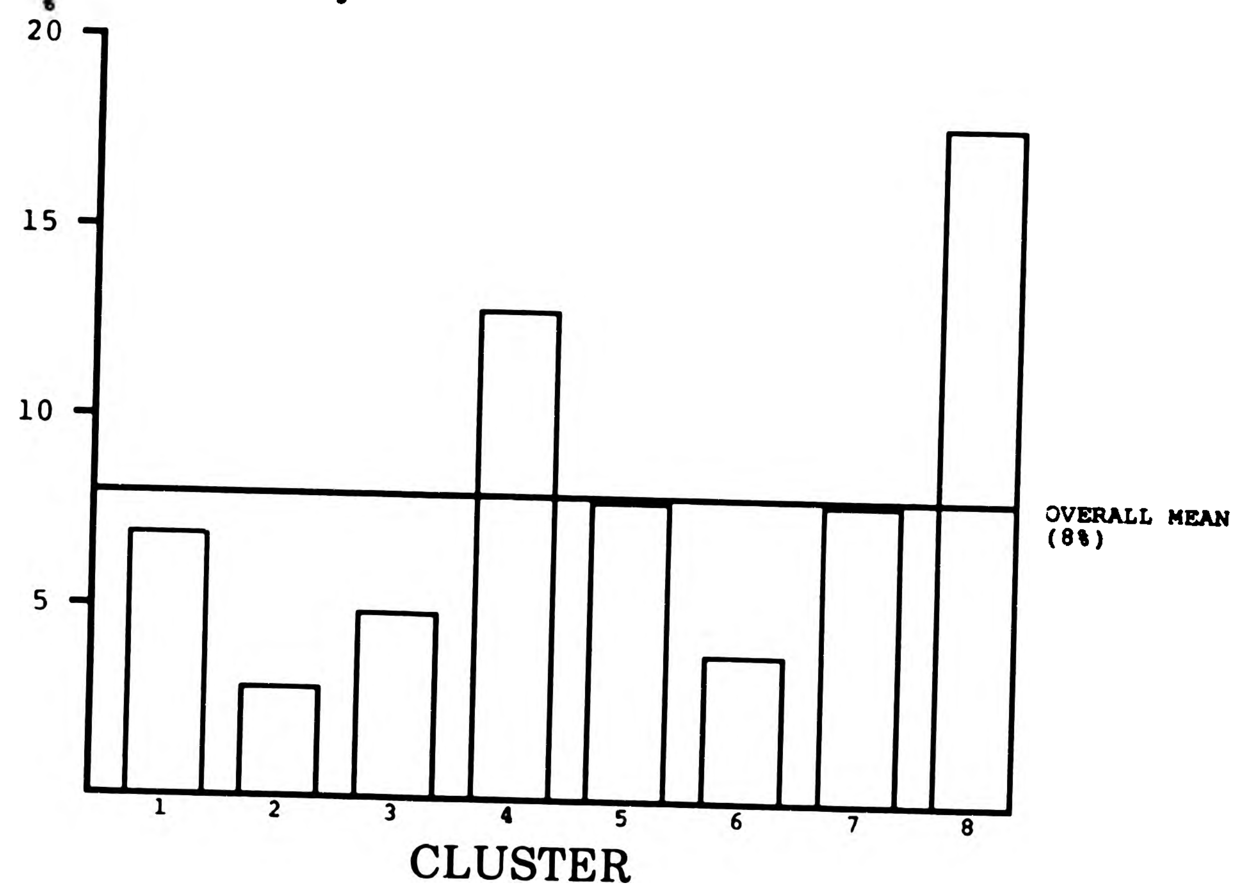


Figure 6.1.1 : Mean percentage of the population living in housing with exclusive use of all amenities by cluster

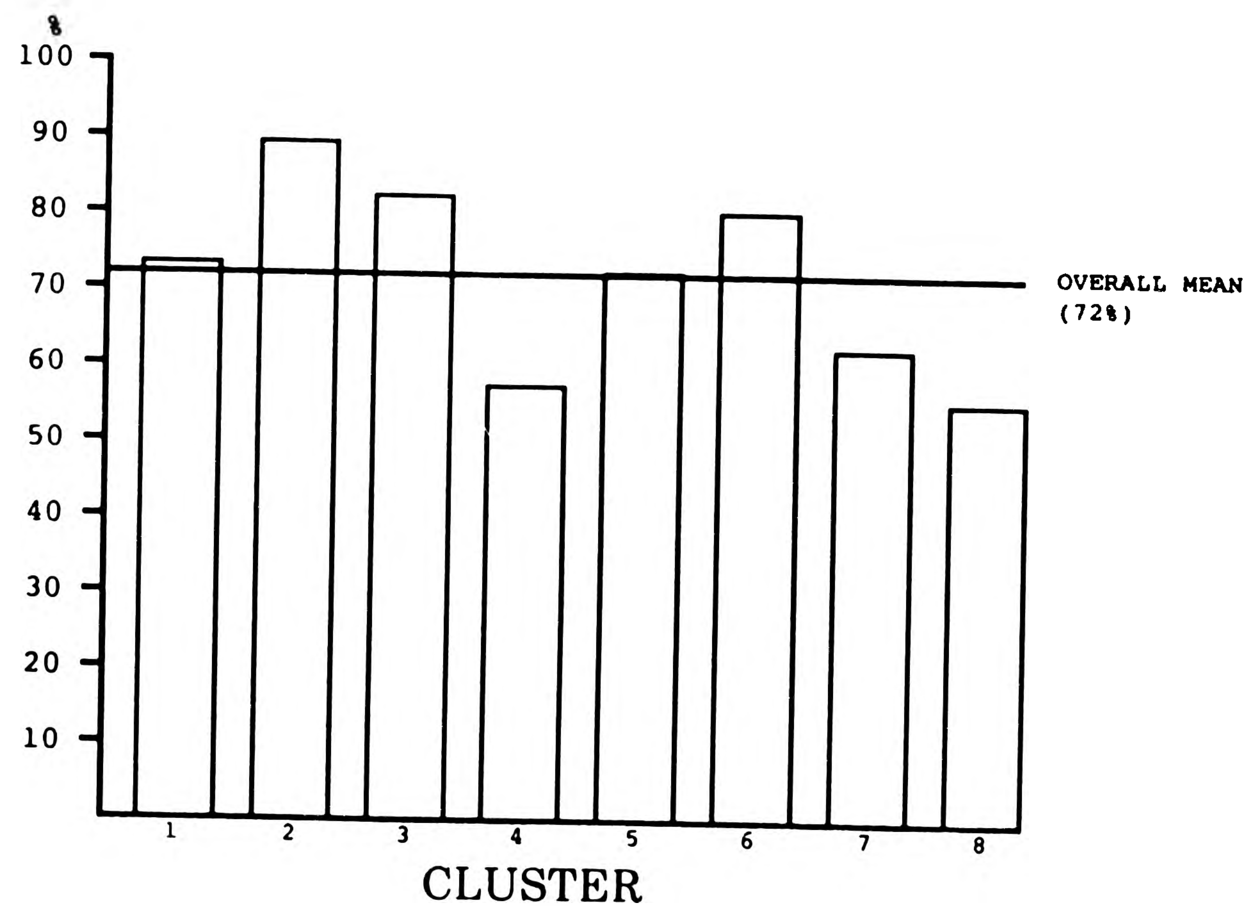
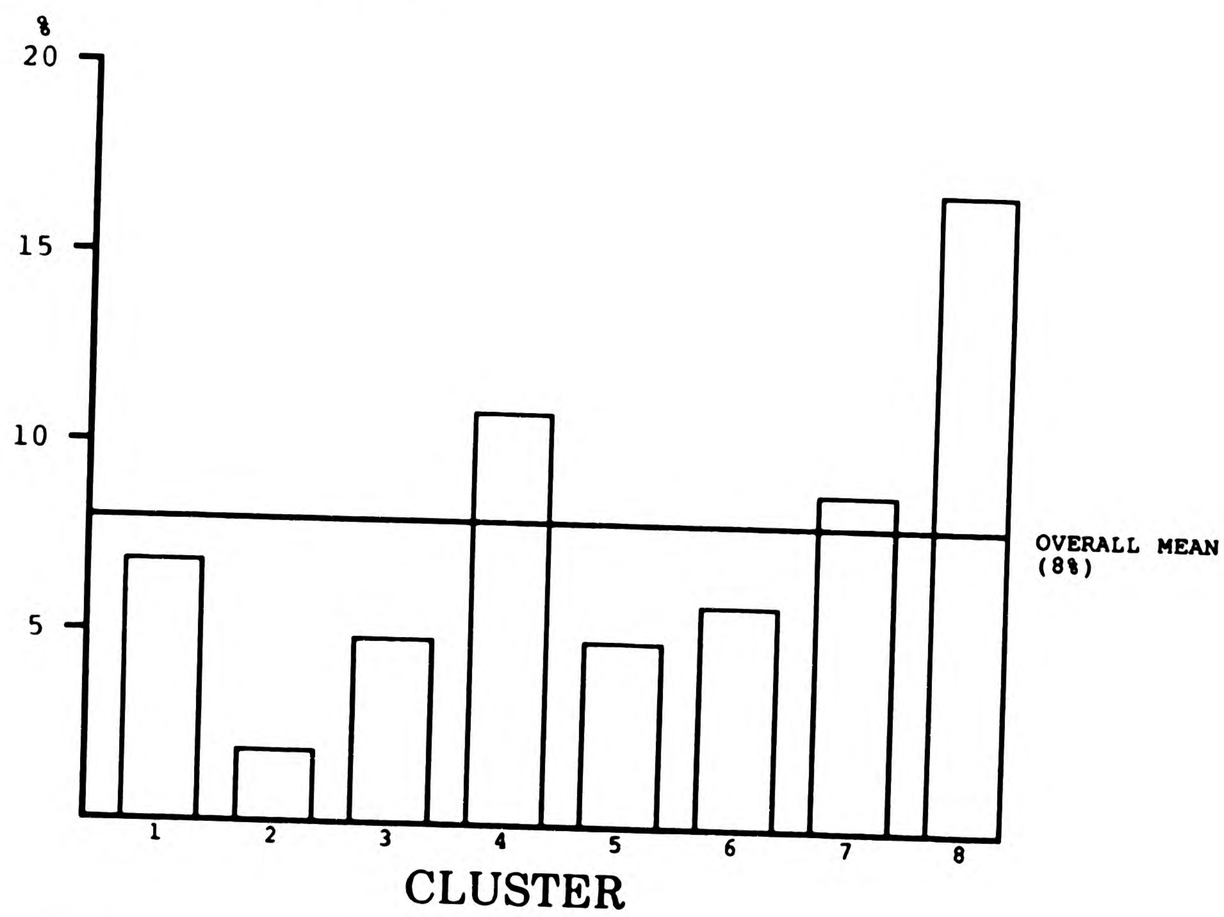


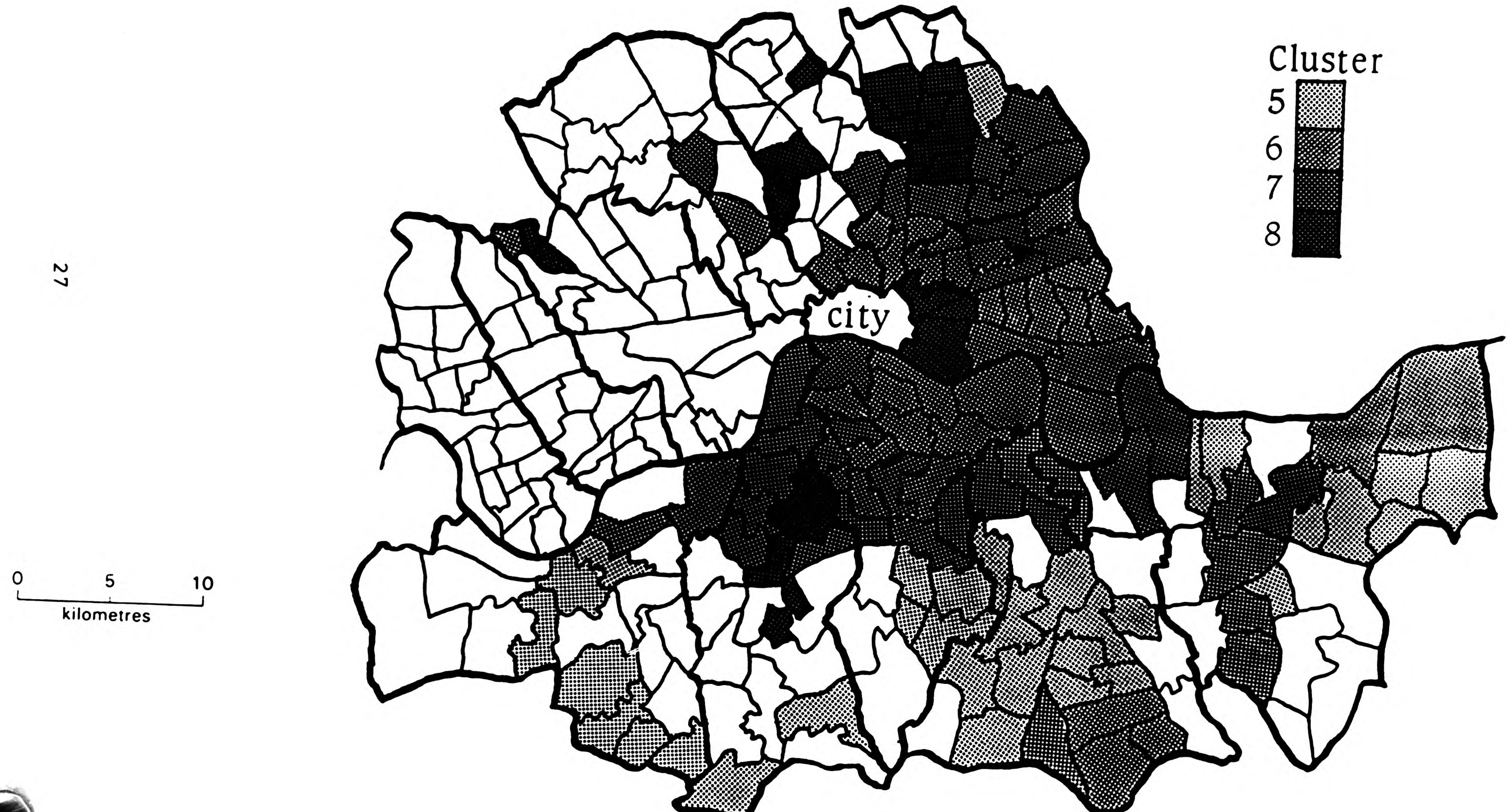
Figure 6.1.m : Mean percentage of the population living in overcrowded housing by cluster *



* Number of persons per room >1.5

FIGURE 6.2: THE DISTRIBUTION OF WARDS CHARACTERISED BY ABOVE AVERAGE PERCENTAGES OF NON-MANUAL WORKERS

FIGURE 6.3: THE DISTRIBUTION OF WARDS CHARACTERISED BY BELOW AVERAGE PERCENTGES OF NON-MANUAL WORKERS



APPENDIX 1.2

THE TABLES

Table 2.1: Jobs Most Frequently Named By Male and Female Students

	Female (N = 21)		Male (N = 27)
Nurse/midwife	20	Policeman	17
Doctor/surgeon	15	Teacher	12
Shop assistant	13	Electrician	12
Secretary	11	Plumber	11
Teacher	11	Carpenter	10
Hairdresser	10	Mechanic	10
Vet	9	Dustman	9
Cook/catering	7	Lorry driver	9
Office work/Clerk	7	Cook/chef	8
Cashier	6	Engineer	8
Nursery nurse	6	Shop assistant	7

Table 2.2: Constructs Named by Three or More Students Involved in the Pilot Repertory Grid Survey *

			N of students
working with machines	v	working with people	9
office work	v	manual work	9
male jobs	v	female jobs	8
clean jobs	v	dirty jobs	8
making things	v	not making things	6
dealing with people	v	not dealing with people	5
involve writing	v	don't involve much writing	5
boring jobs	v	interesting jobs	4
less responsibility	v	more responsibility	4
skilled jobs	v	not such skilled jobs	4
higher paid	v	lower pay	4
better prospects	v	poorer prospects	4
work alone	v	work with others	3
technicial work	v	not such technical work	3
use electrical equipment	v	don't use electrical equipment	3
record/filing used	v	little record keeping/filing	3
regular hours	v	irregular hours	3
inside work	v	work outside	3
not so much experience needed	v	lots of experience needed	3

Total N = 16

* Constructs were classified on the basis of similarities in the verbal labels given by students.

Table 2.3: The Numbers and Percentages of Commercial, Construction and Engineering Students Included in the Main Repertory Grid Survey in 1979

	Repertory Grid Survey			Total Survey 1979	
	N	%	% of Total Sample	N	%
Commercial	205	33.3	26.8	766	32.6
Construction	187	30.4	31.1	601	28.3
Engineering	224	36.4	31.5	711	36.9
Total	616	100.0	29.6	2078	100.0

Table 5.1: Numbers of First Year Students Undertaking Selected Commercial, Construction and Engineering Courses in 1978 and 1979 by College Attended.

COURSE	COLLEGE					
1978	HACKNEY	PADDINGTON	SE LONDON	VAUXHALL	WOOLWICH	TOTAL
Commercial	153	116	197	106	106	678
Construction	197	-	164	226	-	587
Engineering	242	190	184	-	150	766
TOTAL	592	306	545	332	256	2031
1979						
Commercial	178	172	180	128	108	766
Construction	183	-	195	223	-	601
Engineering	207	239	124	-	141	711
TOTAL	568	411	499	351	249	2078

Table 5.1: Numbers of First Year Students Undertaking Selected Commercial, Construction and Engineering Courses in 1978 and 1979 by College Attended.

COURSE	COLLEGE					
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TOTAL	592	306	545	332	256	2031
1979						
Commercial	178	172	180	128	108	766
Construction	183	-	195	223	-	601
Engineering	207	239	124	-	141	711
TOTAL	568	411	499	351	249	2078

Table 5.2: Numbers of First Year Students Undertaking Selected Commercial, Construction and Engineering Courses in 1978 and 1979

	STUDENT GROUP			
YEAR	Commercial	Construction	Engineering	Total
1978	678	587	766	2031
1979	766	601	711	2078
TOTAL	1444	1188	1477	4109

Table 5.3: The Distribution of Commercial, Construction and Engineering Students by Area of Origin in 1978 and 1979 *

	1978		1979	
	N	%	N	%
INNER LONDON BOROUGHS				
Commercial	511	75.4	545	71.2
Construction	407	69.3	411	68.4
Engineering	534	69.7	489	68.8
Total	1452	71.5	1444	69.5
OUTER LONDON BOROUGHS				
Commercial	162	23.9	213	27.8
Construction	156	26.6	167	27.8
Engineering	212	27.7	180	25.3
Total	530	26.1	560	27.0
OUTSIDE GLC AREA				
Commercial	5	0.7	8	1.0
Construction	24	4.1	24	4.0
Engineering	20	2.6	42	5.9
Total	49	2.4	74	3.6

* All percentages are rounded to one decimal place.

Table 5.4: Pearson Product Moment Correlations Between the Distributions of the Three Student Groups at the Ward Level

	1978	1979	Combined Totals
	r	r	r
Commercial and Engineering	0.47 **	0.47 **	0.56 **
Commercial and Construction	0.30 **	0.17 *	0.26 **
Construction and Engineering	0.11	0.16 *	0.16 *

* p <0.05 ** p <0.01

N=209

Table 5.5: Chi-Square Values for Commercial, Construction and Engineering Student Distributions in 1978 and 1979

	1978	1979
Commercial	88.88 *	76.24
Construction	122.66 *	129.09 *
Engineering	85.85 *	83.67 *

p <0.05, v = 64

Table 5.6: Pearson Product Moment Correlations Between the Distributions of Vocational Students and Measures of Social Class Composition at the Ward Level, in 1978 and 1979

% Economically Active Males

	1978 intake	1979 intake	Combined student total
	r	r	r
Professional & managerial	- 0.35 ***	- 0.33 ***	- 0.37 ***
Other non-manual	- 0.31 ***	- 0.26 **	- 0.29 ***
Skilled manual	0.40 ***	0.38 ***	0.42 ***
Semi-skilled manual	0.20 *	0.19 *	0.26 **
Unskilled manual	0.10	0.10	0.15 *

* p <0.05

** p <0.01

*** p <0.0001

N=209

Table 5.7: Pearson Product Moment Correlations Between the Selected Census Based Measures of Socio-Economic Characteristics and Population Size at the Ward Level

	Prof	Non-man	Skilled	Semi	Unskill	A-level	Degree
Prof	1.00	0.58	-0.82	-0.79	-0.69	0.85	0.86
Nonman		1.00	-0.72	-0.71	-0.65	0.74	0.68
Skilled			1.00	0.66	0.48	-0.85	-0.82
Semi				1.00	0.59	-0.75	-0.73
Unskill					1.00	-0.67	-0.65
A-level						1.00	0.96
Crowded	-0.29	-0.02ns	-0.04	0.27	0.35	-0.06ns	-0.14
Excam	0.30	0.03ns	-0.09ns	-0.24	-0.20	0.11ns	0.16
Occup	0.36	0.32	-0.15	-0.33	-0.62	0.23	0.27
Rented	0.38	0.49	-0.57	-0.34	-0.27	0.56	0.48
Council	-0.55	-0.61	0.55	0.51	0.66	-0.61	-0.57
Immig	-0.17	0.10ns	-0.05ns	0.17	0.02ns	0.01ns	-0.06ns
Nyoung	-0.35	-0.17	0.35	0.21	0.16	-0.36	-0.35

	Crowded	Excam	Occup	Rented	Council	Immig	Nyoung
Crowded	1.00	-0.64	-0.40	0.43	-0.06ns	0.77	0.13ns
Excam		1.00	0.16	-0.58	0.34	-0.67	0.00ns
Occup			1.00	-0.13	-0.63	0.01ns	0.07ns
Rented				1.00	-0.70	0.49	-0.28
Council					1.00	-0.40	0.16
Immig						1.00	0.20
Nyoung							1.00

N=209

All correlations significant unless indicated ns

Table 5.8: Summary of Disaggregated Multiple Regression Analysis - Dependent Variable Total Number of Vocational Students 1978 and 1979 by Wards

N = 209 S = Number of vocational students
Variables in equation (in order of entry)

	Variable	b	rij.k	F	Significance
X1	Nyoung	0.450	0.467	86.56	0.0001
X2	Skilled	0.269	0.301	57.62	0.0001

a = -4.816 rs.12 = 0.599 r2 = 0.359

Variables not in equation

	Variable	rij.12	T	Signifiance T
X3	Prof	0.017	0.242	0.8091
X4	Nonman	-0.046	-0.654	0.514
X5	Semi	-0.020	-0.291	0.772
X6	Unskill	-0.067	-0.964	0.336
X7	A-level	-0.097	-1.391	0.166
X8	Degree	-0.041	-0.591	0.555
X9	Crowded	0.054	-0.780	0.437
X10	Excam	-0.045	0.641	0.522
X11	Council	-0.087	-1.249	0.213
X12	Rented	-0.042	-0.603	0.547
X13	Immig	-0.014	-0.197	0.844

*In considering the factor of social class it must be remembered that the categories Prof Nonman Skilled Semi and Unskill did not sum to 100% (because unclassified, economically inactive and those in the armed forces were included when percentages were calculated, but were not used in the analysis.)

Table 5.9: Pearson Product Moment Correlations Between the Numbers of Commercial Construction and Engineering Students and Selected Census Measures at the Ward Level

VARIABLE	STUDENT GROUP (combined 1978 and 1979 Totals)		
	Commercial	Construction	Engineering
Prof	-0.260 ***	-0.302 ***	-0.293 ***
Nonman	-0.198 **	-0.181 **	-0.289 ***
Skilled	0.311 ***	0.308 ***	0.345 ***
Semi	0.191 **	0.180 **	0.218 **
Unskill	0.027	0.171 *	0.181 **
A-level	-0.294 **	-0.351 ***	-0.347 ***
Degree	-0.273 **	-0.339 ***	-0.306 ***
Occup	0.186 *	-0.027	0.019
Rented	-0.152 *	-0.307 ***	-0.271 ***
Council	-0.021	0.260 ***	0.195 **
Immig	0.201 *	-0.040	-0.071

** p <0.01 *** p <0.0001

N=209

Table 5.10: Summary of Disaggregated Multiple Regression Analysis - Dependent Variable Total Number of Commercial Students 1978 and 1979 by Wards

N = 209   c = Number of commercial students
Variables in equation (in order of entry)

Variable		b	rij.kl	F	Significance
X1	Nyoung	0.371	0.377	49.937	0.0001
X2	Skilled	0.327	0.291	57.63	0.0006
X3	Council	-0.261	-0.248	13.381	0.0001

a = -2.664   rc 123 = 0.520   r2 = 0.271

Variables not in equation

Variable		rij.123	T	Signifiance T
X4	Prof	0.013	-0.191	0.849
X5	Nonman	-0.110	1.587	0.114
X6	Semi	0.047	0.678	0.499
X7	Unskill	-0.025	-0.363	0.717
X8	A-level	-0.100	-1.40	0.162
X9	Degree	-0.052	-0.746	0.457
X10	Crowded	0.032	0.458	0.647
X11	Excam	0.061	0.878	0.381
X12	Rented	-0.077	-1.105	0.271
X13	Immig	0.054	0.778	0.438

Table 5.11: Summary of Disaggregated Multiple Regression Analysis - Dependent Variable Total Number of Construction Students 1978 and 1979 by Wards

N = 209 c = Number of construction students
Variables in equation (in order of entry)

	Variable	b	rij.k	F	Significance
X1	Nyoung	0.514	0.525	86.438	0.0001
X2	Council	0.176	0.207	9.233	0.003

a = -1.2565 rc.12 = 0.570 r2 = 0.325

Variables not in equation

	Variable	rij.12	T	Signifiance T
X3	Prof	-0.036	-0.513	0.608
X4	Nonman	0.019	0.267	0.790
X5	Skilled	0.052	0.738	0.461
X6	Semi	-0.025	-0.351	0.726
X7	Unskill	-0.040	-0.573	0.568
X8	A-level	-0.099	-1.421	0.157
X9	Degree	-0.091	-1.314	0.190
X10	Crowded	-0.112	-1.612	0.109
X11	Excam	0.077	1.100	0.273
X12	Rented	-0.073	-1.042	0.299
X13	Immig	-0.098	-1.406	0.161

Table 5.12: Summary of Disaggregated Multiple Regression Analysis - Dependent Variable Total Number of Engineering Students 1978 and 1979 by Wards

N = 209 e = Number of engineering students
Variables in equation (in order of entry)

	Variable	b	rij.k	F	Significance
X1	Nyoung	0.172	0.172	16.352	0.0001
X2	Skilled	0.288	0.280	17.615	0.0001

a = -0.617 re.12 = 0.382 r2 = 0.146

Variables not in equation

	Variable	rij.12	T	Signifiance T
X3	Prof	0.007	0.096	0.924
X4	Nonman	-0.083	-1.193	0.234
X5	Semi	-0.011	-0.150	0.881
X6	Unskill	0.020	0.281	0.779
X7	A-level	-0.085	-1.222	0.223
X8	Degree	-0.091	-0.266	0.790
X9	Crowded	-0.077	-1.099	0.273
X10	Excam	0.052	0.743	0.458
X11	Council	0.011	0.162	0.872
X12	Rented	-0.080	-1.145	0.254
X13	Immig	-0.099	-1.427	0.155

Table 6.1: The Mean Percentage Scores on Each Census Variable for Wards in the Eight Clusters.

Variable	CLUSTER								$\bar{X}$ SCORE ALL WARDS
	1	2	3	4	5	6	7	8	
PROF	33.69	30.37	16.17	12.07	12.81	6.84	7.82	8.07	14.23
NON MAN	39.93	34.68	31.85	33.31	28.67	22.30	23.47	24.09	28.88
SKILLED	9.17	17.82	23.40	25.31	29.56	32.47	30.47	25.64	25.72
SEMI	4.62	6.67	11.13	11.63	12.85	15.41	14.97	17.49	12.36
UNSKILL	4.01	3.69	7.66	8.64	7.12	14.74	13.32	13.44	9.80
A LEVEL	19.28	14.78	9.11	9.55	6.32	3.39	4.73	5.04	8.14
DEGREE	13.22	11.29	5.26	5.32	3.59	1.42	2.40	2.39	4.87
CROWDED	7.17	2.25	4.97	10.98	4.92	6.09	8.62	15.96	7.49
EXCAMM	73.97	89.49	82.51	58.32	72.58	80.90	63.15	55.63	71.92
OCCUP	17.99	51.43	18.56	24.10	43.98	6.23	10.01	15.21	20.88
RENTED	66.65	23.74	31.11	52.54	33.22	18.12	39.41	48.90	38.07
COUNCIL	13.89	24.49	49.65	21.82	22.10	74.84	49.38	33.87	39.98
IMMIG	7.21	3.33	4.60	12.95	8.26	3.63	8.01	17.56	7.81

Table 6.2: Cluster Characteristics and the Distribution Vocational Students (1978 and 1979 combined totals)

CLUSTER	CHARACTERISTICS	STUDENT NUMBERS*
1	Very high-status rented areas	(111)
2	High status owner-occupied areas with good housing conditions	(120)
3	Non-manual areas with good housing conditions	(266)
4	Non-manual immigrant areas with poor housing conditions	(317)
5	Stable skilled working-class owner-occupied areas	(585)
6	Stable working-class council areas with good housing conditions	(644)
7	Working class areas with poor quality housing	(487)
8	Working class immigrant areas with poor housing conditions	(259)

* N = 2789

Table 6.3: Observed and Expected Numbers of Vocational Students Located in Each Cluster (combined totals 1978 & 1979 intakes)

CLUSTER	NUMBER OF STUDENTS		STUDENT PRODUCTION
	Observed	Expected	
1	111	195.5	(under-producing)
2	120	133.3	(under-producing)
3	266	306.2	(under-producing)
4	317	386.6	(under-producing)
5	585	493.4	(over-producing)
6	644	566.7	(over-producing)
7	487	449.6	(over-producing)
8	259	257.4	(average-production)

$\chi^2 = 86.33$, $v = 7$, $p < 0.0001$

Table 6.4: Actual and Expected Numbers of Commercial, Construction and Engineering Students Located in Each Cluster (combined totals 1978 & 1979)

CLUSTER	COMMERCIAL		CONSTRUCTION		ENGINEERING	
	Observed	Expected	Observed	Expected	Observed	Expected
1	33	(40.4)	21	(32.3)	57	(38.4)
2	45	(43.6)	41	(34.9)	34	(41.5)
3	72	(96.7)	110	(99.4)	84	(91.9)
4	121	(115.3)	95	(92.2)	101	(109.6)
5	252	(212.7)	136	(170.1)	197	(202.2)
6	181	(234.1)	201	(187.3)	262	(222.6)
7	191	(177.1)	149	(141.6)	147	(168.3)
8	119	(94.2)	58	(75.3)	82	(89.5)
TOTAL	1014		811		964	

STUDENT GROUP (heading over COMMERCIAL, CONSTRUCTION, ENGINEERING)

* N = 2789

$\chi^2 = 80.74$, $v = 14$, $p < 0.01$

Table 6.4: Actual and Expected Numbers of Commercial, Construction and Engineering Students Located in Each Cluster (combined totals 1978 & 1979)

	STUDENT GROUP					
CLUSTER	COMMERCIAL		CONSTRUCTION		ENGINEERING	
	Observed	Expected	Observed	Expected	Observed	Expected
1	33	(40.4)	21	(32.3)	57	(38.4)
2	45	(43.6)	41	(34.9)	34	(41.5)
3	72	(96.7)	110	(99.4)	84	(91.9)
4	121	(115.3)	95	(92.2)	101	(109.6)
5	252	(212.7)	136	(170.1)	197	(202.2)
6	181	(234.1)	201	(187.3)	262	(222.6)
7	191	(177.1)	149	(141.6)	147	(168.3)
8	119	(94.2)	58	(75.3)	82	(89.5)
TOTAL	1014		811		964	

* N = 2789

$\chi^2 = 80.74$, $v = 14$, $p < 0.01$

Table 6.5: Significance of Differences Between Observed and Expected Student Numbers in the Eight Clusters

	STUDENT GROUP CHI-SQUARE VALUES			
CLUSTER	COMMERCIAL	CONSTRUCTION	ENGINEERING	TOTALS
1	1.36 under	3.95 * under	9.01** over	14.32 **
2	0.05 average	1.07 over	1.36 under	2.48
3	6.31* under	8.93** over	0.68 average	15.92 **
4	0.28 average	0.09 average	0.68 average	1.05
5	7.26** over	4.24 * under	0.13 average	11.63 **
6	12.05 ** under	1.00 over	6.97 ** over	20.02 **
7	1.09 over	0.39 average	2.70 under	4.18
8	6.53* over	3.98 * under	0.63 average	11.14 **
TOTAL	34.93 **	23.65 **	22.16 **	80.74 **

* $p<0.05$ ** $p<0.01$

Table 6.6: Mean Values of Standardised Residuals for Each Student Group by Cluster*

CLUSTER	STUDENT GROUP: COMMERCIAL	CONSTRUCTION	ENGINEERING
1	0.045	-0.263 under	0.158 over
2	0.085	0.222 over	-0.079
3	-0.230 under	0.270 over	-0.144 under
4	-0.379 under	-0.068	-0.275 under
5	0.126 over	0.055	0.176 over
6	0.002	0.001	0.104 over
7	0.133 over	0.133 over	-0.130 under
8	0.309 over	-0.373 under	0.044

* Overall means for standardised residuals

Commercial -0.002; Construction -0.003; Engineering -0.0001

Table 6.7: Results of Student's t Test Analysis: Pairs of Clusters with Significant Differences in Mean Standardised Residual Values*

		STUDENT GROUP		
		COMMERCIAL	CONSTRUCTION	ENGINEERING
CLUSTER PAIR	v	t value	t value	t value
1 & 2	35	-	1.940	-
1 & 7	53	-	1.941	-
1 & 4	52	2.452	-	1.680
4 & 5	59	1.911	-	-
4 & 6	71	2.016	-	1.727
7 & 8	43	-	1.733	-

* the one tailed test was selected because the direction of the difference between cluster means was predicted on the basis of chi-square analysis of student numbers. Only significant values shown.

* p<0.05

Table 6.8 Summary of Results of Analysis of Student Over- and Under-Production at the Cluster Level by Student Group

a) Commercial Cluster

Cluster	Student Production: Chi-square Results	Student Production: Residual Results
1	-	A
2	A	A
3	-	-
4	A	-
5	+	+
6	-	A
7	+	+
8	+	+

b) Construction Group Cluster

Cluster	Chi-square Results	Residual Results
1	-	-
2	+	+
3	+	+
4	A	A
5	-	A
6	+	A
7	A	+
8	-	-

c) Engineering Group Cluster

Cluster	Chi-square Results	Residual Results
1	+	
2	-	A
3	A	-
4	A	-
5	A	+
6	+	+
7	-	-
8	A	A

where - = under-produced student group

A = average production of student group

+ = over-produced student group

Table 7.1: The Numbers and Percentages of Males and Females Taking First Year Commercial, Construction and Engineering Courses (1979)

		Male	Female	Total
Commercial	N	118	557	675
	%	17.5	82.5	36.2
Construction	N	541	2	543
	%	99.6	0.4	29.1
Engineering	N	639	6	645
	%	99.1	0.9	34.5
TOTAL	N	1298	565	1863*
	%	69.7	30.3	100.0

*Sex was not given by 21 respondents to the questionnaire survey.

Table 7.2: Comparison of the Social Class Backgrounds of Vocational Students With the Percentage of Economically Active Males in Each Social Class Group in the Study Area

		Social Class of Father			
		UNM	LNM	SM	LM
All students	%	11.1	9.1	64.0	15.8
	N	147	120	847	209
		Social Class of EA Males*			
Inner London Study Area (Source: 1971 Census)	%	21.5	26.0	28.5	24.0

$\chi^2 = 834.98$, $v=3$, $p < 0.0001$

N of Students = 1323 (Students whose fathers were not working, absent or whose occupations were inadequately described were excluded).

Where:

UNM = Professional, managerial and intermediate non-manual

LNM = Other non-manual

SM = Skilled manual

LM = Semi-and unskilled manual

EA = Economically active males.

NOTE: Chi-square figures in this and all subsequent tables are calculated on the basis of frequencies.

Table 7.3: Comparison of the Social Class Backgrounds of Commercial, Construction and Engineering Students

Student Group		Social Class of Father's Job				
		UNM	LNM	SM	LM	Total
Commercial	N	46	52	227	78	403
	%	11.4	12.9	56.3	19.4	30.5
Construction	N	48	27	283	56	414
	%	11.6	6.5	68.4	13.5	31.3
Engineering	N	53	41	337	75	506
	%	10.5	8.1	66.6	14.8	38.3
Total	N	147	120	847	209	1323
	%	11.1	9.1	64.0	15.8	100.0

$\chi^2 = 20.62,, p < 0.01, v = 6$

Chi-Square Comparisons of Social Class Background for Student Group Pairs

	χ^2	v	p
Commercial & Construction	17.27	3	0.01
Commercial & Engineering	11.83	3	0.05
Construction & Engineering	1.38	3	ns

Table 7.4: Numbers and Percentages of Commercial, Construction and Engineering Students with Mothers in Different Social Class Groups

		Not Working	UNM	LNM	SM	LM	TOTAL
			Social Class of Mother's Job*				
Commercial	N	(300)	68	87	21	139	315
	%	(48.8)	21.6	27.6	6.7	44.1	36.1
Construction	N	(287)	35	87	23	95	240
	%	(54.5)	14.6	36.3	9.6	39.6	27.5
Engineering	N	(303)	52	124	33	109	318
	%	(48.8)	16.4	39.0	10.4	34.3	36.4
Total	N	(890)	155	298	77	343	873
	%	(50.5)	17.8	34.1	8.8	39.3	100.0

$\chi^2 = 17.348$, $v=6$, $p.<0.05$

* Chi-square calculations are based on working mothers only.

Chi-square Comparisons of Mother's Occupations for Student Group Pairs

	χ^2	v	p
Commercial and Construction	8.623	3	0.05
Commercial and Engineering	13.964	3	0.05
Construction and Engineering	1.917	3	ns

Table 7.5: Comparisons of Social Class of Father's Occupation for Male Students by Type of Course

		Father's Social Class			
		NM	SM	LM	TOTAL
Commercial	N	22	33	7	62
	%	35.5	53.2	11.3	6.4
Engineering	N	75	282	55	412
	%	18.2	68.4	13.4	49.4
Construction	N	93	331	73	497
	%	18.7	66.6	14.7	51.2
Total	N	190	646	135	971
	%	19.6	66.5	13.9	100.0

$\chi^2 = 10.963$, $v=4$, $p<0.05$

Chi-Square Comparisons of Social Class Background for Student Group Pairs (Males only)

	χ^2	v	p
Commercial & Construction	9.914	2	0.01
Commercial & Engineering	9.456	2	0.01
Construction & Engineering	0.433	2	ns

Where:

NM = Non manual

SM = Skilled manual

LM = Semi-and unskilled manual

Table 7.6: The Numbers and Percentages of Commercial, Construction and Engineering Students with a Parent Working in the Same Field

		Parents' Employment Field			
		NA	Same	Different	Total
Commercial	N	(87)	106	332	525
	%		24.2	75.8	33.7
Construction	N	(42)	155	273	470
	%		36.2	63.8	30.1
Engineering	N	(48)	162	355	565
	%		31.3	68.7	36.2
Total	N	(177)	423	960	1560
	%		30.6	69.4	100.0

$\chi^2 = 14.91, v=2, p <0.001$

* N/A exluded from calculation of percentages and of chi-square figure. These students' fathers and mothers were not employed or absent. Those whose occupations were inadequate described or not given are excluded from the table.

Chi-Square Comparisons of Parent's Employment Field for Student Group Pairs

	χ^2	v	p
Commercial & Construction	14.84	1	0.001
Commercial & Engineering	5.98	1	0.05
Construction & Engineering	2.50	1	ns

Table 7.7: The Numbers and Percentages of Commercial, Construction and Engineering Students with an Elder Sibling(s) Working in the Same Field

		Elder Sibling'(s) Employment Field			
		N/A*	Same	Different	Total
Commercial	N	213	197	179	589
	%	36.2	33.4	30.4	35.5
Construction	N	186	93	223	502
	%	37.1	18.5	44.4	30.3
Engineering	N	227	117	223	567
	%	40.0	20.6	39.3	34.2
Total	N	626	407	625	1658
	%	37.8	24.5	37.7	100.0

$\chi^2 = 43.35$, $p < 0.001$, $v=2$

* N/A category excluded from calculation of chi-square figures (these students had no elder siblings, or none in employment).

Chi-Square Comparisons of Elder Siblings' Employment Fields for Student Group Pairs

	χ^2	v	p
Commercial and Construction	37.24	1	<0.01
Commercial and Engineering	23.45	1	<0.01
Construction and Engineering	1.86	1	ns

Table 7.8: The Numbers and Percentages of Commercial, Construction and Engineering Students with a Parent and/or Elder Sibling Working in the Same Field

		Parents' and Elder Siblings' Employment Fields			
		*NA/NK	Any Same	All Different	Total
Commercial	N	24	215	237	476
	%	5.0	45.2	49.8	33.5
Construction	N	13	199	227	439
	%	3.0	45.3	51.7	30.9
Engineering	N	9	214	284	507
	%	1.8	42.2	56.0	35.7
Total	N	46	628	748	1422
	%	3.2	44.2	52.6	100.0

$\chi^2 = 2.299$, $v=2$, $p > 0.05$

*NA/NK excluded from calculation of chi-square figure

Chi-Square Comparisons of Employment Fields of Parents/Siblings for Student Group Pairs

	χ^2	v	p
Commercial and Construction	0.07	1	ns
Commercial and Engineering	2.06	1	ns
Construction and Engineering	1.43	1	ns

Table 7.9: Number and Percentage of Students with Particular Levels of Qualifications

Highest Level of Qualification	N	%
Two or more CSE '1' or '0' level passes	353	19.6
One CSE '1' or '0' level pass	318	17.7
CSE pass(es) of grade '2'	399	22.2
CSE pass(es) of grade '3'	279	15.5
CSE pass(es) of grade '4'	110	6.1
No Examinations Taken	194	10.8
Examination results NK	145	8.1
	1798*	100.0

* No response was given by 86 students (4.6% of the total sample)

Table 7.10: Numbers and Percentages of Commercial, Construction and Engineering Students by Highest Level of Qualification Obtained at School

Level of Highest Qualification

		Two + CSE '1'	One CSE '1'	CSE 2	CSE 3 or Below	NK*	Total
Commercial	N	140	129	146	209	31	655
36.4	%	21.4	19.7	22.3	31.9	4.7	
Construction	N	93	78	112	189	39	511
28.4	%	18.2	15.3	21.9	37.0	7.6	
Engineering	N	120	111	141	185	75	632
35.2	%	19.0	17.6	22.3	29.3	11.9	
Total	N	353	318	399	583	145	1798
	%	19.6	17.7	22.2	32.4	8.1	100.0

* Students who did not know their examination results were excluded from calculation of the chi-square figure.

$\chi^2 = 10.35$, $p > 0.10$, $v=6$

Chi-square Comparisons of Qualification Level for Student Group Pairs

	χ^2	v	p
Commercial & Construction	6.59	3	0.05
Commercial & Engineering	0.63	3	ns
Construction & Engineering	5.57	3	ns

Table 7.11: Numbers and Percentages of Commercial, Construction and Engineering Students by Vocational Subjects Studied at School

		Commercial (N=682)	Construction (N=546)	Engineering (N=656)
Any Commercial subject	N	231	18	30
	%	33.9	3.3	4.6
Any Construction subject	N	14	187	100
	%	2.1	34.3	15.2
Any Engineering subject	N	12	90	295
	%	1.8	16.5	45.0
Any subject equally relevent for both Construction and Engineering work	N	17	154	235
	%	2.5	28.2	35.8

* Figures do not total to 100 per cent because some students appear in more than one group. This is because they had taken one or more engineering and one or more construction subject. Others might have taken a commercial, an engineering and a subject relevant to both engineering and construction work. Finally, students with no relevant qualifications are not included in this table.

Table 7.12: Numbers and Percentages of Students Who Had Taken Some or No Subjects Relevant to Engineering, Construction or Both Employment Fields

		Construction (N=546)	Engineering (N=656)
Number taking construction subjects and no engineering subjects	N	84	38
	%	15.4	5.8
Number taking engineering subjects and no construction subjects	N	58	45
	%	10.6	22.1
Number taking at least one subject equally relevant to both industries	N	165	254
	%	30.2	38.7
Number taking no subjects relevant to either industry	N	297	257
	%	54.4	39.2

* Figures do not total 100 per cent because some students included in the category 'Number taking at least one subject relevant to both industries' may also have taken an engineering subject but no construction subject, or a construction subject but no engineering subject.

Table 7.13: Comparison of Observed and Expected Numbers of Construction and Engineering Students Who Had Taken Particular Vocational Subjects at School

		Only Construction Subjects	Only Engineering Subjects	No Relevant Subjects	Total
Construction	O	84	58	297	439
	E	68.9	126.9	312.1	
Engineering	O	38	45	257	340
	E	53.4	98.3	241.7	
Total	N	122	225	554	779
	%	15.7	28.9	71.1	100.0

$\chi^2 = 75.75$, $v=2$, $p<0.0001$

Where: 0 = observed number of students
E = expected number of students

Table 7.14: Social Class of Student's Job Ambition by Sex

Student sex		Social Class of Job Ambition: UNM	LNM	SM	LM	D.K	Total
Male	N	31	91	994	20	109	1246
	%	2.5	7.3	79.8	1.6	8.7	71.5
Female	N	87	286	12	3	110	498
	%	17.7	58.0	2.4	0.6	22.1	28.5
Total	N	116	377	1006	23	219	1744*
	%	6.7	21.7	57.9	1.3	12.5	100.0

* Information was missing for job ambition or sex for 7.4 per cent of the sample.

$\chi^2 = 95.18$, $v=4$, $p<0.00001$

Table 7.15: Agreement Between Job Ambition and Present Training by Social Class Background

Social class father's job		Job Ambition: Same as Training	Different from Training	Not Sure	Total
UNM	N	88	44	11	143
	%	61.5	30.8	7.7	11.3
LNM	N	71	28	13	112
	%	63.4	25.0	11.6	8.8
SM	N	586	155	73	814
	%	72.0	19.0	9.0	64.0
LM	N	114	35	23	172
	%	71.3	17.3	11.4	13.5
Total	N	889	262	120	1271*
	%	70.0	20.6	9.4	100.0

* Students whose fathers were not working, absent, or whose occupations were inadequately described have been excluded.

$\chi^2 = 16.19$, $v=6$, $p < 0.05$

Table 7.16: Agreement Between Job Ambition and Present Training by Social Class Background for a) commercial b) construction c) engineering students

a) Commercial

Social class fathers's job		Job Ambition: Same as training	Different from training	Not Sure	Total
NM	N	53	27	12	92
	%	57.6	29.4	13.0	24.8
SM	N	136	35	36	207
	%	65.7	16.9	17.4	56.0
LM	N	38	17	16	71
	%	53.5	23.9	22.5	19.2
Total	N	227	79	64	370
	%	61.4	21.4	17.3	100.0

b) Construction

NM	N	43	29	3	75
	%	57.3	38.7	4.0	17.4
SM	N	182	74	21	277
	%	65.7	26.7	7.6	67.9
LM	N	45	8	3	56
	%	80.4	14.3	5.4	13.7
Total	N	270	111	27	408
	%	66.2	27.2	6.6	100.0

c) Engineering

NM	N	63	16	9	88
	%	71.6	18.2	10.2	17.9
SM	N	268	46	16	330
	%	81.2	13.9	4.9	66.9
LM	N	61	10	4	75
	%	81.3	13.3	5.3	15.2
Total	N	392	72	29	493
	%	79.5	14.6	5.9	100.0

* Students whose fathers were not employed, absent or whose employment was inadequately described were excluded.

Table 8.1: Percentage of the Variance in Construct use Due to Differences Between a) Respondents b) Elements c) Element-Respondent Interaction by Student Group

Construct	Commercial %	Construction %	Engineering %
1 a)	9.3	8.5	8.6
b)	31.5	39.2	43.3
c)	59.2	52.3	48.1
2 a)	4.5	5.7	6.1
b)	55.4	50.4	52.4
c)	40.1	43.9	41.5
3 a)	10.8	13.8	13.8
b)	40.1	34.7	34.3
c)	49.2	51.4	51.9
4 a)	6.0	5.3	5.6
b)	61.0	61.1	59.6
c)	33.0	33.6	34.8
5 a)	2.4	3.0	4.0
b)	70.7	67.1	66.2
c)	26.9	29.9	29.9
6 a)	15.2	18.0	15.5
b)	34.4	26.7	25.9
c)	50.4	55.4	58.7
7 a)	4.5	4.7	4.5
b)	64.4	62.7	62.4
c)	31.1	32.6	33.2
8 a)	9.8	17.4	15.0
b)	25.9	25.0	30.3
c)	64.3	57.6	54.7
9 a)	11.1	13.8	12.7
b)	29.1	27.1	25.7
c)	59.8	59.1	61.6
10 a)	8.8	14.0	13.0
b)	45.7	34.3	36.4
c)	45.5	51.7	50.6
11 a)	13.9	17.9	16.7
b)	21.4	19.7	17.0
c)	64.8	62.5	66.3
12 a)	16.4	11.8	10.3
b)	26.5	29.6	28.3
c)	57.1	58.6	61.5
13 a)	20.3	19.7	18.3
b)	13.8	10.5	14.3

c)	65.9	69.7	67.4
14 a)	20.9	19.0	18.5
b)	25.3	19.1	20.5
c)	53.8	61.9	61.0
15 a)	12.7	25.0	13.4
b)	27.5	17.7	21.9
c)	59.9	57.3	64.6
16 a)	22.1	17.9	14.6
b)	25.3	21.0	21.7
c)	52.7	61.1	63.7
17 a)	19.9	24.7	20.5
b)	26.0	18.0	21.2
c)	54.2	57.3	58.3
18 a)	13.4	16.0	13.8
b)	30.6	25.3	27.5
c)	56.0	58.7	58.7
19 a)	21.7	27.8	24.1
b)	14.7	5.6	6.6
c)	63.2	66.6	69.3
20 a)	14.5	10.5	11.4
b)	29.5	43.6	42.4
c)	56.0	45.9	46.3

Table 8.2: Percentages of Respondents With a) Very Favourable b) Very Unfavourable Views of Particular Jobs on Construct 1 ('Jobs I'd like v Jobs I wouldn't like') by Student Group

Job (element)	% very favourable			% very unfavourable		
	Commer-cial	Const-ruction	Engin-eering	Commer-cial	Const-ruction	Engin-eering
1 Carpenter	0.6	23.5	17.8	54.8	7.6	11.9
2 Telephonist	22.9	0.6	0.9	11.7	78.2	71.7
3 Bank Clerk	21.2	0.0	1.4	9.5	68.2	64.8
4 Secretary	52.0	0.6	1.8	11.2	85.3	87.2
5 Technician	5.6	8.2	24.2	53.1	31.2	10.0
6 Plumber	1.1	45.3	8.2	76.5	7.1	16.0
7 Cook	11.7	5.3	3.7	39.1	39.4	53.9
8 Hairdresser	8.9	3.5	0.5	27.9	75.4	79.9
9 Factory Worker	0.0	0.0	1.4	79.3	80.0	62.1
10 Travel Agent	38.6	5.9	2.3	3.3	44.1	45.2
11 Clerical Worker	24.0	0.6	0.9	7.3	62.9	70.8
12 Electrician	5.6	20.6	44.7	42.5	10.0	4.1
13 Nurse	11.2	1.2	1.8	30.7	68.2	74.9
14 Computer Operator	19.4	2.9	7.8	19.6	57.1	35.2
15 Motor bike mechanic	3.4	15.9	35.2	67.6	18.8	6.4
16 Engineer	6.2	12.9	53.9	54.8	15.9	2.3
17 Teacher	8.9	2.9	2.7	36.9	54.1	56.2
18 Sales Assistant	7.8	1.8	1.4	28.5	58.8	53.4
19 Doctor	16.8	5.9	5.9	30.7	49.7	52.1
20 Police Constable	6.1	4.1	2.7	51.4	56.5	61.2
21 Painter & decorator	4.5	25.3	4.6	52.5	16.5	21.5
22 Bricklayer	1.1	26.5	11.4	73.7	10.0	21.0
23 Lorry Driver	2.8	20.0	24.7	72.1	15.3	11.0

Table 8.3: Mean Scores Recorded for Construction and Engineering Work on Construct 16 ('High class jobs v working-class jobs') for Construction and Engineering Students.

Student Group	Employment Field: Construction Work $\overline{X}$	Employment Field: Engineering Work $\overline{X}$
Construction	3.86	3.43 *
Engineering	3.85	3.37 *

* Student's t tests of differences between means were statistically signifi

Table 8.4: Mean Scores Recorded for Construction and Engineering Work on Construct 18 ('Difficult jobs v easy jobs') for Construction and Engineering Students

Student Group	Employment Field	
	Construction Work	Engineering Work
	$\overline{X}$	$\overline{X}$
Construction	2.38	2.11
Engineering	2.63	2.08 *

* Student's t test of differences between means were statistically signific

Table 8.5: Covariation Recorded Between Construct 1 and Constructs 2 to 20 for Construction Jobs in Construction Students' Grids

Construct Pair	Construction Jobs			
	Carpenter	Plumber	Painter	Bricklayer
1 & 2	90.9	77.7	- 16.0	- 63.7
1 & 3	- 91.6	-178.7	- 6.4	-144.8
1 & 4	-240.2	-369.6	-209.1	-361.2
1 & 5	-249.9	-340.7	-202.2	-327.7
1 & 6	- 8.0	-136.1	41.1	- 23.0
1 & 7	- 97.3	-488.4	-242.0	-423.9
1 & 8	276.0	459.9	256.2	346.0
1 & 9	24.2	- 52.9	38.5	21.0
1 & 10	77.2	- 33.3	49.2	40.3
1 & 11	- 55.2	- 68.7	- 50.6	-172.3
1 & 12	86.7	174.8	26.3	41.8
1 & 13	- 53.6	- 90.6	- 60.2	- 94.8
1 & 14	- 58.3	- 10.8	55.6	16.2
1 & 15	-105.9	-201.8	- 69.8	-118.5
1 & 16	-104.1	-121.2	- 39.8	- 95.8
1 & 17	91.9	125.6	25.7	15.3
1 & 18	78.8	135.1	62.9	98.3
1 & 19	97.2	53.6	64.7	62.4
1 & 20	239.5	341.4	193.2	295.7

Table 8.6: Covariation Recorded Between Construct 1 and Constructs 2 to 20 for Engineering Jobs in Engineering Students' Grids Construct

Pair	Engineering Jobs			
	Technician	Electrician	Motor bike Mechanic	Engineer
1 & 2	219.9	252.4	486.6	657.0
1 & 3	-256.0	-312.7	-160.1	-333.3
1 & 4	- 80.3	-364.4	-362.3	-380.1
1 & 5	-212.9	-430.2	-384.9	-468.7
1 & 6	-166.4	-260.7	- 70.4	-227.3
1 & 7	-116.6	-379.5	-680.6	-651.4
1 & 8	322.6	563.8	494.8	593.5
1 & 9	36.1	- 45.4	24.5	87.2
1 & 10	-314.9	-250.1	21.9	-282.2
1 & 11	-203.5	-129.4	- 26.1	-198.7
1 & 12	371.9	444.3	296.6	490.9
1 & 13	- 99.1	-174.1	-129.6	-173.1
1 & 14	-118.3	- 37.7	- 42.5	-123.2
1 & 15	-185.3	-311.8	- 71.4	-304.9
1 & 16	- 87.6	- 71.7	-163.6	- 24.1
1 & 17	193.5	199.0	111.3	240.1
1 & 18	231.5	243.6	110.7	295.9
1 & 19	- 8.8	19.3	- 0.7	43.3
1 & 20	297.8	488.2	308.4	499.1

Table 8.7: Mean Scores Recorded for Commercial, Construction and Engineering Work on Construct 1 ('Jobs I'd like v jobs I wouldn't like') and Construct 2 ('Jobs mainly working with machines v jobs mainly working with people') - Commercial Students' Responses

	Employment Field		
	Commercial	Construction	Engineering
	$\bar{X}$	$\bar{X}$	$\bar{X}$
Construct 1	2.32*	4.42	4.09
Construct 2	3.68*	2.91*	1.81

* Student's t test of the differences in mean scores were statistically significant ($p<0.05$) for comparisons of commercial with both construction and engineering work on construct 1 and construct 2.

In addition the difference between the mean scores applied to construction and to engineering work on construct 2 was significant.

Table 8.8: Mean Scores Recorded for Commercial, Construction and Engineering Work on Construct 5 ('Women's jobs v men's jobs') by Student Group

Student Group

Employment Field

	Commercial Work	Construction Work	Engineering Work
	$\overline{X}$	$\overline{X}$	$\overline{X}$
Commercial	* 2.30	4.54	4.41
Construction	* 2.39	4.72	4.50
Engineering	* 2.35	4.49	4.64

* Student's t tests of the differences between the mean scores accorded commercial work and that for construction and engineering work were highly statistically significant for each student group pair (p.<0.01)

Table 8.9: Mean Scores Recorded for Commercial, Construction and Engineering Work on Construct 8 'Interesting jobs v boring jobs' and Construct 10 ('Jobs which need few qualifications v jobs which need many qualifications') - Commerical Students' Responses

	Employment Field		
	Commercial	Construction	Engineering
	$\bar{X}$	$\bar{X}$	$\bar{X}$
Construct 8	2.33*	3.45	2.98
Construct 10	3.16*	2.44	3.72

* The Student's t test of the differences in mean scores were statistically significant ($p<0.05$) for comparisons of commerical work with both construction and engineering work on construct 8 and construct 10.

Table 8.10: Mean Scores Recorded for Commercial Work on Construct 15 ('Jobs with no prospects v jobs with good prospects') and Construct 11 ('poorly paid jobs v well paid jobs') by Student Group

Student Group

Commercial Work

	Construct 15	Construct 11
	$\overline{X}$	$\overline{X}$
Commercial	3.55	3.76
Construction	2.90	3.44
Engineering	2.85	3.38

* The Student's t tests of the differences between the mean scores accorded commercial work by the three student groups were statistically significant for construct 15 ($p<0.05$).

Table 8.11: Covariation Recorded Between Construct 1 and Constructs 2 to 20 for Commerical Jobs in Commerical Students' Grids

Construct Pair	Commercial Jobs				
	Telephonist	Bank	Secretary	Travel Agent	Office Worker
1 & 2	84.1	-153.3	-131.7	-344.7	- 95.3
1 & 3	98.3	- 7.3	161.9	114.0	80.4
1 & 4	254.2	307.6	578.7	389.9	407.9
1 & 5	277.2	102.6	532.1	154.7	167.9
1 & 6	- 0.4	- 99.4	-235.0	- 12.2	51.2
1 & 7	269.2	267.3	435.3	391.2	306.2
1 & 8	212.0	195.6	391.1	296.5	162.1
1 & 9	97.0	187.1	250.1	256.3	203.0
1 & 10	58.3	- 65.3	-251.7	23.7	14.1
1 & 11	- 37.5	- 78.9	-257.0	- 23.5	- 8.5
1 & 12	- 29.0	- 52.7	-106.7	-172.9	-112.6
1 & 13	- 5.8	76.6	174.8	30.9	126.3
1 & 14	90.8	77.2	138.7	204.8	- 16.3
1 & 15	- 10.2	-121.8	-272.1	- 23.2	- 65.4
1 & 16	27.3	115.6	234.3	146.4	74.0
1 & 17	37.3	69.5	202.8	- 8.8	17.7
1 & 18	- 59.1	4.3	106.1	- 46.4	- 54.4
1 & 19	108.6	96.8	186.1	139.0	58.0
1 & 20	- 98.4	- 97.2	-195.6	-244.2	-142.0

Table 8.12: Pearson Product Moment Correlations Between Sex of Student and Perceptions of Commercial, Construction and Engineering Employment in Terms of Construct 1 and Construct 8 - All Students

	Construct 1 & Sex r	Construct 8 & Sex r
Commercial Employment	-0.82**	-0.63**
Construction Employment	0.66**	0.43**
Engineering Employment	0.63**	0.31**

N=536

where:

sex of student coded: 1=male, 2=female

constructs 1 and 8 coded: 1= most favourable, 5=most negative rating

** p.<0.01

Table 8.13: Percentages of Commercial, Construction and Engineering Students Included in the Repertory Grid Survey by Social Class Background

Father's Social Class	Commercial		Construction		Engineering	
	N	%	N	%	N	%
Non-manual	28	19.4	10	75	27	13.6
Skilled manual	49	34.1	76	56.7	95	47.7
Semi-& Unskilled manual	21	14.6	11	8.2	25	12.6
Unemployed/EI	20	13.9	16	11.9	10	5.0
Father Absent	1	0.7	8	6.0	2	1.0
Not Given	15	10.4	11	8.2	26	13.1
Unclear	10	6.9	2	1.5	14	7.0
Total	144	100.0	134	100.0	199	100.0

Student Group spans Commercial, Construction and Engineering.

Table 8.14: Comparison of Social Class Composition of Repertory Grid Respondents with that of the Questionnaire Sample*

Father's Social Class	Commercial	Construction	Engineering
	Student Group		
	%	%	%
Non-manual	28.6 (24.3)	10.3 (18.1)	18.4 (18.6)
Skilled manual	50.0 (56.3)	78.4 (68.4)	64.6 (66.6)
Semi-unskilled manual	21.4 (19.4)	11.3 (13.5)	17.0 (14.8)

* Percentages for the questionnaire sample are given in brackets.

Table 9.1: Distribution of Repertory Grid Respondents by Cluster

Cluster		Commercial	Construction	Engineering	Total
		Student Group			
One	N	3	3	5	11
	%	2.6	2.8	3.9	3.1
Two	N	7	8	8	23
	%	6.1	7.5	6.2	6.5
Three	N	4	13	14	31
	%	3.5	12.2	10.8	8.8
Four	N	15	9	10	34
	%	13.0	8.4	7.7	9.7
Five	N	44	16	24	84
	%	38.3	15.0	18.5	23.9
Six	N	22	32	39	93
	%	19.1	30.0	30.0	26.4
Seven	N	7	18	18	43
	%	6.1	16.8	13.9	12.2
Eight	N	13	8	12	33
	%	11.3	7.5	9.2	9.4
Total	N	115	107	130	352
	%	32.6	30.4	36.9	100.0

N outside study area 189 (33.1%)
N No home address given 28 (4.9%)

Total N 568

Table 9.2: Mean Ratings of Commercial, Construction and Engineering Employment on Construct 1 ('jobs I'd like v jobs I wouldn't like') by Cluster

(a) Commercial Students

Employment Type	Cluster three	Cluster four	Cluster five	Cluster six	Cluster seven	Cluster eight
	$\overline{X}$	$\overline{X}$	$\overline{X}$	$\overline{X}$	$\overline{X}$	$\overline{X}$
Commercial	-	2.35	2.44	2.25	-	2.29
Construction	-	4.62	4.37	4.50	-	4.60
Engineering	-	4.25	4.10	4.52	-	3.90

(b) Construction Students

Commercial	4.66	-	4.36	4.51	4.41	-
Construction	2.27	-	2.13	2.44	2.65	-
Engineering	2.90	-	2.52	3.15	2.96	-

(c) Engineering Students

Commercial	4.46	4.40	4.39	4.40	4.32	4.18
Construction	2.80	3.53	3.00	2.65	2.82	3.06
Engineering	2.02	2.00	2.09	1.84	1.97	2.00

- Number of respondents insufficient for analysis (N 10)

Table 9.3: Mean Ratings of Commercial, Construction and Engineering Employment on Construct 15 ('jobs with no prospects v jobs with good prospects') by Cluster

(a) Commercial Students

	Cluster three	Cluster four	Cluster five	Cluster six	Cluster seven	Cluster eight
	$\overline{X}$	$\overline{X}$	$\overline{X}$	$\overline{X}$	$\overline{X}$	$\overline{X}$
Commercial	-	3.32	3.42	3.55	-	3.92
Construction	-	2.83	2.62	2.91	-	2.58
Engineering	-	3.37	3.59	3.57	-	3.39

(b) Construction Students

	Cluster three	Cluster four	Cluster five	Cluster six	Cluster seven	Cluster eight
Commercial	2.68	-	2.93	3.00	3.27	-
Construction	3.50	-	3.78	3.44	3.43	-
Engineering	3.62	-	4.00	3.56	3.71	-

(c) Engineering Students

	Cluster three	Cluster four	Cluster five	Cluster six	Cluster seven	Cluster eight
Commercial	2.86	2.86	2.83	2.95	2.90	2.98
Construction	3.29	3.40	3.26	3.57	3.39	3.52
Engineering	3.54	4.25	3.96	4.00	3.93	4.23

\- Number of respondents insufficient for analysis (N less than 10)

Table 9.4: Commercial Students' Ratings of Commercial Employment in Terms of Selected Constructs by Cluster

	Cluster four $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster eight $\overline{X}$
Construct 2 (mainly working with machines v mainly with people	3.55	3.72	3.90	3.42
Construct 4 (office v manual)	1.83	1.83	1.66	1.54
Construct 5 (women's v men's jobs)	2.37	2.29	2.17	2.34
Construct 7 (clean v dirty)	2.28	2.27	1.41	1.08
Construct 8 (interesting v boring)	2.35	2.42	2.45	1.94
Construct 11 (well paid v poorly paid)	3.61	3.75	3.83	3.94
Construct 14 (important to make people happy v not important)	2.19	2.16	2.19	2.14
Construct 15 (poor prospects v good prospects)	3.32	3.42	3.55	3.92
Construct 19 (friendly atmosphere v unfriendly	2.25	2.00	1.99	1.92

Table 9.5: Commercial Students' Ratings of Commercial Employment in Terms of Construct 3 and Construct 16 by Cluster

	Cluster four $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster eight $\overline{X}$
Construct 3 (little experience v lots of experience)	3.32	3.00	3.17	3.77
Construct 16 (High-class v working-class)	3.25	2.99	2.93	2.72

Table 9.6: Construction Students' Ratings of Commercial Employment in Terms of Selected Constructs by Cluster

	Cluster three $\bar{X}$	Cluster five $\bar{X}$	Cluster six $\bar{X}$	Cluster seven $\bar{X}$
Construct 2 (working with machines v people)	2.76	3.13	3.16	3.11
Construct 4 (office v manual work)	4.83	4.70	4.70	4.61
Construct 5 (women' v men's jobs)	4.85	4.72	4.73	4.50
Construct 7 (clean v dirty jobs)	4.00	3.99	3.73	4.08
Construct 8 (interesting v boring jobs)	2.10	2.56	2.34	2.67
Construct 10 (need few qualifications v many qualifications)	2.39	2.78	3.00	2.61
Construct 16 (high class v working class jobs)	4.04	3.88	4.01	3.92
Construct 18 (difficult v easy jobs)	2.74	2.31	2.57	2.77
Construct 19 (friendly v unfriendly atmosphere)	2.54	2.45	2.25	2.51
Construct 20 (Apprenticeship v non-apprenticeship)	1.62	1.03	1.40	1.71

Table 9.7: Construction Students' Ratings of Construction Employment in Terms of Construct 3, Construct 6 and Construct 15 by Cluster

	Cluster three $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster seven $\overline{X}$
Construct 3 (little experience required v lots of experience required)	3.64	4.36	3.94	3.78
Construct 6 (jobs without much responsibility v jobs with more responsibility)	3.42	3.75	3.39	3.39
Construct 15 (jobs with no prospects v jobs with good prospects)	3.50	3.78	3.44	3.43

Table 9.8: Engineering Students' Perceptions of Engineering Work in Terms of Selected Constructs by Cluster

Construct	Cluster three $\bar{X}$	Cluster four $\bar{X}$	Cluster five $\bar{X}$	Cluster six $\bar{X}$	Cluster seven $\bar{X}$	Cluster eight $\bar{X}$
Construct 2 (contact with machines v people)	2.18	2.58	1.98	1.93	1.86	2.45
Construct 3 (little experience v lots of experience)	4.48	4.73	4.52	4.39	4.26	4.02
Construct 6 (not much responsibility v more responsibility)	3.86	4.50	4.01	4.16	4.26	3.83
Construct 7 (clean v dirty jobs)	3.77	3.83	3.95	3.87	3.63	3.65
Construct 8 (interesting v boring jobs)	2.02	2.03	2.12	1.92	1.72	2.73
Construct 10 (few qualifications v more qualifications)	3.75	4.00	3.88	3.78	3.83	3.50
Construct 11 (poorly paid v well paid jobs)	3.73	4.08	3.83	4.06	3.72	3.77
Construct 12 (technical jobs v non-technical)	1.79	1.53	1.78	2.02	1.82	1.71
Construct 15 (no prospects v good prospects)	3.55	4.25	3.96	3.99	3.63	4.23
Construct 17 (you use your mind v jobs where you don't)	1.91	1.55	2.02	1.55	1.56	1.7
Construct 18 (difficult jobs v easy jobs)	1.96	1.75	2.10	2.12	1.78	2.06
Construct 20 (apprenticeship v non-apprenticeship jobs)	1.43	1.93	1.39	1.48	1.42	1.7

Table 9.9: Construction Students' Perceptions of Engineering Work in Terms of Construct 1 and Construct 8 by Cluster

	Cluster three $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster seven $\overline{X}$
Construct 1 (jobs I'd like v jobs I wouldn't like)	2.90	2.52	3.15	2.96
Construct 8 (interesting jobs v boring jobs)	2.71	2.31	2.66	2.51

Table 9.10: Construction Students' Perceptions of Engineering Work in Terms of Constructs 3, 10, 17 and 18 by Cluster

	Cluster three $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster seven $\overline{X}$
Construct 3 (jobs where little experience needed v jobs where lots of experience needed	4.07	4.39	4.29	4.28
Construct 10 (jobs which need few qualifications v jobs which need more)	3.79	3.72	3.92	3.54
Construct 17 (jobs where you use your mind v jobs where you don't use your mind)	1.77	1.91	1.99	2.15
Construct 18 (difficult jobs v easy jobs)	2.02	1.89	2.21	2.35

Table 9.11: Construction Students' Perceptions of Engineering Work in Terms of Constructs 11 and 15 by Cluster

	Cluster three $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster seven $\overline{X}$
Construct 11 (poorly paid jobs v well paid jobs)	4.12	4.03	4.03	3.90
Construct 15 (jobs with no prospects v jobs with good prospects)	3.62	4.00	3.56	3.71

Table 9.12: Construction Students' Perceptions of Engineering Work in Terms of Constructs 2, 5, 7, 12 and 20 by Cluster

	Cluster three $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster seven $\overline{X}$
Construct 2 (jobs mainly working with machines v mainly working with people)	1.92	2.03	2.01	2.18
Construct 5 (women's jobs v men's jobs)	4.71	4.53	4.52	4.40
Construct 7 (clean jobs v dirty jobs)	3.81	3.69	3.48	3.65
Construct 12 (technical jobs v non-technical jobs)	2.00	1.92	1.63	2.03
Construct 20 (apprenticeship jobs v non-apprenticeship jobs	1.50	1.45	1.58	1.72

Table 9.13: Engineering Students' Perceptions of Construction Work in Terms of Construct 1 and Construct 8 by Cluster

Construct	Cluster three $\overline{X}$	Cluster four $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster seven $\overline{X}$	Cluster eight $\overline{X}$
Construct 1 (jobs I'd like v jobs I wouldn't like)	2.80	3.53	3.00	2.64	2.82	3.06
Construct 8 (interesting jobs v boring jobs)	2.86	3.03	2.55	2.49	2.35	3.27

Table 9.14: Engineering Students' Perceptions of Construction Work in Terms of Constructs 2, 4, 5 and 7 by Cluster

Construct	Cluster three $\bar{X}$	Cluster four $\bar{X}$	Cluster five $\bar{X}$	Cluster six $\bar{X}$	Cluster seven $\bar{X}$	Cluster eight $\bar{X}$
Construct 2 (jobs working with machines v jobs mainly with people)	3.11	3.30	2.76	2.95	2.81	3.31
Construct 4 (office work v manual work)	4.30	4.60	4.63	4.56	4.50	4.54
Construct 5 (women's jobs v men's jobs)	4.79	4.73	4.60	4.74	4.54	4.52
Construct 7 (clean jobs v dirty jobs)	4.05	4.40	4.12	4.03	3.82	3.58

Table 9.15: Engineering Students' Perceptions of Construction Work in Terms of Constructs 10, 16, 18, 19 and 20 by Cluster

Construct	Cluster three $\overline{X}$	Cluster four $\overline{X}$	Cluster five $\overline{X}$	Cluster six $\overline{X}$	Cluster seven $\overline{X}$	Cluster eight $\overline{X}$
Construct 10 (jobs with few qualifications v jobs which need many)	2.71	2.23	2.85	2.72	2.90	2.17
Construct 16 (high class jobs v working-class jobs)	3.89	4.13	3.72	3.71	3.70	4.06
Construct 18 (difficult jobs v easy jobs)	2.57	2.80	2.77	2.45	2.56	2.63
Construct 19 (jobs with a friendly atmosphere v jobs with an unfriendly atmosphere)	2.29	2.49	2.75	2.47	2.75	2.33
Construct 20 (Apprenticeship jobs v non-apprenticeship jobs)	1.32	1.73	1.73	1.70	1.60	1.81

Table 10.1: Factors Identified as Significantly Related to Participation in Particular Kinds of Vocational Training

(1) Ecological Analyses

Cluster of residence

(2) Structural Analyses

Sex of Student
Parent/sibling in commercial work
Parent/sibling in construction work
Parent/sibling in engineering work
Commercial subjects studied at school
Construction subjects studied at school
Engineering subjects studied at school

(3) Attitudinal Analyses

'Liking' for commercial work
Interest in commercial work
'Liking' for construction work
Interest in construction work
'Liking' for engineering work
Interest in engineering work

Table 10.2: Pearson Product Moment Correlations Between Sex of Student and Subjects Studied at School

	r
Student Sex & construction subject(s)	0.27***
Student sex & engineering subject(s)	0.40***
Student sex & commercial subject(s)	-0.45***

*** p<0.001
N = 451

Where sex of student coded: 1 = male, 2 = female

Commercial, Construction and Engineering subjects coded: 1 = Studied relevant subjects, 2 = No relevant subjects

Table 10.3: Pearson Product Moment Correlations Between Sex of Student and Parents'/Siblings' Employment Fields

	r
Sex & parent/sibling in construction work	0.10*
Sex & parent/sibling in Engineering field	0.11*
Sex & parent/sibling in Commercial field	-0.20**

* $p<0.05$
** $p<0.01$

N = 416

Where sex of student coded: 1 = male, 2 = female

Parent/sibling in commercial, construction or engineering field coded: 1 = yes, 2 = no

Tables 10.4: Pearson Product Correlations Between Subjects Studied at School and Ratings of Employment in Terms of Construct 1 ('jobs I'd like v jobs I wouldn't like') and construct 8 ('interesting jobs v boring jobs')

a) Construct 1

	Liking for commercial work r	Liking for construction work r	Liking for engineering work r
Commercial subjects studied	0.38***	-0.36***	-0.35***
Construction subjects studied	-0.24***	0.26***	0.10*
Engineering subjects studied	-0.38***	0.24***	0.39***

b) Construct 8

	Interest in commercial work r	Interest in construction work r	Interest in engineering work r
Commercial studies studied	0.28***	-0.23***	-0.16**
Construction subjects studied	-0.25***	0.18**	0.03
Engineering subjects studied	-0.32***	0.11*	0.23***

* p<0.05
** p<0.01
***p<0.001

N = 451

Table 10.5: Pearson Product Moment Correlations Between Parents'/Elder Siblings' Jobs and Ratings of Employment in Terms of Construct 1 ('jobs I'd like v jobs I wouldn't like') and Construct 8 ('interesting jobs v boring jobs')

a) Construct 1

	Liking for commercial work r	Liking for construction work r	Liking for Engineering work r
Parent/sibling in commercial work	0.22**	-0.15*	-0.12*
Parent/sibling in construction work	-0.08*	0.22**	-0.02
Parent/sibling in Engineering work	-0.05	0.04	0.16**

b) Construct 8

	Interest in commercial work r	Interest in construction work r	Interest in engineering work r
Parent/sibling in commercial work	0.19**	-0.06	-0.01
Parent/sibling in construction work	-0.07	0.14*	-0.07
Parent/sibling in Engineering work	-0.09*	0.01	0.08*

* $p<0.05$
** $p<0.01$
N = 416

APPENDIX 2.1

THE PILOT QUESTIONNAIRE

Instructions

Please make sure that you do answer every question. Except where there is a space for you to write in put a tick in the right answer box.

1. What course are you doing at Vauxhall college?

   (write in)..

2. Is it a

Full-time Course?	[ ]
Part-time day Course?	[ ]
Block release Course?	[ ]

3. How long does it usually take you to travel from home to college?

Less than 15 minutes	[ ]
Between 15 and 30 minutes	[ ]
Over 30 minutes but less than 1 hour	[ ]
1 hour or more	[ ]

4. How do you get to college? (Tick more than one box if necessary)

On foot only	[ ]
By bus	[ ]
By car	[ ]
By train	[ ]
By motor-bike	[ ]
By bicycle	[ ]

5. Can you name any other colleges which run the course you are doing at Vauxhall?
If 'YES' write down their name(s)

		College Names
YES	[ ]	....
		....
		....
		....
NO	[ ]	....

6. __Before__ you started your course at Vauxhall college did you try to do any of the following?

	YES	NO
To stay on at school	[ ]	[ ]
To go to another Further Education/ Technical college	[ ]	[ ]
To go to a sixth form college	[ ]	[ ]

7. When you decided to go to a Further Education College was Vauxhall college your first choice?

YES	[ ]
NO	[ ]

If 'NO' where did you want to go?

write in ....

6. <u>Before</u> you started your course at Vauxhall college did you try to do any of the following?

	YES	NO
To stay on at school	[ ]	[ ]
To go to another Further Education/ Technical college	[ ]	[ ]
To go to a sixth form college	[ ]	[ ]

7. When you decided to go to a Further Education College was Vauxhall college your first choice?

YES [ ]

NO [ ]

If 'NO' where did you want to go?

write in ....

8. What is the name and address of your last school?

write in ....

9. When did you leave school?

1978 [ ]

1977 [ ]

1976 [ ]

Another year 19......(fill in)

10. Did you leave school?

In the summer [ ]

At Easter [ ]

or at another time [ ]

11. Did you take any of these exams at school? If you did, write down the subjects you took and the grades you got.

		Subject	Grade
CSE exams			
YES	[ ]	....	....
		....	....
		....	....
NO	[ ]	....	....
		....	....
		....	....
GCE exams			
YES	[ ]	....	....
		....	....
		....	....
NO	[ ]	....	....
		....	....
		....	....

12. Who <u>first</u> told you about courses at this college?

Your employer [ ]

A teacher [ ]

A friend [ ]

A parent [ ]

A relative [ ]

The Careers Advisory Service [ ]

Some one else (who)................ [ ]

13. Was there a craft teacher at your last school?

YES [ ] NO [ ] DON'T KNOW [ ]

If 'YES' did this teacher tell you about courses at Further Education colleges?

YES [ ] NO [ ]

14. Was there a careers teacher at your last school?

YES NO DON'T KNOW

If 'YES' did this careers teacher tell you about careers at Further Education colleges?

YES NO

15. Have you ever spoken to any one from your local Careers Advisory Office?

YES NO DON'T KNOW

If 'YES', were you told about courses at Further Education colleges by the Careers Advisory Service?

YES NO

16. Have you ever read any of these magazines?

	YES	NO
'Floodlight'		
'The Further and Higher Education Handbook'		
'School Leaver'		
'Which Course?'		

17. Have you ever heard any advertisements on the radio about courses at Further Education colleges?

YES NO

18. Did you read a copy of the Vauxhall's college prospectus before you applied to do a course here?

YES NO

19. If you are a full-time student did you try to get a permanent job before starting your course at college?

YES NO

14. Was there a careers teacher at your last school?

YES NO DON'T KNOW

If 'YES' did this careers teacher tell you about careers at Further Education colleges?

YES NO

15. Have you ever spoken to any one from your local Careers Advisory Office?

YES NO DON'T KNOW

If 'YES', were you told about courses at Further Education colleges by the Careers Advisory Service?

YES NO

16. Have you ever read any of these magazines?

	YES	NO
'Floodlight'		
'The Further and Higher Education Handbook'		
'School Leaver'		
'Which Course?'		

17. Have you ever heard any advertisements on the radio about courses at Further Education colleges?

YES NO

18. Did you read a copy of the Vauxhall's college prospectus before you applied to do a course here?

YES NO

19. If you are a full-time student did you try to get a permanent job before starting your course at college?

YES NO

20. If you are not a full-time student, do you have a job?

YES [ ] NO [ ]

If 'yes' what is your firm/employer's name and address (if none, write in 'none')?

....

21. What kind of job did you **want** to do when you left school?

....

22. What kind of job do you think you **will** be doing in 5 years time?

....

23. Is your father/step-father/guardian working full time at the moment?

YES [ ] NO [ ]

If 'YES', what is his present job? (Please describe as fully as you can)

....

....

24. How many younger brothers and sisters have you?

....

25. How many older brothers and sisters have you?

....

26. Of your older brothers and unmarried sisters how many are:

Full-time students	............(write number in)
Unemployed	....
Working full-time	....

For those working full-time, please describe the sort of jobs they do.

....

....

....

For those who are full-time students, please describe the sorts of courses they are doing.

....

....

....

27. Are you

```
                Male          +--+
                              |  |
                              +--+
                              +--+
             or Female?       |  |
                              +--+
```

28. How old were you on your last birthday?

.... years

29. Please fill in your address here.

....

THANK YOU FOR YOUR HELP

APPENDIX 2.1.b

AMENDMENTS TO QUESTIONNAIRE ARISING FROM PILOT

(a) An additional part was added to question 16 (so that information about whether students had read about courses in newspapers was obtained) because a number of students (four) mentioned this source of information.

(b) Question 20 was altered to comprise one rather than two parts to make the completion of the form easier.

(c) Details of the mother/step mother's occupation were added as an additional question. This was done so that the relationship between mother's occupation and offspring's job choice could be examined at a later date. This would avoid confusing information about mother's and father's occupation for students from one parent families where, if the father was absent, the mother's job was recorded in place of the father (ILEA figures for 1979 showed that over a quarter of secondary pupils were in families with only one parent and thus it was likely that a similar proportion of the student sample would be in this position).

(d) The word 'unmarried' was deleted from question 26 because it caused confusion to some students. In addition, it seemed likely that any elder sister who was working might have had an influence upon her younger siblings, irrespective of her marital status.

(e) The final question was altered to a request for the student's home address rather than name for administrative reasons. By collecting students' home addresses directly, the laborious process of looking up registration forms was avoided for the 1979 student intake, except for absent students. It also ensured that names were not included in the questionnaire which maintained confidentiality.

APPENDIX 2.2

THE MAIN QUESTIONNAIRE

Instructions
Please make sure that you do answer every question. Except where there is a space for you to write in put a tick in the right answer box.

1. What course are you doing at college?

   (write in)..

2. Is it a
   - Full-time Course? [ ]
   - Part-time day Course? [ ]
   - Block release Course? [ ]

3. How long does it usually take you to travel from home to college?
   - Less than 15 minutes [ ]
   - Between 15 and 30 minutes [ ]
   - Over 30 minutes but less than 1 hour [ ]
   - 1 hour or more [ ]

4. How do you get to college? (Tick more than one box if necessary)
   - On foot only [ ]
   - By bus [ ]
   - By car [ ]
   - By train [ ]
   - By motor-bike [ ]
   - By bicycle [ ]

5. Can you name any other colleges which run the course you are doing here?
If 'YES' write down their name(s)

College Names

YES [ ] ....

....

....

....

NO [ ] ....

6. <u>Before</u> you started your course at this college did you try to do any of the following?

	YES	NO
To stay on at school	[ ]	[ ]
To go to another Further Education/ Technical college	[ ]	[ ]
To go to a sixth form college	[ ]	[ ]

7. When you decided to go to a Further Education College was this college your first choice?

YES [ ]

NO [ ]

If 'NO' where did you want to go?

write in ....

8. What is the name and address of your last school?

write in ....

9. When did you leave school?

1978 [ ]

1977 [ ]

1976 [ ]

Another year 19......(fill in)

10. Did you leave school?

In the summer ☐

At Easter ☐

or at another time ☐

11. Did you take any of these exams at school? If you did, write down the subjects you took and the grades you got.

		Subject	Grade
CSE exams			
YES	☐	....	....
		....	....
		....	....
NO	☐	....	....
		....	....
		....	....
GCE exams			
YES	☐	....	....
		....	....
		....	....
NO	☐	....	....
		....	....
		....	....

12. Who <u>first</u> told you about courses at this college?

Your employer ☐

A teacher ☐

A friend ☐

A parent ☐

A relative ☐

The Careers Advisory Service ☐

Some one else (who)................ ☐

13. Was there a craft teacher at your last school?

YES	NO	DON'T KNOW
[ ]	[ ]	[ ]

If 'YES' did this teacher tell you about courses at Further Education colleges?

YES	NO
[ ]	[ ]

14. Was there a careers teacher at your last school?

YES	NO	DON'T KNOW
[ ]	[ ]	[ ]

If 'YES' did this careers teacher tell you about careers at Further Education colleges?

YES	NO
[ ]	[ ]

15. Have you ever spoken to any one from your local Careers Advisory Office?

YES	NO	DON'T KNOW
[ ]	[ ]	[ ]

If 'YES', were you told about courses at Further Education colleges by the Careers Advisory Service?

YES	NO
[ ]	[ ]

13. Was there a craft teacher at your last school?

YES [ ] NO [ ] DON'T KNOW [ ]

If 'YES' did this teacher tell you about courses at Further Education colleges?

YES [ ] NO [ ]

14. Was there a careers teacher at your last school?

YES [ ] NO [ ] DON'T KNOW [ ]

If 'YES' did this careers teacher tell you about careers at Further Education colleges?

YES [ ] NO [ ]

15. Have you ever spoken to any one from your local Careers Advisory Office?

YES [ ] NO [ ] DON'T KNOW [ ]

If 'YES', were you told about courses at Further Education colleges by the Careers Advisory Service?

YES [ ] NO [ ]

16. Have you ever read any of these magazines?

	YES	NO
'Floodlight'	[ ]	[ ]
'The Further and Higher Education Handbook'	[ ]	[ ]
'School Leaver'	[ ]	[ ]
'Which Course?'	[ ]	[ ]

17. Have you ever heard any advertisements on the radio about courses at Further Education colleges?

YES [ ] NO [ ]

Have you ever read any advertisements in newspapers about courses at Further Education colleges?

YES [ ] NO [ ]

18. Did you read a copy of the college prospectus before you applied to do a course here?

YES [ ] NO [ ]

19. If you are a full-time student did you try to get a permanent job before starting your course at college?

YES [ ] NO [ ]

20. What is your firm/employer's name and address (if none, write in 'none')?

....

21. What kind of job did you **want** to do when you left school?

....

22. What kind of job do you think you **will** be doing in 5 years time?

....

23. Is your father/step-father/guardian working full time at the moment?

YES [ ] NO [ ]

If 'YES', what is his present job? (Please describe as fully as you can)

....

....

Is your mother/step-mother working full-time at the moment?

YES [ ]   NO [ ]

If 'YES' what is her present job? (Please describe as fully as you can)

....

....

24. How many younger brothers and sisters have you?

....

25. How many older brothers and sisters have you?

....

26. Of your older brothers and sisters how many are:

Full-time students	............(write number in)
Unemployed	....
Working full-time	....

For those working full-time, please describe the sort of jobs they do.

....

....

....

For those who are full-time students, please describe the sort of courses they are doing.

....

....

....

27. Are you

Male [ ]

or Female? [ ]

28. How old were you on your last birthday?

.... years

29. Please fill in your address here.

....

THANK YOU FOR YOUR HELP

APPENDIX 2.3

RESPONSE RATE FOR MAIN QUESTIONNAIRE

			Missing N	%
	Var1	Student No.	-	-
	Var2	College	-	-
	Var3	Course	-	-
	Var4	Mode	-	-
	Var5	Time travel to college	1	0.1
	Var6	Method travel to college	7	0.4
	Var7	Knowledge other colleges	2	0.1
	Var8	Try stay on at school?	104	5.5
	Var9	Try stay on at college?	83	4.4
	Var10	Try enter 6th form college?	120	6.4
	Var11	First choice college?	132	7.0
	Var12	Year left school	48	2.5
	Var13	Season left school	14	0.7
	Var14	Qualifications at school	25	1.3
	Var15	Who first told about course?	81	4.3
	Var16	Was there craft teacher at school?	22	1.2
			24	1.3
	Var17	Did craft teacher tell about courses?	51	2.7
	Var18	Was there careers teachers at school?	23	1.2
	Var19	Did careers teacher tell about courses?	29	1.5
	Var20	Have you seen a careers advisor?	23	1.2
	Var21	Did careers advisor tell about courses?	35	1.9
	Var22	Read Floodlight?	66	3.5
	Var23	Read FHE booklet?	88	4.7
	Var24	Read 'school-leaver'?	87	4.6
	Var25	Read 'which course'?	86	4.6
	Var26	Heard about courses on radio?	40	2.1
	Var27	Read about courses in newspapers?	38	2.0
	Var28	Read college prospectus?	37	2.0
	Var29	Did you try and get a job when you left school?	40	2.1
	Var30	What job did you want when left school?	122	6.5
*derived from Var30	*Var31	Same as vocational course?	122	6.5

			Missing N	%
	Var32	What job do you think you'll be doing in five years time?	128	6.8
*derived from Var32	*Var33	Same as vocational course?	128	6.8
	Var34	Is father working?	70	3.7
	Var35	Type of father's job	141	7.5
*derived from Var35	Var36	Job same as student's vocational course	141	7.5
	Var37	Is mother working full-time	65	3.5
	Var38	Description of mother's job	121	6.5
*derived from Var38	Var39	Job same as student's vocational course	121	6.5
	Var40	How many younger siblings?	42	2.3
	Var41	How many older siblings?	45	2.4
	Var42	How many older siblings students?	71	3.8
	Var43	How many older siblings unemployed?	71	3.8
	Var44	How many older siblings working?	75	4.0
	Var45	Any older siblings same job as student's choice?	167	8.9
	Var46	Any older siblings same studies as student?	103	5.5
	Var47	Student's sex	20	1.1
	Var48	Student's age	22	1.2
	Var49	Student's address	82	4.4

APPENDIX 2.4

JOBS PICTURED IN PHOTOGRAPHS USED IN PILOT REPERTORY GRID SURVEY

PHOTOGRAPH

A	Motor bike mechanic
B	Computer operator
C	Nursery nurse
D	Disc jockey
E	Electronics assembly worker
F	Clerical work
G	Secretary/Typist - male
H	Travel agent
I	Factory worker
J	Hairdresser
K	Cook
L	Plasterer
M	Hospital porter
N	Florist
O	Technician
P	Secretarty/Typist - female
Q	Bank clerk
R	Telephonist
S	Carpenter

APPENDIX 2.5

JOB LISTS OBTAINED FOR PILOT REPERTORY GRID SURVEY

a) Jobs named by females (N=21)

	N
Computer work	2
Taxi driver	2
Telephonist/operator	3
Cleaner	4
Teacher	11
Bus driver	3
Technician	1
Travel agent	4
Accounting	2
Vet	9
Secretary/typist	11
Optician	1
Cook/catering	7
Dentist	4
Doctor/surgeon	15
Librarian	2
Nurse/midwife	20
Beauty therapy	2
Cashier banking	6
Artist	1
Shop work/sales assistant	13
Actress	1
Air hostess	5
Police force/woman	3
Hairdresser	10
Disc jockey	4
Mechanic	3
Florist	3
Office work/clerk	7
Traffic warden	1
Modelling	1
Fireman	2
Receptionist	5
Lorry driver	5
Assembly worker	4
Nursery nurse	6
Photographer	2
Miner	1
Home help	1
Helping old people/handicapped	2
Barmaid	1
Postman/woman	1
Sales rep	1
Print	1

b)Jobs named by males (N=27)

	N
Teacher	12
Porter	4
Pilot	4
Cook/chef	8
Technician	5
Computer operator	4
Electrician	12
Secretary	1
Clerical worker	4
Travel agent	3
Sales or shop assistant	7
Carpenter	10
Mechanic (motor)	9
Painter & decorator	5
Bus driver	6
Plumber	11
Lorry driver	9
Chemist	1
Physicist	1
Policeman	17
Milk man	4
Fireman	6
Nurse	2
Bricklayer	6
Labourer	1
Glazier	6
Bus conductor	6
Engineer	8
Salesman	2
Doctor	6
Services (army/navy/airforce)	5
Vet	3
Farmer	2
Gas worker	2
Water worker	2
Road sweeper	2
Hairdresser	2
Dustman	9
Sportsman/footballer	5
Captain	1
Spaceman	1
Cleaner	2
Butcher	2
Ambulance driver	3
Taxi driver	3
Swimming pool attendant	1
Lolly pop man	1
Probation officer	1
Social worker	2
Train driver	4
Photographer	3
Forester	1
Gardener	1
Sailor	1
Factory work	6
Welding	1
Plasterer	1
Road works	1

APPENDIX 2.6

CONSTRUCTS PRODUCED IN THE PILOT REPERTORY GRID SURVEY

Respondent A

Construct Triad				Job
1	Male jobs	v	Female job	ABC
2	More electrical	v	no electrical work	DEF
3	Uses writing	v	doesn't use writing	GHI
4	Don't travel	v	move around	JKL
5	Messy work	v	clean work	MNO
6	Sitting jobs	v	moving about	PQR
7	Young peoples' jobs	v	any age	SAB
8	Uses expensive equipment	v	not using expensive equipment	CDE
9	Office work	v	not office work	FGH
10	Working in a big place	v	working in a small place	IJK

(time limit reached)

Respondent B

Construct				Job Triad
1	Learning because job changes	v	job doesn't change	ABC
2	Dealing with people	v	not dealing with people	DEF
3	Office work	v	factory work	GHI
4	Self-employed	v	employees	JKL
5	Better promotion prospects	v	not much future	MNO
6	Non-manual	v	manual work	PWR
7	Not making things	v	making things	SAB
8	More monotonous same surrounding	v	changing and different surroundings	CDE

(time limit reached)

Respondent C

Construct			Job Triad
Don't need a lot of care and attention	v	you need a lot of care and attention	ABC
Office work	v	factory work	DEF
Manual work	v	non-manual work	GHI
Need to be hygienic	v	no need to be hygienic	JKL
Need patience	v	no need for patience	MNO
Need to be pleasant	v	no need to be pleasant	PQR
Making things	v	not making things	SAB
Need to be gentle	v	no need to be gentle	CDE
Involves writing	v	not much writing	FGH

(time limit reached)

Respondent D

Construct

Construct			Job Triad
Working with machines	v	working with people	ABC
You use skills, experience	v	not much experience	DEF
Working on their own	v	working in a group	GHI
Usually women's jobs	v	normally men's jobs	JKL
More important job	v	not a very important job	MNO
Working with people	v	not working with people	PQR
Difficult jobs	v	not so difficult	SAB
Noisy jobs	v	quiet job	CDE
Office work	v	not office job	FGH
Clean work	v	dirty work	IJK

(time limit reached)

Respondent E

Construct

Construct			Job Triad
Dealing with machines	v	dealing with people	ABC
More electricity	v	no use of electricity	DEF
Clerical jobs	v	not clerical	GHI
Women's jobs	v	mainly men's jobs	JKL
Technical work	v	not technical	MNO

(respondent unable to provide any more constructs)

Respondent F

Construct

Construct			Job Triad
Need training	v	natural ability	ABC
More ambitious	v	less ambitious	DEF
Boring, repetitive	v	more interesting	GHI
Service job (not so vital)	v	necessary job	JKL
More technical	v	less technical	MNO
Dealing with public	v	not dealing with public	PQR
Apprenticeship jobs	v	not apprenticeship jobs	SAB
Not women's jobs	v	expected to be women's jobs	CDE

(time limit reached)

Respondent G

(unable to participate, called away)

Respondent H

Construct			Job Triad
Dealing with machines	v	dealing with people	ABC
Men's jobs (expected)	v	women's jobs (expected)	DEF
They work on their own	v	working with lots of people	GHI
Cleaner jobs	v	more messy	JKL
Higher pay	v	poorer pay	MNO
More experience needed	v	less experience	PQR
Practical	v	not so practical	SAB

(time limit reached)

Respondent I

Construct			Job Triad
Skilled (set routine)	v	not so skilled	ABC
Working alone	v	working with others	DEF
Not manual	v	manual	GHI
A friendly atmosphere	v	less friendly atmosphere	JKL
More pay	v	not so high a salary	MNO
Working with public	v	not working with public	PQR
Indoor job	v	outdoor job	SAB
No prospects	v	more prospects	CAD
More clerical	v	less clerical	EFG

Respondent J

Construct			Job Triad
Jobs mainly using machines	v	Jobs working with people	ABC
More talk	v	Don't talk much	DEF
Not making things	v	making things	GHI
Women's jobs	v	men's jobs	JKL
None			MNO
None			PQR
Manual	v	office work	SAB
None			CDE
Better paid	v	worse pay	FGH

(time limit reached)

Respondent K

Construct			Job Triad
Clean job	v	dirty job	ABC
Regular hours or time	v	not a 9 to 5 job	DEF
Bit further up	v	working class	GHI
Better working conditions	v	not very good conditions	JKL
Don't meet people	v	meet people	MNO
Less responsibility	v	more responsibility	PQR
Mostly inside	v	mostly outside work	SAB
Deals with people	v	deals with machines	CDE
None			EFG
None			HIJ

Respondent L

Construct			Job Triad
Dirty jobs	v	clean jobs	ABC
Involves electronics	v	not electronics	DEF
Clerical/typing	v	no clerical/typing	GHI
Women's jobs	v	men's jobs	JKL
Highly skilled	v	not so skilled	MNO
Not so responsible	v	more responsible	PQR
Not so dangerous	v	dangerous	SAB
Long hours	v	shorter hours	CAD
Filing	v	not filings	CDE
Small employer	v	big employer	FGH

(time limit reached)

Respondent M

Construct			Job Triad
No future	v	a future in it	ABC
Not really skilled	v	need knowledge	DEF
Limit to learning	v	always learning	GHI
Apprenticeship	v	not apprenticeships	JKL
Useful	v	not very useful	MNO
Mainly women's job	v	for either	PQR
Work with your hands	v	not so much	SAB
Not so much brain work	v	use brains more	CDE
Records kept	v	not record work	FGH
Changes in job	v	doesn't change	IJK

(time limit reached)

Respondent N

Construct			Job Triad
Working with machines	v	working with people	ABC
Told what to do	v	independent	DEF
Not making things	v	making things	GHI
Clean jobs	v	dirty job	JKL
None			MNO
Not so responsible	v	more responsible	PQR
None			SAB
Make people happy	v	doesn't	CDE
Office work	v	not office work	FGH
None			IJK
None			LMN
None			OPQ

Respondent O

Construct			Job Triad
Mechanical jobs	v	work with people	ABC
More technical	v	less technical	DEF
Quite repetitive	v	more varied	GHI
More a business	v	can be self employed	JKL
More highly paid	v	less highly paid	MNO
Less maths	v	more mathematical	PQR
Physical strength	v	non-manual	SAB
None			CDE

(time limit reached)

Respondent P

Construct			Job Triad
Working with machines	v	with people	ABC
Have to keep things in order	v	don't have to keep records	DEF
More interesting	v	boring	GHI
Cleaner jobs	v	dirty	JKL
Unsociable hours	v	9 to 5 job	MNO
Not so many qualifications	v	more qualifications	SAB
Initiative important	v	not so important	CDE
Work set	v	work varies	FGH

(time limit reached)

Respondent O

Construct			Job Triad
Machines	v	mainly with people	ABC
Not so much	v	lots of experience	DEF
Office work	v	manual	GHI
Services	v	making things	JKL
Skilled	v	unskilled	MNO
Less responsible	v	more responsibility security	PQR
Inside	v	outside job	SAB
None			CDE
Not shops	v	shop work	FHG
Dirtier work	v	cleaner work	IJK

(time limit reached)

APPENDIX 2.7

THE MAIN REPERTORY GRID SURVEY

INSTRUCTIONS

Please score the list of jobs on each scale.
For example, if you would really like to be a plumber but hate to be a technician you would score the jobs:

Plumber '1' Technician '5'

JOBS

Carpenter ____
Telephonist ____
Bank clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory worker ____
Travel agent ____
Clerical worker ____

Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry Driver ____

Jobs I'd like				Jobs I wouldn't like
1	2	3	4	5
Really like	Quite like	Neither or both	Not like much	Not like at all

JOBS

Carpenter	____
Telephonist	____
Bank clerk	____
Secretary	____
Technician	____
Plumber	____
Cook	____
Hairdresser	____
Factory Worker	____
Travel agent	____
Clerical worker	____
Electrician	____
Nurse	____
Computer operator	____
Motor bike mechanic	____
Engineer	____
Teacher	____
Sales assistant	____
Doctor	____
Police constable	____
Painter	____
Bricklayer	____
Lorry Driver	____

Jobs mainly working with machines — Jobs mainly working with people

1	2	3	4	5
Nearly always with machines	Generally with machines	Neither or both	Generally with people	Nearly always with people

JOBS

Carpenter	____
Telephonist	____
Bank clerk	____
Secretary	____
Technician	____
Plumber	____
Cook	____
Hairdresser	____
Factory worker	____
Travel agent	____
Clerical worker	____
Electrician	____
Nurse	____
Computer operator	____
Motor bike mechanic	____
Engineer	____
Teacher	____
Sales assistant	____
Doctor	____
Police constable	____
Painter	____
Bricklayer	____
Lorry driver	____

Jobs where little experience is needed — Jobs where lots of experience is needed

1	2	3	4	5
Hardly any experience needed	Not much experience needed	Neither or both	Quite a lot of experience needed	A great deal of experience needed

JOBS

Carpenter	____
Telephonist	____
Bank clerk	____
Secretary	____
Technician	____
Plumber	____
Cook	____
Hairdresser	____
Factory worker	____
Travel agent	____
Clerical worker	____
Electrician	____
Nurse	____
Computer operator	____
Motor bike mechanic	____
Engineer	____
Teacher	____
Sales assistant	____
Doctor	____
Police constable	____
Painter	____
Bricklayer	____
Lorry driver	____

Office work ... Manual work

1	2	3	4	5
Almost always office work	Mainly office work	Neither or both	Mainly manual work	Almost always manual work

JOBS

Carpenter	____
Telephonist	____
Bank clerk	____
Secretary	____
Technician	____
Plumber	____
Cook	____
Hairdresser	____
Factory worker	____
Travel agent	____
Clerical worker	____
Electrician	____
Nurse	____
Computer operator	____
Motor bike mechanic	____
Engineer	____
Teacher	____
Sales assistant	____
Doctor	____
Police constable	____
Painter	____
Bricklayer	____
Lorry driver	____

Women's jobs ... Men's jobs

1	2	3	4	5
Nearly always women's jobs	Often women's jobs	Neither or both	Often men's jobs	Nearly always men's jobs

JOBS

Carpenter	___
Telephonist	___
Bank clerk	___
Secretary	___
Technician	___
Plumber	___
Cook	___
Hairdresser	___
Factory worker	___
Travel agent	___
Clerical worker	___
Electrician	___
Nurse	___
Computer operator	___
Motor bike mechanic	___
Engineer	___
Teacher	___
Sales assistant	___
Doctor	___
Police constable	___
Painter	___
Bricklayer	___
Lorry driver	___

Jobs without much responsibility — Jobs with more responsibility

1	2	3	4	5
Hardly any respons-ability	Little respons-ability	Neither or both	Quite a lot of respons-ability	A great deal of respons-ability

JOBS

Carpenter	___
Telephonist	___
Bank clerk	___
Secretary	___
Technician	___
Plumber	___
Cook	___
Hairdresser	___
Factory worker	___
Travel agent	___
Clerical worker	___
Electrician	___
Nurse	___
Computer operator	___
Motor bike mechanic	___
Engineer	___
Teacher	___
Sales assistant	___
Doctor	___
Police constable	___
Painter	___
Bricklayer	___
Lorry driver	___

Clean jobs — Dirty jobs

1	2	3	4	5
Very clean	Quite clean	Neither or both	Quite dirty	Very dirty

JOBS

Carpenter	___
Telephonist	___
Bank clerk	___
Secretary	___
Technician	___
Plumber	___
Cook	___
Hairdresser	___
Factory worker	___
Travel agent	___
Clerical worker	___
Electrician	___
Nurse	___
Computer operator	___
Motor bike mechanic	___
Engineer	___
Teacher	___
Sales assistant	___
Doctor	___
Police constable	___
Painter	___
Bricklayer	___
Lorry driver	___

Interesting jobs — Boring jobs

1	2	3	4	5
Very interesting	Quite interesting	Neither or both	Quite boring	Very boring

JOBS

Carpenter	___
Telephonist	___
Bank clerk	___
Secretary	___
Technician	___
Plumber	___
Cook	___
Hairdresser	___
Factory worker	___
Travel agent	___
Clerical worker	___
Electrician	___
Nurse	___
Computer operator	___
Motor bike mechanic	___
Engineer	___
Teacher	___
Sales assistant	___
Doctor	___
Police constable	___
Painter	___
Bricklayer	___
Lorry driver	___

Jobs with regular hours — Jobs with irregular hours

1	2	3	4	5
Very regular	Quite regular	Neither or both	Generally irregular	Very irregular

JOBS

Carpenter ____
Telephonist ____
Bank clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory worker ____
Travel agent ____
Clerical worker ____

Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry driver ____

Jobs which need few qualifications — Jobs which need more qualifications

1	2	3	4	5
Very few	Not many	Neither or both	Quite a lot	Very many

JOBS

Carpenter ____
Telephonist ____
Bank Clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory worker ____
Travel agent ____

Clerical worker ____
Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry driver ____

Poorly paid jobs — Well paid jobs

1	2	3	4	5
Very poor pay	Quite poor pay	Neither or both	Quite good pay	Very good pay

JOBS

Carpenter ___
Telephonist ___
Bank clerk ___
Secretary ___
Technician ___
Plumber ___
Cook ___
Hairdresser ___
Factory worker ___
Travel agent ___

Clerical worker ___
Electrician ___
Nurse ___
Computer operator ___
Motor bike mechanic ___
Engineer ___
Teacher ___
Sales assistant ___
Doctor ___
Police constable ___
Painter ___
Bricklayer ___
Lorry driver ___

Technical jobs				Non-technical jobs
1	2	3	4	5
Very technical	Quite technical	Neither or both	Generally non-technical	Almost always non-technical

JOBS

Carpenter ___
Telephonist ___
Bank clerk ___
Secretary ___
Technician ___
Plumber ___
Cook ___
Hairdresser ___
Factory worker ___
Travel agent ___
Clerical worker ___

Electrician ___
Nurse ___
Computer operator ___
Motor bike mechanic ___
Engineer ___
Teacher ___
Sales assistant ___
Doctor ___
Police constable ___
Painter ___
Bricklayer ___
Lorry driver ___

Jobs where you are told what to do				Jobs where you are more independent
1	2	3	4	5
Almost always told	Often told	Neither or both	Generally independent	Almost always independent

JOBS

Carpenter ____
Telephonist ____
Bank clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory worker ____
Travel agent ____
Clerical worker ____

Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry driver ____

Jobs where you aim to make people happy				Jobs where making people happy isn't important
1	2	3	4	5
Very important to make people happy	Quite important to make people happy	Neither or both	Not very important to make people happy	Not at all important to make people happy

JOBS

Carpenter ____
Telephonist ____
Bank clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory work ____
Travel agent ____
Clerical worker ____

Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry driver ____

Jobs with no prospects				Jobs with good prospects
1	2	3	4	5
Very poor prospects	Quite poor prospects	Neither or both	Quite good prospects	Very good prospects

JOBS

Carpenter ____
Telephonist ____
Bank clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory worker ____
Travel agent ____

Clerical worker ____
Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry driver ____

High class jobs — Working class jobs

1	2	3	4	5
Very high class	Quite high class	Neither or both	Quite working class	Very working class

JOBS

Carpenter ____
Telephonist ____
Bank clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory worker ____
Travel agent ____

Clerical worker ____
Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry driver ____

Jobs where you use your mind — Jobs where you don't use your mind

1	2	3	4	5
A lot	Quite a lot	Neither or both	Much	At all

JOBS

Carpenter	___	
Telephonist	___	
Bank clerk	___	
Secretary	___	
Technician	___	
Plumber	___	
Cook	___	
Hairdresser	___	
Factory worker	___	
Travel agent	___	
Clerical worker	___	
Electrician	___	
Nurse	___	
Computer operator	___	
Motor bike mechanic	___	
Engineer	___	
Teacher	___	
Sales assistant	___	
Doctor	___	
Police constable	___	
Painter	___	
Bricklayer	___	
Lorry driver	___	

Difficult jobs ... Easy jobs

1	2	3	4	5
Very difficult	Quite difficult	Neither or both	Quite easy	Very easy

JOBS

Carpenter	___	
Telephonist	___	
Bank clerk	___	
Secretary	___	
Technician	___	
Plumber	___	
Cook	___	
Hairdresser	___	
Factory worker	___	
Travel agent	___	
Clerical worker	___	
Electrician	___	
Nurse	___	
Computer operator	___	
Motor bike mechanic	___	
Engineer	___	
Teacher	___	
Sales assistant	___	
Doctor	___	
Police constable	___	
Painter	___	
Bricklayer	___	
Lorry driver	___	

Jobs with a friendly atmosphere ... Jobs with an unfriendly atmosphere

1	2	3	4	5
Very friendly	Quite friendly	Neither or both	Quite unfriendly	Very unfriendly

JOBS

Carpenter ____
Telephonist ____
Bank clerk ____
Secretary ____
Technician ____
Plumber ____
Cook ____
Hairdresser ____
Factory worker ____
Travel agent ____

Clerical worker ____
Electrician ____
Nurse ____
Computer operator ____
Motor bike mechanic ____
Engineer ____
Teacher ____
Sales assistant ____
Doctor ____
Police constable ____
Painter ____
Bricklayer ____
Lorry driver ____

Apprenticeship jobs — Non-apprenticeship jobs

1	2	3	4	5
Always have appren- ticeships	Generally have appren- ticeships	Neither or both	Generally don't have appren- ticeships	Never have appren- ticeships

Thank you for your help.

APPENDIX 5.1

1971 WARD NAMES AND NUMBERS BY BOROUGH

WANDSWORTH

1 Thamesfield
2 Putney
3 Roehampton
4 Westhill
5 Southfield
6 Fairfield
7 Earlsfield
8 Springfield
9 Tooting
10 Haveney
11 Furzedown
12 Bedford
13 Nightingale
14 Balham
15 Northcote
16 Shaftesbury
17 St. John
18 Latchmere
19 St. Mary's Park
20 Queensdown

LAMBETH

21 Bishops
22 Prince's
23 Oval
24 Stockwell
25 Vassall
26 Larkhall
27 Clapham Town
28 Ferndale
29 Angell
30 Clapham Park
31 Town Hall
32 Tulse Hill
33 Herne Hill
34 Thornton
35 Thurlow Park
36 St. Leonard's
37 Streatham Wells
38 Leigham
39 Knight's Hill
40 Streatham South

SOUTHWARK

41 Cathedral
42 Chaucer
43 Riverside
44 Abbey
45 Dockyard
46 Rotherhithe
47 Bricklayers
48 Faraday
49 Browning
50 Newington
51 Brunswick
52 Burgess
53 Friary
54 Consort
55 The Lane
56 St. Giles
57 Lyndhurst
58 Bellevden
59 Waverley
60 Rye
61 Allen
62 Ruskin
63 The College

LEWISHAM

64 Deptford
65 Marlowe
66 Grinling Gibbons
67 Pepys
68 Drake
69 Ladywell
70 Blackheath and Lewisham Village
71 St. Mildred Lee
72 Mannor Lee
73 Lewisham Park
74 Brockley
75 Honor Oak Park
76 Forest Hill
77 Rushey Green
78 Culverley
79 St. Andrew
80 South Lea
81 Whitefoot
82 Grove Park
83 Southend
84 Bellingham
85 Sydenham East
86 Sydenham West

GREENWICH

87 West
88 Park
89 Trafalgar
90 Marsh
91 Vanburgh
92 Eastcombe
93 Charlton
94 Hornfair
95 St. May's
96 St. George's
97 Woolwich
98 Eynsham
99 St. Nicholas
100 Abbeywood
101 Slade
102 St. Margaret's
103 Academy
104 Blackheath
105 Kidbrooke
106 Wellhall
107 Shooter's Hill
108 New Eltham
109 Coldharbour
110 Eltham
111 Middle Park
112 Sherrard
113 Horn Park

TOWER HAMLETS

114 Poplar Millwall
115 Poplar South
116 Shadwell
117 St. Katherine
118 Poplar East
119 Poplar West
120 Bromley
121 Limehouse
122 St. Dunstan's
123 Redcoat
124 St. Mary's
125 Spitalfields
126 Bethnal Green West
127 Bethnal Green North
128 Bethnal Green South
129 Holy Trinity
130 Bethnal Green Central
131 Bethnal Green East
132 Bow North

133 Bow South

HACKNEY

134 Moorfields
135 Wenlock
136 De Beauvoir
137 Haggerston
138 Queensbridge
139 Dalston
140 Victoria
141 Wick
142 Chatham
143 Kingsmead
144 Lea Bridge
145 Downs
146 Rectory
147 Northwood
148 Springfield
150 New River
151 Defoe
152 Brownswood
153 Clissold

ISLINGTON

154 Bunhill
155 Clerkenwell
156 St. Peter
157 Pentonville
158 Thornhill
159 Barnsbury
160 St. Mary
161 Canonbury
162 Mildmay
163 Quadrant
164 Highbury
165 Holloway
166 Hillmarton
167 St. George's
168 Junction
169 Highview
170 Hillrise
171 Parkway
172 Station

CAMDEN

173 Westend
174 Kilburn
175 Priory
176 Hampstead Town
177 Highgate
178 Hampstead Central
179 Belsize
180 Gospel Oak
181 St. John's
182 Camden
183 Grafton
184 Adelaide
185 Chalk Farm
186 Regent's Park
187 St. Pancreas
188 Euston
189 King's Cross
190 Holborn
191 Bloomsbury

WESTMINSTER

192 Queen's Park
193 Harrow Road
194 Maida Vale
195 Lord's
196 Regent's Park
197 Church Street
198 Cavendish
199 Baker Street
200 Hyde Park
201 Lancaster Gate
202 Westbourne
203 Knightsbridge
204 Regent Street
205 Charing Cross
206 Victoria Cross
207 Millbank
208 Warwick
209 Churchill

APPENDIX 5.2

FREQUENCY DISTRIBUTION OF VOCATIONAL STUDENTS AT THE WARD LEVEL

Combined Total (1978 and 1979 intakes)

Number of Students	Number of Wards
0	3
1	4
2	6
3	5
4	10
5	6
6	16
7	14
8	8
9	12
10	14
11	10
12	8
13	7
14	9
15	3
16	9
17	8
18	6
19	5
20	11
21	6
22	2
23	4
24	5
25	1
26	2
27	1
29	1
30	2
31	1
33	1
34	1
37	1
38	2
41	2
47	1
48	2

Commercial Group (1978 and 1979 intakes)

Number of Students	Number of Wards
0	26
1	39
2	24
3	19
4	14
5	10
6	16
7	12
8	12
9	10
10	5
11	4
12	4
13	1
14	3
15	1
16	1
17	3
18	1
21	1
23	1
24	1
31	1

Construction Group (1978 and 1979 intakes)

Number of Students	Number of Wards
0	19
1	29
2	38
3	28
4	18
5	25
6	17
7	10
8	8
9	8
10	3
11	2
13	2
19	1
21	1

Engineering Group (1978 and 1979 intakes)

Number of Students	Number of Wards
0	26
1	22
2	28
3	28
4	18
5	18
6	9
7	15
8	14
9	6
10	7
11	6
12	1
13	3
14	3
16	2
17	1
18	1
20	1

APPENDIX 5.3

1971 CENSUS-BASED MEASURES EMPLOYED IN ANALYSES OF THE SOCIO-ECONOMIC STRUCTURE OF NEIGHBOURHOODS

Measures of social class

PROF NONMAN SKILLED SEMI UNSKILL	Percentage of economically active males engaged in professional and managerial; other non-manual; skilled; semi-skilled; and unskilled manual work.

Measures of social stability

COUNCIL OCCUP RENTED	Percentage of the population living in council; owner occupied; and privately rented accommodation.

Measures of educational achievement

A-LEVEL DEGREE	Percentage of the adult population with A-levels; Degrees or their equivalent.

Measures of housing conditions

EXCAM CROWDED	Percentage of the population living in housing with exclusive use of all amenities; overcrowded conditions (number of persons per room greater than <1.5)

Measure of ethnic composition

IMMIG	Percentage of the population born in the New Commonwealth

APPENDIX 5.4

COLLECTION OF DATA ON THE DISTRIBUTION OF EMPLOYERS

The vast majority of the construction and engineering students had been sponsored by employers. A review of the literature indicated that the opportunities offered by the local neighbourhood may have a part to play in determining vocation at choice and, therefore, entry into vocational training (see Chapter 7). In the context of this study, therefore, it was necessary to obtain some information about the employment opportunities available in the home area to sponsored students.

It was not possible to obtain information about the availability of jobs in the local area at the time of the survey (1979) because such information was not collected at an appropriate spatial scale by local employment offices. There is also considerable evidence that many firms do not use employment offices to advertise jobs and that they often rely upon informal methods of recruitment. This was particularly true in the construction and engineering industries in the recruitment of craft level employees (see Lee & Wrench, 1981).

It was clearly beyond the scope of the present investigation to consult job adverts printed in different papers available in the inner London area to obtain information about variations in local employment opportunities at the time of the study. Although both the CITB and EITB were approached to ask for lists of the names and addresses of inner London employers who provided vocational training for employees in 1978 and 1979, neither body would release this information. Thus it was not possible to obtain data about the availability of sponsored construction or engineering training in the study area.(1)

Instead, therefore, the names and addresses of construction engineering employers were identified using the Yellow Pages printed in 1979 for the inner London areas (Central, South, South West, South East, East, North, and North West). Only employers living within the inner London areas were included in the data collection. The employers' addresses were then mapped on a ward basis so that variations in the distributions of construction and engineering employers could be examined. By mapping these addreses to the ward boundary it was possible to investigate the relationships between the distributions of construction and engineering students and those of employers in the same fields.

In all, a total of 1,372 construction employers addresses were mapped on a ward basis within the inner London area. (A further 23 addresses could not be located either because the address given did not include a number or because the road given in the Yellow Pages did not appear in any street directory and may have been misprinted.) Of course, the construction employers listed in the Yellow Pages may not necessarily be representative of the whole population of construction employers within the inner city. Some employers may not have been willing to pay the fee required to advertise in the Yellow Pages, and specialist employers may not have advertised themselves under the general heading of building contractors.(2)

This information about the location of construction employers, therefore only provides a guide to the probable location of all construction employers within the inner city. Moreover, these data do not necessarily relate to the employment or training opportunities available in construction work within the inner city area. It was not possible to establish whether the construction employers listed in the Yellow Pages recruited school leavers as craft apprentices during the years of the study. Nor was it possible to establish the extent of competition for craft apprenticeships during this period in this study.(3)

Despite the limitations of the employment data (which, as indicated are considerable) it was considered worthwhile to collect the information since this would enable relationships between the distribution of employers and that of students to be examined.

Given the crudity of the data available, if significant associations were nevertheless identified, the results would suggest that, in reality, the distribution of employment opportunities (which would be likely to reflect the distribution of employers) had a part to play in the explanation of spatial variations in participation in craft level construction training.

NOTES

(1) The constraints of time and limitations of a PhD programme of work meant that it was not feasible to conduct a survey of employers to establish the availability of craft level employment opportunities in the construction and engineering industries within different parts of the inner city.

(2) Great care was required in the mapping process to ensure that employers who advertised themselves in more than one area of the Yellow Pages (a common practice) were recorded only once.

(3) Because of the time required to map addresses, it was not practical to consider mapping the location of specialist employers within the construction industry, given the resources available for, and time constraints set upon, the present study.

APPENDIX 5.5

FREQUENCY DISTRIBUTION OF CONSTRUCTION FIRMS AT THE WARD LEVEL (1)

Number of Firms	Number of Wards
0	3
1	15
2	18
3	11
4	20
5	25
6	18
7	18
8	19
9	19
10	6
11	9
12	9
13	3
14	4
15	2
16	6
17	3
18	1

(1) Source: Yellow Pages 1978.

APPENDIX 6.1

DESCRIPTIVE STATISTICS OF CLUSTER CHARACTERISTICS

CLUSTER 1

VARIABLE		F Ratio	T
1	PROF	1.030	1.856
2	NONMAN	0.736	1.498
3	SKILLED	0.303	-1.960
4	SEMI	0.284	-1.641
5	UNSKILL	0.278	-1.138
6	A LEVEL	0.756	1.968
7	DEGREE	0.943	1.896
8	CROWDED	1.025	-0.073
9	EXCAMM	0.461	0.150
10	OCCUP	0.395	-0.163
11	RENTED	0.533	1.523
12	COUNCIL	0.168	-1.076
13	IMMIG	0.761	-0.113

CLUSTER 2

VARIABLE		F Ratio	T
1	PROF	0.498	1.540
2	NONMAN	0.481	0.787
3	SKILLED	0.144	-0.936
4	SEMI	0.352	-1.207
5	UNSKILL	0.130	-1.201
6	A LEVEL	0.326	1.172
7	DEGREE	0.524	1.457
8	CROWDED	0.083	1.201
9	EXCAMM	0.164	1.281
10	OCCUP	1.129	1.729
11	RENTED	0.307	-0.763
12	COUNCIL	0.215	-0.640
13	IMMIG	0.164	-0.842

CLUSTER 3

VARIABLE		F Ratio	T
1	PROF	0.151	0.185
2	NONMAN	0.137	0.403
3	SKILLED	0.203	-0.216
4	SEMI	0.333	-0.262
5	UNSKILL	0.355	-0.419
6	A LEVEL	0.162	0.172
7	DEGREE	0.169	0.088
8	CROWDED	0.231	-0.578
9	EXCAMM	0.509	0.772
10	OCCUP	0.509	-0.131
11	RENTED	0.602	-0.371
12	COUNCIL	0.281	0.399
13	IMMIG	0.242	-0.606

CLUSTER 4

VARIABLE		F Ratio	T
1	PROF	0.077	-0.206
2	NONMAN	0.342	0.601
3	SKILLED	0.184	-0.049
4	SEMI	0.175	-0.156
5	UNSKILL	0.250	-0.228
6	A LEVEL	0.190	0.249
7	DEGREE	0.137	0.102
8	CROWDED	0.442	0.803
9	EXCAMM	0.372	-0.991
10	OCCUP	0.256	0.182
11	RENTED	0.184	0.771
12	COUNCIL	0.148	-0.749
13	IMMIG	0.452	0.965

CLUSTER 5

VARIABLE		F Ratio	T
1	PROF	0.218	-0.135
2	NONMAN	0.349	-0.029
3	SKILLED	0.319	0.455
4	SEMI	0.351	0.103
5	UNSKILL	0.134	-0.527
6	A LEVEL	0.102	-0.322
7	DEGREE	0.082	-0.291
8	CROWDED	0.313	-0.590
9	EXCAMM	0.455	0.049
10	OCCUP	0.504	1.307
11	RENTED	0.247	-0.258
12	COUNCIL	0.149	-0.737
13	IMMIG	0.524	0.085

CLUSTER 6

VARIABLE		F Ratio	T
1	PROF	0.127	-0.750
2	NONMAN	0.245	-0.893
3	SKILLED	0.304	0.799
4	SEMI	0.338	0.645
5	UNSKILL	0.743	0.973
6	A LEVEL	0.064	-0.840
7	DEGREE	0.077	-0.782
8	CROWDED	0.299	-0.321
9	EXCAMM	0.707	0.655
10	OCCUP	0.244	-0.829
11	RENTED	0.320	-1.062
12	COUNCIL	0.199	1.438
13	IMMIG	0.126	-0.785

CLUSTER 7

VARIABLE		F Ratio	T
1	PROF	0.054	-0.612
2	NONMAN	0.340	-0.735
3	SKILLED	0.219	0.563
4	SEMI	0.362	0.552
5	UNSKILL	0.386	0.693
6	A LEVEL	0.072	-0.603
7	DEGREE	0.113	-0.561
8	CROWDED	0.425	0.261
9	EXCAMM	0.486	-0.639
10	OCCUP	0.142	-0.615
11	RENTED	0.197	0.072
12	COUNCIL	0.195	0.388
13	IMMIG	0.349	0.037

CLUSTER 8

VARIABLES		F Ratio	T
1	PROF	0.084	-0.588
2	NONMAN	0.288	0.651
3	SKILLED	0.328	-0.009
4	SEMI	0.987	1.086
5	UNSKILL	0.638	0.717
6	A LEVEL	0.050	-0.548
7	DEGREE	0.082	-0.562
8	CROWDED	0.684	1.944
9	EXCAMM	0.199	-1.187
10	OCCUP	0.273	-0.321
11	RENTED	0.161	0.577
12	COUNCIL	0.207	-0.252
13	IMMIG	0.970	1.833

CLUSTER 7

VARIABLE		F Ratio	T
1	PROF	0.054	-0.612
2	NONMAN	0.340	-0.735
3	SKILLED	0.219	0.563
4	SEMI	0.362	0.552
5	UNSKILL	0.386	0.693
6	A LEVEL	0.072	-0.603
7	DEGREE	0.113	-0.561
8	CROWDED	0.425	0.261
9	EXCAMM	0.486	-0.639
10	OCCUP	0.142	-0.615
11	RENTED	0.197	0.072
12	COUNCIL	0.195	0.388
13	IMMIG	0.349	0.037

CLUSTER 8

VARIABLES		F Ratio	T
1	PROF	0.084	-0.588
2	NONMAN	0.288	0.651
3	SKILLED	0.328	-0.009
4	SEMI	0.987	1.086
5	UNSKILL	0.638	0.717
6	A LEVEL	0.050	-0.548
7	DEGREE	0.082	-0.562
8	CROWDED	0.684	1.944
9	EXCAMM	0.199	-1.187
10	OCCUP	0.273	-0.321
11	RENTED	0.161	0.577
12	COUNCIL	0.207	-0.252
13	IMMIG	0.970	1.833

APPENDIX 8.1

OVERALL MEANS FOR EACH ELEMENT ON EACH CONSTRUCT BY STUDENT GROUP

Construct 1 Jobs I'd like v jobs I wouldn't like

Element	Commercial		Construction		Engineering
1	4.352	**	2.559		2.589
2	2.598	**	4.671		4.612
3	2.548	**	4.565		4.411
4	2.028	**	4.818		4.813
5	4.017	**	3.429	* E Con	2.461
6	4.682	**	2.088	* E Con	2.858
7	3.559	**	3.706	* E Con	4.077
8	3.347	**	4.506		4.644
9	4.676	**	4.782	* E Con	4.278
10	2.062	**	3.771		3.968
11	2.352	**	4.535		4.543
12	3.849	**	2.353	* E Con	1.881
13	3.386	**	4.618		4.552
14	2.648	**	4.106	* E Con	3.434
15	4.397	**	2.829	* E Con	2.160
16	4.101	**	2.782	* E Con	1.708
17	3.576	**	4.088		4.128
18	3.447	**	4.300		4.155
19	3.185	**	3.894		4.018
20	3.961		4.041		4.182
21	4.039	**	2.559	* E Con	3.169
22	4.559	**	2.276	* E Con	2.982
23	4.419		2.647		2.511

* Difference between means significant (Student's t gte 1.96, $p<0.05$) for student group pair

** Difference between means significant for both pairs (Student's t gte 1.96 for Commercial/Construction; Commercial/Engineering student group pairs)

where: E Con = Construction/Engineering pair only

Construct 2 Jobs mainly working working with machines v jobs mainly working with people

	Commercial		Construction	Engineering
1	2.491		2.623	2.667
2	3.033		2.664	2.913
3	4.000		4.000	4.137
4	3.569		3.541	3.530
5	1.938	**	2.329	2.388
6	2.776		2.841	2.868
7	3.089		2.799	2.891
8	4.005		3.841	4.003
9	2.067	**	1.723	1.808
10	4.480		4.458	4.498
11	3.631		3.635	3.717
12	1.960	**	2.594	2.507
13	4.374		4.176	4.283
14	1.480		1.305	1.448
15	1.731		1.647	1.703
16	1.608		1.582	1.658
17	4.687		4.641	4.708
18	4.553		4.576	4.562
19	4.469		4.300	4.402
20	4.659		4.441	4.553
21	3.262		3.347	3.224
22	3.117		3.305	3.137
23	2.759		2.452	2.429

Construct 3 Jobs where little experience is needed v jobs where lots of experience is needed

1	3.788	**	4.153		4.160
2	2.827		2.971		2.808
3	3.419		3.618	* E Con	3.310
4	4.006	**	3.412		3.278
5	4.336		4.271	* E Con	4.562
6	3.648	**	4.203		4.036
7	3.503		3.753		3.744
8	3.766		3.889		3.753
9	1.581		1.636		1.785
10	3.028	**	2.806		2.703
11	2.955		3.112	* E Con	2.835
12	4.341		4.453		4.443
13	4.620		4.548		4.447
14	4.375		4.306		4.447
15	3.791	**	4.071		4.096
16	4.241		4.303		4.383
17	4.520	* E	4.336		4.146
18	1.944	**	2.595		2.438
19	4.872		4.812		4.776
20	4.039	**	3.589		3.406
21	2.877	**	3.236		3.109
22	3.039	**	4.050	* E Con	3.735
23	2.665		2.777		2.950

Construct 4 Office work v manual work

	Commercial		Construction		Engineering
1	4.701		4.641		4.562
2	2.173	* Con	1.853		1.973
3	1.665		1.423		1.461
4	1.274		1.217		1.393
5	3.900	* Con	3.217	* E Con	3.603
6	4.486		4.635		4.487
7	3.995		3.782		3.955
8	3.989	* Con	3.600		3.786
9	4.341		4.123	* E Con	4.480
10	2.061		1.876		1.941
11	1.587		1.606		1.644
12	4.190		4.276		4.274
13	3.931		3.629		3.526
14	2.592	* Con	2.217	* E Con	2.585
15	4.397		4.400		4.535
16	4.341		4.170		4.256
17	3.078	**	2.494		2.681
18	3.285	**	2.982		2.840
19	3.257		2.970		2.955
20	3.307		3.234		3.283
21	4.263		4.488		4.302
22	4.542		4.765		4.713
23	4.224		4.400		4.270

Construct 5 Women's jobs v men's jobs

	Commercial		Construction	Engineering
1	4.581		4.782	4.672
2	1.687		1.706	1.608
3	2.866		2.964	2.941
4	1.458		1.517	1.516
5	4.112		4.023	4.124
6	4.698		4.794	4.708
7	2.821		2.835	2.868
8	2.670		2.411	2.498
9	3.061	* E	3.276	3.370
10	2.894		3.006	2.932
11	2.598		2.747	2.772
12	4.469		4.641	4.544
13	2.240	* E	2.006	1.964
14	3.095	* E	3.294	3.421
15	4.558		4.741	4.695
16	4.480		4.606	4.612
17	2.972		2.947	3.014
18	2.754	**	3.041	3.042
19	3.307		3.482	3.467
20	3.100		3.153	3.147
21	4.173	* Con	4.558	4.398
22	4.687		4.735	4.786
23	4.617		4.570	4.685

Construct 6 Jobs without much responsibility v jobs with more responsibility

	Commercial		Construction		Engineering
1	3.000	**	3.594		3.457
2	3.374		3.247		3.137
3	4.000		3.841		3.877
4	4.340	**	3.665		3.598
5	3.944		3.982	* E Con	4.251
6	3.396	**	3.900		3.749
7	3.446		3.476		3.471
8	3.530		3.423		3.384
9	1.960		2.053		2.165
10	3.569	**	2.953		3.101
11	3.296		3.100		3.110
12	4.095		4.247		4.265
13	4.843		4.641		4.585
14	4.044		3.859		3.913
15	3.257	**	3.729		3.758
16	3.896		4.00		4.133
17	4.502	* E	4.294		4.183
18	2.581		2.553		2.516
19	4.899		4.776		4.808
20	4.659		4.447		4.439
21	2.569	**	3.059		2.900
22	2.826	**	3.441		3.361
23	3.145		3.212		3.306

Construct 7 Clean jobs v dirty jobs

1	3.648	*Con	3.053		3.269
2	1.173		1.194		1.237
3	1.218		1.082		1.151
4	1.156		1.194		1.146
5	3.140	*Con	2.523	* E Con	2.909
6	4.235		4.159		4.091
7	2.989	**	2.335		2.502
8	2.508	**	1.753	* E Con	2.009
9	3.620		3.470	* E Con	3.772
10	1.346		1.241		1.205
11	1.363		1.288		1.347
12	3.112		3.059	* E Con	3.384
13	2.514		1.917		1.986
14	1.587		1.394		1.548
15	4.637		4.735		4.763
16	4.330		4.100		4.146
17	1.503		1.470		1.626
18	1.665		1.370		1.425
19	2.095	**	1.741		1.721
20	2.391		2.282		2.278
21	4.263		4.059		4.046
22	4.570		4.300		4.415
23	3.246	* E	3.047		2.950

Construct 8 Interesting jobs v boring jobs

	Commercial	Construction	Engineering
1	2.871 **	2.036	2.036
2	2.614 **	3.976	3.982
3	2.474 **	4.129	4.004
4	1.988 **	4.071	4.173
5	2.636 **	3.118 * E Con	2.219
6	3.564 **	2.076	2.365
7	2.620 **	3.106	3.187
8	2.541 **	3.659	3.767
9	4.564	4.629	4.356
10	2.050 **	3.723	3.676
11	2.530 **	4.200	4.146
12	2.731 **	2.388 * E Con	1.854
13	2.000 **	2.994	2.845
14	2.447 **	3.582 * E Con	3.146
15	3.435 **	2.341 * E Con	1.872
16	3.100 **	2.606 * E Con	1.872
17	2.597 **	3.423	3.306
18	3.268 **	4.100	3.986
19	1.798 **	2.671	2.639
20	2.514 **	3.135	2.877
21	3.441 **	2.853	2.972
22	3.927 **	2.471 * E Con	2.840
23	3.815 **	2.965	2.767

Construct 9 Jobs with regular hours v jobs with irregular hours

1	2.160	2.810 * E Con	2.041
2	1.941	1.854	1.705
3	1.589	1.447	1.411
4	1.626	1.586	1.558
5	2.160	2.419 * E Con	1.988
6	2.841 **	1.561 * E Con	2.370
7	2.635	2.709	2.417
8	1.965	2.078	1.841
9	1.872	1.877	1.811
10	1.786	1.681	1.688
11	1.758	1.553	1.682
12	2.480 * E	2.748 * E Con	2.164
13	3.672	3.514	3.429
14	1.836	1.955	1.652
15	2.279	2.687 * E Con	2.00
16	2.165	2.731 * E Con	1.976
17	1.900	1.882	1.823
18	1.936	1.754	1.835
19	3.708	3.597	3.623
20	3.653	3.648	3.652
21	2.379 *Con	2.832 * E Con	2.088
22	2.352 *Con	2.704 * E Con	2.076
23	3.767	3.787	3.470

Construct 8 Interesting jobs v boring jobs

	Commercial	Construction	Engineering
1	2.871 **	2.036	2.036
2	2.614 **	3.976	3.982
3	2.474 **	4.129	4.004
4	1.988 **	4.071	4.173
5	2.636 **	3.118 * E Con	2.219
6	3.564 **	2.076	2.365
7	2.620 **	3.106	3.187
8	2.541 **	3.659	3.767
9	4.564	4.629	4.356
10	2.050 **	3.723	3.676
11	2.530 **	4.200	4.146
12	2.731 **	2.388 * E Con	1.854
13	2.000 **	2.994	2.845
14	2.447 **	3.582 * E Con	3.146
15	3.435 **	2.341 * E Con	1.872
16	3.100 **	2.606 * E Con	1.872
17	2.597 **	3.423	3.306
18	3.268 **	4.100	3.986
19	1.798 **	2.671	2.639
20	2.514 **	3.135	2.877
21	3.441 **	2.853	2.972
22	3.927 **	2.471 * E Con	2.840
23	3.815 **	2.965	2.767

Construct 9 Jobs with regular hours v jobs with irregular hours

1	2.160	2.810 * E Con	2.041
2	1.941	1.854	1.705
3	1.589	1.447	1.411
4	1.626	1.586	1.558
5	2.160	2.419 * E Con	1.988
6	2.841 **	1.561 * E Con	2.370
7	2.635	2.709	2.417
8	1.965	2.078	1.841
9	1.872	1.877	1.811
10	1.786	1.681	1.688
11	1.758	1.553	1.682
12	2.480 * E	2.748 * E Con	2.164
13	3.672	3.514	3.429
14	1.836	1.955	1.652
15	2.279	2.687 * E Con	2.00
16	2.165	2.731 * E Con	1.976
17	1.900	1.882	1.823
18	1.936	1.754	1.835
19	3.708	3.597	3.623
20	3.653	3.648	3.652
21	2.379 *Con	2.832 * E Con	2.088
22	2.352 *Con	2.704 * E Con	2.076
23	3.767	3.787	3.470

Construct 10 Jobs which need few qualifications v jobs which need more qualifications

	Commercial		Construction		Engineering
1	2.604	* E	2.812		3.000
2	2.475		2.517		2.471
3	3.397		3.647		3.580
4	3.889	**	3.217		3.178
5	3.995	* E	3.912	* E Con	4.302
6	2.872	**	3.123		3.151
7	2.844		2.894		2.827
8	2.822		2.723		2.608
9	1.375		1.476		1.521
10	2.956	**	2.417		2.484
11	3.062	*Con	2.894		2.941
12	3.989		3.612		3.808
13	4.542	**	4.112		4.201
14	4.101		4.123		4.064
15	3.073		3.164		3.101
16	3.833		3.676		3.799
17	4.587		4.423		4.324
18	1.878	**	2.112		2.151
19	4.811		4.747		4.699
20	3.693	* E	3.335		3.375
21	2.151		2.447		2.370
22	2.112	**	2.741		2.489
23	1.872		1.912		1.914

Construct 11

1	3.458	**	3.894		3.822
2	3.520	**	3.270		3.356
3	3.861		3.753		3.762
4	4.335	**	3.717		3.598
5	4.039		3.811	* E Con	4.160
6	3.570		3.876		3.753
7	3.263	*Con	3.535		3.265
8	2.805	*Con	3.106		2.945
9	2.475		2.329		2.434
10	3.598	**	3.141		3.123
11	3.475	* E	3.300		3.068
12	3.978	*Con	3.090	* E Con	3.845
13	3.369	**	2.953		2.954
14	4.274		4.017		4.055
15	3.383	**	3.741		3.507
16	3.939		3.988		3.936
17	3.844		3.623		3.623
18	2.693		2.770		2.831
19	4.369	* E	4.259		4.073
20	3.983	* E	3.659		3.479
21	3.335		3.594		3.397
22	3.453		4.123	* E Con	3.772
23	3.553		3.811		3.785

Construct 12 Technical jobs v non-technical jobs

	Commercial		Construction		Engineering
1	2.670		2.512		2.475
2	3.469		3.223		3.512
3	3.486		3.318		3.530
4	3.525		3.376		3.553
5	1.704		1.765		1.699
6	2.704		2.406		2.402
7	3.782		3.506		3.443
8	3.698		3.512		3.589
9	3.698		3.988	* E Con	3.571
10	3.704		3.965		3.941
11	3.642		3.806		3.708
12	1.916		1.859		1.859
13	3.005	**	2.594		2.822
14	1.927		1.935		1.932
15	2.257		2.023		2.073
16	1.972		1.847		1.841
17	3.452		3.123		3.169
18	3.972		4.000		3.946
19	2.866	*Con	2.294		2.525
20	3.491		3.306		3.252
21	3.480		3.271		3.293
22	3.441	**	2.839		3.041
23	3.715		3.800		3.713

Construct 13 Jobs where you are told what to do v jobs where you are moreindependent

1	3.380	*Con	2.923		3.196
2	3.984		2.700		2.932
3	2.453		2.465		2.470
4	2.291		2.000		1.927
5	3.162	*Con	2.800	* E Con	3.174
6	3.391	*Con	3.000		3.311
7	3.011	**	2.482	* E Con	2.959
8	2.687	*Con	2.259		2.429
9	1.900		1.947		1.740
10	2.827		2.576		2.662
11	2.441		2.471		2.320
12	3.358	*Con	3.088		3.210
13	2.358		2.188		2.256
14	2.799		2.618		2.717
15	3.358	*Con	3.071		3.196
16	3.335		3.129		3.274
17	3.637	*Con	3.200		3.466
18	2.542		2.406		2.607
19	4.089		3.894		3.982
20	3.000	**	2.647		2.680
21	3.358	**	2.906		3.027
22	3.201		2.971		2.932
23	3.201		2.935		2.986

Construct 14 Jobs where you aim to make people happy v jobs where making people happy isn't important

	Commercial		Construction		Engineering
1	2.989		2.847		2.740
2	2.117	**	2.635		2.580
3	2.246	*Con	2.570		2.402
4	2.017	**	2.529		2.488
5	2.944		3.070		2.972
6	2.659		2.623		2.740
7	1.961		1.935		1.909
8	1.548		1.653		1.671
9	3.754		3.976		3.863
10	1.749	*Con	2.100		1.817
11	2.542		2.853		2.845
12	2.604		2.759		2.648
13	1.414		1.570		1.525
14	3.212		3.311		3.301
15	2.978	*Con	2.388		2.740
16	2.955		2.753		2.899
17	2.028		2.111		2.123
18	1.944		2.059		2.036
19	1.425		1.647		1.571
20	2.246		2.382		2.310
21	2.615		2.523		2.621
22	2.911		2.682		2.726
23	3.492		3.306		3.456

Construct 15 Jobs with no prospects v jobs with good prospects

1	2.967	**	3.706		3.722
2	2.967	**	2.576		2.553
3	3.883	**	3.511		3.439
4	4.084	**	3.088		2.968
5	3.783		3.659	* E Con	4.201
6	2.989	**	3.811		3.672
7	3.051	**	3.411		3.279
8	3.123		3.100		2.996
9	1.894		1.853		1.863
10	3.302	**	2.553		2.589
11	3.459	**	2.788		2.704
12	3.654	**	3.794		4.028
13	4.280	**	3.688		3.845
14	3.905	**	3.435		3.658
15	3.112		3.376		3.480
16	3.486	**	3.594	* E Con	3.982
17	3.984	**	3.459		3.521
18	2.738		2.547		2.726
19	4.447	**	4.041		4.110
20	4.073	**	3.576		3.571
21	2.649	**	3.170		3.009
22	2.654	**	3.488	* E Con	3.174
23	2.358		2.411		2.466

Construct 16 High class jobs v working class jobs

	Commercial		Construction		Engineering
1	3.838		3.936		3.776
2	3.285		3.100		3.219
3	2.799	*Con	2.471		2.566
4	2.486	* E	2.594		2.762
5	2.922		3.036		2.927
6	3.844		3.865		3.872
7	3.587	**	3.206	* E Con	3.223
8	3.542	* E	3.400		3.191
9	4.447		4.453		4.379
10	2.900	* E	3.177	* E Con	3.624
11	3.039		2.900		2.963
12	3.151	**	3.500		3.424
13	2.810		3.047		2.949
14	2.508		2.453		2.474
15	3.771		3.841		3.840
16	3.274		3.359		3.296
17	2.698	**	3.059		2.881
18	3.821	**	3.524		3.296
19	2.017		2.206		2.150
20	2.894	*Con	3.271		3.191
21	3.911		3.753		3.803
22	4.123		3.888		3.958
23	4.073		4.059		4.068

Construct 17 Jobs where you use your mind a lot v jobs where you don't use your mind

1	2.214	*Con	1.914		1.933
2	2.404		2.461		2.677
3	1.968		2.108		2.084
4	1.722	**	2.338		2.275
5	1.795		1.991	* E Con	1.650
6	2.292	*Con	1.967		2.074
7	2.454		2.326		2.485
8	2.398		2.467		2.536
9	3.823		3.867		3.883
10	2.398	**	2.785		2.750
11	2.314		2.567		2.558
12	1.895		1.926		1.819
13	1.543		1.726		1.645
14	1.739		1.867		1.791
15	2.381	**	1.979		1.997
16	2.096	* E	1.843		1.732
17	1.672		1.838		1.787
18	3.219	**	2.838		2.951
19	1.370		1.532		1.504
20	1.968		2.249		2.253
21	2.974		2.685		2.750
22	3.069	**	2.355	* E Con	2.668
23	3.214		2.996		3.029

Construct 18 Difficult jobs v easy jobs

	Commercial		Construction		Engineering
1	2.312		2.186		2.320
2	3.223		3.133		3.384
3	2.742		2.721		2.877
4	2.345	**	2.803		3.014
5	2.010		2.251	* E Con	1.891
6	2.485		2.145		2.352
7	3.005	**	2.580		2.745
8	2.770		2.556		2.800
9	4.139		3.968		4.229
10	2.871	**	3.274		3.389
11	2.899		3.027		3.147
12	1.988		1.974		2.046
13	1.703		1.715		1.973
14	2.049		2.192		2.138
15	2.463		2.221		2.393
16	2.105		2.003		2.001
17	2.083		2.092		2.211
18	3.787		3.439		3.576
19	1.362		1.456		1.576
20	2.128	* E	2.356		2.498
21	3.195	*Con	2.786	*Con	3.106
22	3.038	**	2.398	*Con	2.740
23	3.513		3.351		3.512

Construct 19 Jobs with a friendly atmosphere v jobs with an unfriendly atmosphere

1	2.890	**	2.086	* E Con	2.480
2	2.253		2.351		2.420
3	2.209		2.427		2.356
4	2.086		2.392		2.352
5	2.885	* E	2.562		2.485
6	2.969	**	2.303		2.485
7	2.566		2.415		2.530
8	2.041		2.133		2.119
9	3.036	*Con	1.895	* E Con	2.877
10	2.186		2.362		2.279
11	2.432		2.539		2.543
12	2.807	**	2.368		2.466
13	1.941		2.045		1.936
14	2.784		2.745		2.740
15	2.941	**	2.539		2.595
16	2.773		2.515		2.448
17	2.259		2.380		2.388
18	2.248		2.280		2.388
19	2.002		1.980		2.091
20	2.974		2.992		2.142
21	2.941	**	2.292	* E Con	2.653
22	2.047	**	2.315	* E Con	2.653
23	3.186	*Con	2.633	* E Con	2.950

Construct 20 Apprenticeship jobs v non-apprenticeship jobs

	Commercial		Construction		Engineering
1	1.513		1.493		1.473
2	3.641	*Con	3.952		3.843
3	3.457	*Con	3.805		3.733
4	3.513		3.834		3.870
5	1.898	*Con	2.211	* E Con	1.674
6	1.803		1.564		1.569
7	2.591	**	2.229		2.176
8	1.971		1.917		2.121
9	4.010		4.364		4.217
10	3.540	**	4.170		4.117
11	3.401	* E	3.746		3.916
12	1.596		1.593		1.478
13	2.440		2.170		2.254
14	2.507		2.581		2.596
15	1.948		1.770		1.765
16	1.753		1.687		1.555
17	2.837	* E	3.023		3.163
18	3.864		3.905		3.971
19	2.652		2.452		2.683
20	2.853		2.870		2.943
21	2.980	**	1.734	* E Con	2.099
22	2.239	*Con	1.623	* E Con	1.943
23	3.339	**	4.029		3.998

APPENDIX 8.2

OVERALL MEANS FOR COMMERCIAL, CONSTRUCTION AND ENGINEERING WORK ON EACH CONSTRUCT BY STUDENT GROUP

Where A = Construction Work
B = Commercial Work
C = Engineering Work

	Student Group		
	Commercial	Construction	Engineering
Construct 1			
A	4.408 **	2.406 *	2.00
B	2.318 **	4.472	4.469
C	4.091 **	2.848 *	2.053
Construct 2			
A	2.912	3.029	2.074
B	3.689	3.660	3.759
C	1.809	2.038	2.064
Construct 3			
A	3.338 **	3.906	3.760
B	3.255 *E	3.184 *	2.987
C	4.177	4.275	4.371
Construct 4			
A	4.498	4.632	4.516
B	1.752	1.595	1.682
C	4.207	4.016	4.167
Construct 5			
A	4.535	4.717	4.641
B	2.301	2.388	2.354
C	4.405	4.503	4.494
Construct 6			
A CONST	2.948 **	3.499	3.367
B	3.716 **	3.361	3.365
C ENG	3.798 *E	3.990	4.102
Construct 7			
A	4.179 *Con	3.893	3.955
B	1.251	1.200	1.217
C	3.805	3.604	3.801

	Commercial		Construction		Engineering
Construct 8					
A	3.451	**	2.398		2.553
B	2.331	**	4.020		3.996
C	2.976	**	2.613	*E Con	1.954
Construct 9					
A	2.433		2.477	*E Con	2.144
B	1.740		1.604		1.609
C	2.271	*Con	2.646	*E Con	2.032
Construct 10					
A	2.435	**	2.781		2.753
B	3.156		2.938		2.931
C	3.723		3.591		3.753
Construct 11					
A	3.454		3.872		3.686
B	3.758	**	3.436		3.381
C	3.834		3.658		3.862
Construct 12					
A	3.074	*Con	2.762		2.803
B	3.565		3.538	*	4.561
C	1.962		1.874		1.868
Construct 13					
A	3.333	*Con	2.950		3.117
B	2.619		2.442		2.462
C	3.303	*Con	3.022		3.214
Construct 14					
A	2.794		2.669		2.707
B	2.134	**	2.537		2.426
C	2.870		2.743		2.815
Construct 15					
A	2.747	**	3.544		3.394
B	3.549		2.903		2.851
C	3.439		3.604	* E Con	3.923

	Commercial		Construction		Engineering
Construct 16					
A	3.929		3.861		3.852
B	2.902		2.848		2.027
C	3.280		3.434		3.372
Construct 17					
A	2.637		2.230		2.356
B	1.161	**	2.452		2.469
C	2.042		1.934		1.800
Construct 18					
A	2.758	*Con	2.379		2.630
B	2.820	*E	2.992	*E Con	3.162
C	2.142		2.112		2.083
Construct 19					
A	2.962	**	2.249	*E Con	2.568
B	2.233		2.414		2.390
C	2.852	**	2.496		2.496
Construct 20					
A	2.134	**	1.604		1.771
B	3.510	**	3.901		3.896
C	1.799		1.815		1.618

APPENDIX 8.3

OVERALL MEANS FOR COMMERCIAL, CONSTRUCTION AND ENGINEERING WORK ON EACH CONSTRUCT BY STUDENT GROUP AND SOCIAL CLASS

Student Group

Construct 1

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	4.241	4.439	4.524
B	2.507	2.391	2.238
C	3.866	4.158	4.119
Construction			
A	2.125	2.372	2.341
B	4.660	4.571	4.309
C	2.700	2.849	2.614
Engineering			
A	3.019	2.797	2.980
B	4.593	4.467	4.576
C	2.112	2.052	2.060

Where A = Construction work
B = Commercial work
C = Engineering work

	Non-Man	Skilled	Semi- & Unskilled
Construct 2			
Commercial			
A	2.893	2.780	3.072
B	3.586	3.824	3.696
C	1.839	1.673	1.763
Construction			
A	2.925	3.010	3.091
B	3.500	3.663	3.255
C	1.925	1.971	2.000
Engineering			
A	2.963	2.819	2.940
B	3.719	3.764	3.896
C	1.982	2.013	2.130
Construct 3			
Commercial			
A	3.536	3.424	3.238
B	2.943	3.200	3.581
C	4.233	4.179	4.048
Construction			
A	3.750	4.204	4.318
B	3.240	3.126	3.381
C	4.100	4.244	4.431
Engineering			
A	4.056	3.747	3.810
B	3.148	3.040	2.904
C	4.556	4.353	4.470

Construct 2

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.893	2.780	3.072
B	3.586	3.824	3.696
C	1.839	1.673	1.763
Construction			
A	2.925	3.010	3.091
B	3.500	3.663	3.255
C	1.925	1.971	2.000
Engineering			
A	2.963	2.819	2.940
B	3.719	3.764	3.896
C	1.982	2.013	2.130

Construct 3

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	3.536	3.424	3.238
B	2.943	3.200	3.581
C	4.233	4.179	4.048
Construction			
A	3.750	4.204	4.318
B	3.240	3.126	3.381
C	4.100	4.244	4.431
Engineering			
A	4.056	3.747	3.810
B	3.148	3.040	2.904
C	4.556	4.353	4.470

	Non-Man	Skilled	Semi- & Unskilled
Construct 4			
Commercial			
A	4.402	4.465	4.560
B	1.707	1.784	1.600
C	4.196	4.266	4.107
Construction			
A	4.700	4.641	4.705
B	1.660	1.584	1.727
C	4.050	3.990	4.160
Engineering			
A	4.426	4.529	4.560
B	1.770	1.648	1.656
C	3.981	4.224	4.190
Construct 5			
Commercial			
A	4.553	4.561	4.405
B	2.221	2.359	2.353
C	4.428	4.408	4.155
Construction			
A	4.725	4.718	4.795
B	2.260	2.424	2.382
C	4.625	4.500	4.477
Engineering			
A	4.666	4.694	4.600
B	2.557	2.334	2.352
C	4.426	4.521	4.510

Construct 4

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	4.402	4.465	4.560
B	1.707	1.784	1.600
C	4.196	4.266	4.107
Construction			
A	4.700	4.641	4.705
B	1.660	1.584	1.727
C	4.050	3.990	4.160
Engineering			
A	4.426	4.529	4.560
B	1.770	1.648	1.656
C	3.981	4.224	4.190

Construct 5

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	4.553	4.561	4.405
B	2.221	2.359	2.353
C	4.428	4.408	4.155
Construction			
A	4.725	4.718	4.795
B	2.260	2.424	2.382
C	4.625	4.500	4.477
Engineering			
A	4.666	4.694	4.600
B	2.557	2.334	2.352
C	4.426	4.521	4.510

Construct 6

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.974	2.969	2.822
B	3.436	3.792	4.000
C	3.983	3.694	3.786
Construction			
A	3.400	3.513	3.591
B	3.440	3.350	3.363
C	4.025	4.062	4.181
Engineering			
A	3.639	3.200	3.430
B	3.215	3.327	3.496
C	4.250	3.995	4.240

Construct 7

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	4.206	4.148	4.143
B	1.422	1.208	1.238
C	3.759	3.831	3.869
Construction			
A	3.925	3.918	3.977
B	1.180	1.168	1.072
C	3.750	3.615	3.613
Engineering			
A	3.981	4.003	3.910
B	1.377	1.152	1.128
C	3.694	3.858	3.760

Construct 8

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	3.143	3.500	3.774
B	2.650	2.396	2.152
C	2.527	3.005	3.179
Construction			
A	2.450	2.323	2.500
B	4.020	4.203	3.491
C	2.900	2.602	2.387
Engineering			
A	2.815	2.492	2.550
B	3.963	4.050	4.152
C	2.028	2.065	1.820

Construct 9

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.902	2.959	2.810
B	1.522	1.718	1.467
C	2.724	2.617	2.572
Construction			
A	2.125	2.169	2.205
B	2.160	1.841	1.709
C	1.975	2.059	2.296
Engineering			
A	2.380	2.279	2.700
B	1.711	1.794	1.672
C	2.390	2.132	2.500

Construct 10

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.411	2.484	2.346
B	2.964	3.045	3.372
C	3.750	3.704	3.703
Construction			
A	3.050	2.737	3.296
B	2.680	3.014	3.000
C	3.600	3.586	3.932
Engineering			
A	2.612	2.721	3.000
B	2.919	3.012	2.816
C	3.750	3.603	4.110

Construct 11

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	3.571	3.449	3.215
B	3.521	3.686	4.057
C	4.009	3.740	3.869
Construction			
A	3.750	3.862	4.046
B	3.300	3.466	3.164
C	3.930	3.868	3.932
Engineering			
A	3.898	3.610	3.740
B	3.333	3.437	3.304
C	3.935	3.381	4.020

Construct 12

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	3.018	3.067	3.166
B	3.529	3.837	3.323
C	1.777	1.796	2.071
Construction			
A	2.525	2.875	2.614
B	3.880	3.460	3.546
C	1.725	1.881	1.705
Engineering			
A	2.907	2.776	2.590
B	3.570	3.611	3.904
C	2.000	1.903	1.610

Construct 13

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	3.339	3.505	3.464
B	2.535	2.661	2.619
C	3.321	3.296	3.321
Construction			
A	3.300	3.060	2.887
B	2.200	2.353	2.328
C	3.525	3.129	3.182
Engineering			
A	3.250	2.937	3.220
B	2.577	2.474	2.165
C	3.185	3.095	3.330

Construct 14

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.750	2.939	2.798
B	2.228	2.253	1.962
C	2.919	3.041	2.810
Construction			
A	2.375	2.658	2.704
B	2.640	2.555	2.581
C	2.625	2.816	2.704
Engineering			
A	2.612	2.795	2.851
B	2.341	2.470	2.488
C	2.750	2.955	2.840

Construct 15

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	3.152	2.663	2.738
B	3.515	3.371	3.838
C	3.804	3.372	3.559
Construction			
A	3.575	3.474	3.636
B	2.660	2.847	2.764
C	3.250	3.569	3.636
Engineering			
A	3.274	3.545	3.280
B	2.719	3.097	2.608
C	3.815	3.932	3.960

Construct 16

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	3.840	4.067	3.976
B	3.158	3.172	2.667
C	3.179	3.534	3.179
Construction			
A	3.850	3.842	3.977
B	2.680	2.821	3.164
C	3.650	3.382	3.296
Engineering			
A	3.906	3.855	3.880
B	2.800	2.802	3.296
C	3.297	3.392	3.500

Construct 17

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.607	2.638	2.453
B	2.271	2.074	1.791
C	1.991	1.937	1.830
Construction			
A	2.300	2.132	2.341
B	2.480	2.514	2.491
C	1.900	1.898	1.841
Engineering			
A	2.482	2.340	2.220
B	2.511	2.446	2.488
C	1.583	1.829	1.880

Construct 18

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.474	2.943	2.440
B	2.893	3.014	2.457
C	1.920	2.214	2.000
Construction			
A	2.475	2.480	2.591
B	3.320	3.052	3.164
C	2.350	2.289	2.228
Engineering			
A	2.546	2.510	2.720
B	3.244	3.025	3.272
C	1.981	1.987	2.080

Construct 19

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	2.866	2.913	2.667
B	2.122	2.074	1.914
C	2.696	2.704	2.595
Construction			
A	2.250	2.300	2.432
B	2.440	2.458	2.382
C	2.525	2.559	2.523
Engineering			
A	2.741	2.506	2.730
B	2.475	2.322	2.288
C	2.556	2.405	2.620

Construct 20

	Non-Man	Skilled	Semi- & Unskilled
Commercial			
A	1.857	2.020	2.071
B	3.872	3.637	3.543
C	1.590	1.745	1.796
Construction			
A	1.550	1.381	1.341
B	3.940	3.739	3.436
C	1.675	1.714	1.273
Engineering			
A	1.750	1.713	1.710
B	3.741	3.899	4.056
C	1.602	1.566	1.490

APPENDIX 9.1

OVERALL MEANS FOR COMMERCIAL, CONSTRUCTION AND ENGINEERING WORK BY STUDENT GROUP AND CLUSTER OF RESIDENCE

(a) Commercial Students

	Cluster 4 (N=15)	Cluster 5 (N=44)	Cluster 6 (N=22)	Cluster 8 (N=13)
Construct 1				
Commercial jobs	2.347	2.437	2.246	2.293
Construction jobs	4.617	4.370	4.500	4.597
Engineering jobs	4.251	4.097	4.523	3.885
Construct 2				
Commercial jobs	3.547	3.723	3.899	3.416
Construction jobs	3.234	2.801	2.840	2.654
Engineering jobs	1.984	1.745	1.613	1.693
Construct 3				
Commercial jobs	3.320	2.995	3.173	3.769
Construction jobs	2.950	3.278	3.420	3.019
Engineering jobs	4,050	4.051	4.352	3.904
Construct 4				
Commercial jobs	1.827	1.828	1.655	1.538
Construction jobs	4.634	4.472	4.444	4.577
Engineering jobs	4.217	4.148	4.364	4.346
Construct 5				
Commercial jobs	2.373	2.286	2.172	2.338
Construction jobs	4.317	4.563	4.670	4.634
Engineering jobs	4.017	4.392	4.659	4.423
Construct 6				
Commercial jobs	3.854	3.595	3.691	3.953
Construction jobs	2.950	2.773	2.876	2.808
Engineering jobs	3.650	3.579	3.864	3.808
Construct 7				
Commercial jobs	1.280	1.273	1.409	1.077
Construction jobs	4.151	4.154	4.262	4.346
Engineering jobs	3.618	3.807	3.932	3.962

	Cluster 4 (N=15)	Cluster 5 (N=44)	Cluster 6 (N=22)	Cluster 8 (N=13)
<u>Construct 8</u>				
Commercial jobs	2.347	2.418	2.445	1.954
Construction jobs	3.617	3.375	3.466	3.924
Engineering jobs	3.200	2.900	2.273	3.328
<u>Construct 9</u>				
Commercial jobs	1.827	1.632	1.536	1.508
Construction jobs	2.700	2.887	3.148	3.135
Engineering jobs	2.384	2.603	2.750	2.827
<u>Construct 10</u>				
Commercial jobs	3.160	3.032	3.100	3.431
Construction jobs	2.300	2.370	2.387	2.327
Engineering jobs	3.716	3.596	3.738	3.578
<u>Construct 11</u>				
Commercial jobs	3.613	3.745	3.828	3.938
Construction jobs	3.316	3.585	3.330	3.135
Engineering jobs	3.566	3.858	3.898	3.885
<u>Construct 12</u>				
Commercial jobs	3.079	3.687	4.009	3.739
Construction jobs	2.900	2.057	3.205	3.231
Engineering jobs	2.117	1.813	1.750	2.577
<u>Construct 13</u>				
Commercial jobs	2.493	2.823	2.372	2.861
Construction jobs	3.700	3.167	3.261	3.384
Engineering jobs	3.400	3.301	3.182	3.404
<u>Construct 14</u>				
Commercial jobs	2.187	2.163	2.104	2.139
Construction jobs	2.800	2.983	2.864	3.058
Engineering jobs	2.834	2.988	2.887	2.866
<u>Construct 15</u>				
Commercial jobs	3.320	3.423	3.545	3.923
Construction jobs	2.834	2.620	2.909	2.577
Engineering jobs	3.367	3.591	3.568	3.385

	Cluster 4 (N=15)	Cluster 5 (N=44)	Cluster 6 (N=22)	Cluster 8 (N=13)
Construct 16				
Commercial jobs	3.253	2.987	2.928	2.723
Construction jobs	3.900	3.972	4.069	3.846
Engineering jobs	3.400	3.245	3.523	3.115
Construct 17				
Commercial jobs	1.933	2.023	2.100	2.077
Construction jobs	2.283	2.557	2.384	2.539
Engineering jobs	1.733	1.841	1.875	1.981
Construct 18				
Commercial jobs	2.786	2.732	2.827	2.646
Construction jobs	2.616	2.636	2.807	2.827
eng. jobs	2.200	2.068	2.158	2.115
Construct 19				
Commercial jobs	2.254	2.000	1.991	1.924
Construction jobs	2.850	2.716	2.750	2.828
Engineering jobs	2.684	2.727	2.557	2.558
Construct 20				
Commercial jobs	3.360	3.791	3.873	3.353
Construction jobs	2.067	2.085	1.909	2.038
Engineering jobs	1.984	1.841	1.921	1.904

(b) Construction Students

	Cluster 3 (N=13)	Cluster 5 (N=16)	Cluster 6 (N=32)	Cluster 7 (N=18)
Construct 1				
Commercial jobs	4.662	4.363	4.506	4.422
Construction jobs	2.270	2.125	2.437	2.653
Engineering jobs	2.904	2.516	3.148	2.958
Construct 2				
Commercial jobs	3.476	3.775	3.544	3.511
Construction jobs	2.763	3.125	3.157	3.111
Engineering jobs	1.923	2.031	2.001	2.181
Construct 3				
Commercial jobs	3.538	3.287	3.225	3.266
Construction jobs	3.633	4.185	3.937	3.727
Engineering jobs	4.067	4.390	4.289	4.278
Construct 4				
Commercial jobs	1.416	1.463	1.525	1.611
Construction jobs	4.827	4.703	4.703	4.611
Engineering jobs	4.116	4.219	3.946	4.283
Construct 5				
Commercial jobs	2.153	2.338	2.368	2.366
Construction jobs	4.846	4.719	4.734	4.500
eng. jobs	4.712	4.532	4.516	4.403
Construct 6				
Commercial jobs	3.307	3.438	3.268	3.300
Construction jobs	3.423	3.750	3.734	3.389
Engineering jobs	4.250	4.219	3.765	4.014
Construct 7				
Commercial jobs	1.077	1.125	1.187	1.200
Construction jobs	4.000	3.985	3.734	4.083
Engineering jobs	3.808	3.688	3.484	3.653
Construct 8				
Commercial jobs	4.384	4.150	3.931	3.811
Construction jobs	2.096	2.563	2.336	2.667
Engineering jobs	2.711	2.313	2.656	2.514

	Cluster 3 (N=13)	Cluster 5 (N=16)	Cluster 6 (N=32)	Cluster 7 (N=18)
Construct 9				
Commercial jobs	1.369	1.488	1.725	1.433
Construction jobs	1.962	2.172	2.438	2.056
Engineering jobs	1.750	2.172	2.266	2.015
Construct 10				
Commercial jobs	2.524	2.712	3.181	3.078
Construction jobs	2.385	2.781	3.000	2.612
Engineering jobs	3.789	3.719	3.922	3.542
Construct 11				
Commercial jobs	3.338	3.525	3.425	3.555
Construction jobs	4.077	4.000	3.899	3.722
Engineering jobs	4.115	4.031	4.034	3.902
Construct 12				
Commercial jobs	3.569	3.437	3.412	3.300
Construction jobs	2.635	2.609	2.797	2.722
Engineering jobs	2.000	1.922	1.633	2.028
Construct 13				
Commercial jobs	2.262	2.438	2.500	2.656
Construction jobs	2.981	2.844	3.133	3.042
Engineering jobs	3.116	3.000	3.032	3.056
Construct 14				
Commercial jobs	2.523	2.975	2.319	2.367
Construction jobs	2.885	2.977	2.571	2.569
Engineering jobs	2.692	2.907	2.563	2.653
Construct 15				
Commercial jobs	2.677	2.925	3.000	3.267
Construction jobs	3.338	3.781	3.438	3.431
Engineering jobs	3.616	4.000	3.555	3.709
Construct 16				
Commercial jobs	2.831	3.063	2.744	2.811
Construction jobs	4.039	3.875	4.008	3.916
Engineering jobs	3.347	3.344	3.368	3.458

	Cluster 3 (N=13)	Cluster 5 (N=16)	Cluster 6 (N=32)	Cluster 7 (N=18)
<u>Construct 9</u>				
Commercial jobs	1.369	1.488	1.725	1.433
Construction jobs	1.962	2.172	2.438	2.056
Engineering jobs	1.750	2.172	2.266	2.015
<u>Construct 10</u>				
Commercial jobs	2.524	2.712	3.181	3.078
Construction jobs	2.385	2.781	3.000	2.612
Engineering jobs	3.789	3.719	3.922	3.542
<u>Construct 11</u>				
Commercial jobs	3.338	3.525	3.425	3.555
Construction jobs	4.077	4.000	3.899	3.722
Engineering jobs	4.115	4.031	4.034	3.902
<u>Construct 12</u>				
Commercial jobs	3.569	3.437	3.412	3.300
Construction jobs	2.635	2.609	2.797	2.722
Engineering jobs	2.000	1.922	1.633	2.028
<u>Construct 13</u>				
Commercial jobs	2.262	2.438	2.500	2.656
Construction jobs	2.981	2.844	3.133	3.042
Engineering jobs	3.116	3.000	3.032	3.056
<u>Construct 14</u>				
Commercial jobs	2.523	2.975	2.319	2.367
Construction jobs	2.885	2.977	2.571	2.569
Engineering jobs	2.692	2.907	2.563	2.653
<u>Construct 15</u>				
Commercial jobs	2.677	2.925	3.000	3.267
Construction jobs	3.338	3.781	3.438	3.431
Engineering jobs	3.616	4.000	3.555	3.709
<u>Construct 16</u>				
Commercial jobs	2.831	3.063	2.744	2.811
Construction jobs	4.039	3.875	4.008	3.916
Engineering jobs	3.347	3.344	3.368	3.458

	Cluster 3 (N=13)	Cluster 5 (N=16)	Cluster 6 (N=32)	Cluster 7 (N=18)
<u>Construct 17</u>				
Commercial jobs	2.600	2.575	2.388	2.411
Construction jobs	2.269	2.312	1.913	1.833
Engineering jobs	1.769	1.906	1.985	2.153
<u>Construct 18</u>				
Commercial jobs	3.323	3.000	2.962	2.978
Construction jobs	2.443	2.313	2.570	2.765
Engineering jobs	2.019	1.891	2.211	2.348
<u>Construct 19</u>				
Commercial jobs	2.399	2.375	2.375	2.245
Construction jobs	2.538	2.454	2.250	2.514
Engineering jobs	2.673	2.594	2.446	2.542
<u>Construct 20</u>				
Commercial jobs	3.631	3.862	3.713	3.633
Construction jobs	1.519	1.031	1.399	1.708
Engineering jobs	1.500	1.453	1.579	1.722

(c) Engineering Students

	Cluster 3 (N=14)	Cluster 4 (N=10)	Cluster 5 (N=24)	Cluster 6 (N=39)	Cluster 7 (N=18)	Cluster 8 (N=12)
Construct 1						
Commercial jobs	4.457	4.400	4.392	4.400	4.322	4.182
Construction jobs	2.804	3.525	3.000	2.654	2.819	3.063
Engineering jobs	2.018	1.975	2.094	1.840	1.972	2.000
Construct 2						
Commercial jobs	3.658	3.900	3.917	3.661	3.822	4.100
Construction jobs	3.108	3.300	2.761	2.949	2.806	3.313
Engineering jobs	2.179	2.575	1.979	1.929	1.861	2.480
Construct 3						
Commercial jobs	3.129	2.660	3.067	3.000	2.822	2.983
Construction jobs	3.501	3.725	3.823	3.776	3.709	3.437
Engineering jobs	4.483	4.725	4.521	4.391	4.264	4.020
Construct 4						
Commercial jobs	1.829	1.860	1.609	1.538	1.855	1.700
Construction jobs	4.304	4.600	4.625	4.556	4.500	4.542
Engineering obs	3.983	4.050	4.271	4.038	4.138	4.188
Construct 5						
Commercial jobs	2.457	2.240	2.275	2.385	2.177	2.366
Construction jobs	4.786	4.725	4.600	4.744	4.542	4.521
Engineering jobs	4.589	4.700	4.531	4.538	4.375	4.645
Construct 6						
Commercial jobs	3.343	2.780	3.300	3.405	3.678	3.317
Construction jobs	2.715	3.575	3.177	3.391	3.542	2.959
Engineering jobs	3.857	4.500	4.010	4.160	4.264	3.834
Construct 7						
Commercial jobs	1.200	1.280	1.183	1.159	1.311	1.183
Construction jobs	4.054	4.400	4.115	4.032	3.820	3.583
Engineering jobs	3.768	3.825	3.948	3.872	3.626	3.645

	Cluster 3 (N=14)	Cluster 4 (N=10)	Cluster 5 (N=24)	Cluster 6 (N=39)	Cluster 7 (N=18)	Cluster 8 (N=12)
Construct 8						
Commercial jobs	4.185	3.700	4.150	3.902	3.845	3.367
Construction jobs	2.857	3.025	2.552	2.487	2.348	3.268
Engineering jobs	2.018	2.025	2.115	1.916	1.723	2.730
Construct 9						
Commercial jobs	1.800	1.840	1.575	1.702	1.678	1.683
Construction jobs	2.357	2.975	2.489	2.481	2.528	2.229
Engineering jobs	2.125	2.825	2.354	2.224	2.100	2.209
Construct 10						
Commercial jobs	2.585	2.800	3.092	3.056	2.934	2.917
Construction jobs	2.714	2.225	2.854	2.718	2.903	2.167
Engineering jobs	3.750	4.000	3.875	3.782	3.834	3.500
Construct 11						
Commercial jobs	3.057	3.440	3.342	3.481	3.322	3.383
Construction jobs	3.321	3.625	3.844	3.769	3.625	2.729
Engineering jobs	3.732	4.075	3.823	4.064	3.722	3.771
Construct 12						
Commercial jobs	3.343	4.400	3.804	3.451	3.422	3.933
Construction jobs	2.768	3.225	2.927	2.853	2.709	2.583
Engineering jobs	1.786	1.525	1.782	2.020	1.820	1.708
Construct 13						
Commercial jobs	2.385	2.780	2.342	2.426	2.334	2.700
Construction jobs	2.571	3.225	3.386	2.853	3.486	3.438
Engineering jobs	2.982	4.050	3.407	3.218	3.125	3.605
Construct 14						
Commercial jobs	2.271	2.980	2.558	2.364	2.289	2.300
Construction jobs	2.939	2.775	2.823	2.833	2.972	2.146
Engineering jobs	3.125	2.925	2.823	2.852	3.042	2.208
Construct 15						
Commercial jobs	2.858	2.860	2.825	2.948	2.900	2.983
Construction jobs	3.286	3.400	3.261	3.571	3.389	3.521
Engineering jobs	3.554	4.250	3.959	3.987	3.626	4.229

	Cluster 3 (N=14)	Cluster 4 (N=10)	Cluster 5 (N=24)	Cluster 6 (N=39)	Cluster 7 (N=18)	Cluster 8 (N=12)
<u>Construct 16</u>						
Commercial jobs	2.832	3.040	2.750	3.533	3.100	3.000
Construction jobs	3.893	4.125	3.718	3.706	3.695	4.063
Engineering jobs	3.376	3.175	3.552	3.353	3.416	3.688
<u>Construct 17</u>						
Commercial jobs	2.243	2.620	2.659	2.339	2.344	2.133
Construction jobs	2.589	2.525	2.594	2.122	1.958	2.438
Engineering jobs	1.911	1.550	2.021	1.545	1.556	1.729
<u>Construct 18</u>						
Commercial jobs	3.071	3.140	2.909	2.857	3.189	3.133
Construction jobs	2.571	2.800	2.771	2.449	2.556	2.625
Engineering jobs	1.964	1.750	2.104	2.013	1.778	2.062
<u>Construct 19</u>						
Commercial jobs	2.272	2.440	2.342	2.488	2.156	2.300
Construction jobs	2.286	2.487	2.751	2.468	2.751	2.334
Engineering jobs	2.250	2.500	2.582	2.532	2.600	2.334
<u>Construct 20</u>						
Commercial jobs	3.300	3.860	3.975	3.893	3.778	4.034
Construction jobs	1.322	1.725	1.729	1.699	1.597	1.876
Engineering jobs	1.429	1.925	1.385	1.481	1.417	1.750

APPENDIX 10.1

LOGIT MODELS TESTED IN THE EXPLANATION OF PARTICIPATION IN COMMERCIAL, CONSTRUCTION AND ENGINEERING TRAINING

(a) PARTICIPATION IN COMMERCIAL TRAINING

(1) Variables used

Comms	Entry into commercial training 1 = yes 0 = no
Comarea	Cluster of residence 1 = Cluster under-produced commercial studies 2 = Cluster of average student production 3 = Cluster over-produced commercial studies 0 = Outside study area or not known
Comsub	Any commercial subjects studied at school 1 = No commercial subjects studied 2 = Commercial subjects studied 3 = Not known
Comsame	Any parent sibling in commercial employment 1 = Parent sibling in commercial employment 2 = No parent sibling in commercial employment 3 = Not Known
Sex	Sex of student 1 = Male 2 = Female 3 = Not known
Likecom	Attitude towards commercial work as measured by construct 1 ('jobs I'd like v jobs I wouldn't like')

Model A (N = 536)

Comms (0,1) by comarea (0,3), consub (1,3), comsame (1,3), sex (1,2) with likecom

Design = Comms
Comms by comarea
Comms by comsub
Comms by sex
Comms by likecom

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	1.699	62	1.000
Pearson chi-square	10.464	62	1.000

Measures of Association

Entropy	0.83
Concentration	0.91

Estimates for parameters

		Coefficient	Z - Value
Comms		5.291	0.820
Comms by comarea			
	3v0	-0.920	-0.303
	3v1	-0.359	-0.118
	3v2	2.301	0.254
Comms by comsub			
	3v1	-2.335	0.679
	3v2	-0.802	-0.233
Comms by comsame			
	3v1	-0.326	-1.563
	3v2	0.610	2.501*
Comms by sex			
	2v1	5.291	0.820
Comms by likecom		-0.427	-1.729

* $p<0.05$

Model B (N = 569)

Comms (0,1) by comarea (0,3), comsub (1,3)
comsame (1,3) with likecom

Design = Comms
Comms by comarea
Comms by comsub
Comms by comsame
Comms by likecom

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	8.338	27	1.000
Pearson chi-square	15.205	27	0.966

Measures of association

Entropy	0.140
Concentration	0.189

Estimates for parameters

		Coefficient	Z - Value
Comms		0.049	-0.110
Comms by comarea			
	3v0	0.048	0.554
	3v1	0.127	1.342
	3v2	-0.026	-0.163
Comms by comsub			
	3v1	-0.846	-6.536*
	3v2	0.503	5.608*
Comms by comsame			
	3v1	-0.277	-2.871*
	3v2	0.250	3.125*
Comms by likecom		-0.012	-0.087

* p<0.05

Model B (N = 569)

Comms (0,1) by comarea (0,3), comsub (1,3)
comsame (1,3) with likecom

Design = Comms
Comms by comarea
Comms by comsub
Comms by comsame
Comms by likecom

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	8.338	27	1.000
Pearson chi-square	15.205	27	0.966

Measures of association

Entropy	0.140
Concentration	0.189

Estimates for parameters

	Coefficient	Z - Value
Comms	0.049	-0.110
Comms by comarea		
3v0	0.048	0.554
3v1	0.127	1.342
3v2	-0.026	-0.163
Comms by comsub		
3v1	-0.846	-6.536*
3v2	0.503	5.608*
Comms by comsame		
3v1	-0.277	-2.871*
3v2	0.250	3.125*
Comms by likecom	-0.012	-0.087

* $p<0.05$

Model C (N = 569)

Comms (0,1) by comarea (0,3), comsub (1,3), comsame (1,3),

Design = Comms
Comms by comarea
Comms by comsub
Comms by comsame

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	8.39	28	1.000
Pearson chi-square	15.37	28	0.974

Measures of Association

Entropy	0.139
Concentration	0.189

Estimates for parameters

	Coefficient	Z - Value
Comms	-0.848	-0.118
Comms by comarea		
3v0	0.049	0.561
3v1	0.127	1.339
3v2	-0.026	-0.169
Comms by comsub		
3v1	-0.848	-6.986*
3v2	0.505	5.941*
Comms by comsame		
3v1	-0.278	-2.925*
3v2	0.216	3.217*

* $p<0.05$

Model D (N = 569)

Comms (0,1) by comsame (1,3), comsub (1,3), with like com

Design = Comms
Comms by comsame
Comms by comsub
Comms by likecom

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	0.186	3	0.980
Pearson chi-square	0.306	3	0.956

Measures of Association

Entropy	0.158
Concentration	0.199

Estimates for parameters

		Coefficient	Z - Value
Comms		4.589	1.686
Comms by comsame			
	3v1	-0.271	-2.620*
	3v2	0.385	3.444*
Comms by comsub			
	3v1	-0.880	-6.622*
	3v2	0.465	4.644*
Comms by likecom		-1.364	-1.697

* $p<0.05$

(b) PARTICIPATION IN CONSTRUCTION TRAINING

(1) Variables used

CONSTS	entry into construction training 1 = yes 0 = no
Conarea	Cluster of residence 1 = Cluster which under-produced construction students 2 = Cluster average production of construction students 3 = Cluster which over-produced construction students 0 = Outside study area or not known
Consub	Any construction subjects studied at school 1 = No construction subjects studied 2 = Construction subjects studied 3 = Not known
Consame	Any parent sibling in construction employment 1 = Parent sibling in construction employment 2 = No parent sibling in construction employment 3 = Not known
Sex	Sex of student 1 = Male 2 = Female 3 = Not known
Likecon	Attitude towards construction work as measured by construct 1 ('jobs I'd like v jobs I wouldn't like')

Model E (N = 536)

Consts (0,1) by conarea (0,3), consub (1,3), consame (1,3) Sex (1,2) with likecon

Design = Consts
Consts by conarea
Consts by consub
Consts by consame
Consts by sex
Consts by likecon

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	14.94	62	1.000
Pearson chi-square	18.31	62	1.000

Measures of Association

Entropy	0.279
Concentration	0.290

Estimates for parameters

		Coefficient	Z - Value
Consts		1.597	0.234
Consts by conarea			
	3v0	0.145	1.434
	3v1	0.204	1.665
	3v2	-0.378	-1.923
Consts by consub			
	3v1	-0.101	-0.894
	3v2	0.248	2.623*
Consts by consame			
	3v1	-0.425	-3.487*
	3v2	0.341	3.934*
Consts by sex			
	2v1	-2.979	-0.438
Consts by likecon		0.467	2.180*

* $p<0.05$

Model F (N = 569)

Consts (0,1) by conarea (0,3), consub (1,3), consame (1,3) with likecon

Design = Consts
Consts by conarea
Consts by consub
Consts by consame
Consts by likecon

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	13.88	27	0.982
Pearson chi-square	23.42	27	0.662

Measures of Association

Entropy	0.108
Concentration	0.147

Estimates for parameters

	Coefficient	Z - Value
Consts	-0.381	-0.872
Consts by conarea		
3v0	0.008	-0.088
3v1	0.235	2.214*
3v2	-0.080	-0.510
Consts by consub		
3v1	-0.281	-2.400*
3v2	0.348	3.593*
Consts by consame		
3v1	-0.461	-4.537*
3v2	0.306	3.935*
Consts by likecon	0.188	1.193

* p<0.05

Model G (N = 569)

Consts (0,1) by consub (1,3), consame (1,3) with likecon

Design = Consts
Consts by consub
Consts by consame
Consts by likecon

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	4.00	3	0.261
Pearson chi-square	4.19	3	0.242

Measures of Association

Entropy	0.121
Concentration	0.150

Estimates for parameters

	Coefficient	Z - Value
Consts	-1.905	-1.540
Consts by consub		
3v1	-0.238	-1.751
3v2	0.231	1.740
Consts by consame		
3v1	-0.365	-2.813*
3v2	0.353	4.487*
Consts by likecon	0.711	1.628

* p<0.05

Model G (N = 569)

Consts (0,1) by consub (1,3), consame (1,3) with likecon

Design = Consts
Consts by consub
Consts by consame
Consts by likecon

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	4.00	3	0.261
Pearson chi-square	4.19	3	0.242

Measures of Association

Entropy	0.121
Concentration	0.150

Estimates for parameters

	Coefficient	Z - Value
Consts	-1.905	-1.540
Consts by consub		
3v1	-0.238	-1.751
3v2	0.231	1.740
Consts by consame		
3v1	-0.365	-2.813*
3v2	0.353	4.487*
Consts by likecon	0.711	1.628

* p<0.05

Model H (N = 390)

(Commercial students excluded)

Consts (0,1) by conarea (0,3), consub (1,3), consame (1,3) with likecon

Design = Consts
Consts by conarea
Consts by consub
Consts by consame
Consts by likecon

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	14.87	27	0.971
Pearson chi-square	18.16	27	0.898

Measures of Association

Entropy	0.109
Concentration	0.147

Estimates for parameters

	Coefficient	Z - Value
Consts	-1.326	-2.33*
Consts by conarea		
3v0	0.135	1.325
3v1	0.192	1.539
3v2	-0.360	-1.801
Consts by consub		
3v1	-0.101	-0.892
3v2	0.236	2.487*
Consts by consame		
3v1	-0.417	3.456*
3v2	0.340	3.940*
Consts by likecon	0.446	2.071

* $p<0.05$

(c) PARTICIPATION IN ENGINEERING COURSES

(1) Variables used

Engsts	Entry into engineering training 1 = yes 0 = no
Engarea	Cluster of residence 1 = Cluster which under-produced engineering students 2 = Cluster of average engineering student production 3 = Cluster which over-produced engineering students 0 = Outside study area or not known
Engsub	Any engineering subjects studied at school 1 = No engineering subjects studied 2 = Engineering subjects studied 3 = Not known
Engsame	Any parent sibling in engineering employment 1 = Parent sibling in engineering employment 2 = No parent sibling in engineering employment 3 = Not Known
Sex	Sex of student 1 = Male 2 = Female 3 = Not known
Likeeng	Attitude towards engineering work as measured by construct 1 ('jobs I'd like v jobs I wouldn't like')

Model I (N = 536)

Engsts (0,1) by engarea (0,3), engsub (1,3), engsame (1,3) sex (1,2) with likeeng

Design = Engsts
Engsts by engarea
Engsts by engsub
Engsts by engsame
Engsts by sex
Engsts by likeeng

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	17.34	62	1.00
Pearson chi-square	22.96	62	1.00

Measures of Association

Entropy	0.281
Concentration	0.305

Estimates for parameters

		Coefficient	Z - Value
Engsts		2.707	0.457
Engsts by engarea			
	3v0	-0.055	-0.646
	3v1	0.071	-0.692
	3v2	-0.033	-0.246
Engsts by engsub			
	3v1	-0.451	-4.858*
	3v2	0.209	2.457*
Engsts by engsame			
	3v1	-0.223	-2.185*
	3v2	0.179	2.222*
Engsts by sex			
	2v1	-2.873	-0.486
Engsts by likeeng		-0.002	-0.014

* $p<0.05$

Model J (N = 569)

Engsts (0,1) by engsub (1,3), engsame (1,3) with likeeng

Design = Engsts
Engsts by engsub
Engsts by engsame
Engsts by likeeng

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	3.217	3	0.359
Pearson chi-square	3.152	3	0.369

Measures of Association

Entropy	0.144
Concentration	0.189

Estimates for parameters

	Coefficient	Z - Value
Engsts	1.789	0.899
Engsts by engsub		
3v1	-0.891	-3.457
3v2	0.506	3.118
Engsts by engsame		
3v1	-0.271	2.724
3v2	0.202	2.455
Engsts by likeeng	-0.659	-0.875

Model K (N = 569)

Engsts (0,1) by engarea (0,3) engsub (1,3), engsame (1,3)

Design = Engsts
Engsts by engarea
Engsts by engsub
Engsts by engsame

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	20.13	28	0.860
Pearson chi-square	25.52	28	0.599

Measures of Association

Entropy	0.129
Concentration	0.181

Estimates for parameters

		Coefficient	Z - Value
Engsts		0.054	0.864
Engsts by engarea			
	3v0	-0.060	-0.785
	3v1	0.018	0.190
	3v2	-0.021	-0.172
Engsts by engsub			
	3v1	-0.663	-7.536
	3v2	0.387	5.209
Engsts by engsame			
	3v1	-0.241	-2.701
	3v2	0.155	2.084

Model L (N = 390)

Engsts (0,1) by engarea (0,3) engsub (1,3), engsame (1,3) with likeeng

Design = Engsts
Engsts by engarea
Engsts by engsub
Engsts by engsame
Engsts by likeeng

Goodness-of-fit test statistics

	χ^2	v	p
Likelihood ratio chi-square	18.56	27	0.885
Pearson chi-square	24.38	27	0.609

Measures of Association

Entropy	0.058
Concentration	0.091

Estimates for parameters

		Coefficient	Z - Value
Engsts		-0.212	0.523
Engsts by engarea			
	3v0	-0.067	-0.765
	3v1	0.111	1.080
	3v2	-0.045	0.323
Engsts by engsub			
	3v1	-0.464	-4.888*
	3v2	0.191	2.183*
Engsts by engsame			
	3v1	-0.185	-1.804
	3v2	0.148	1.807
Engsts by likeeng		0.009	0.052

* $p<0.05$

APPENDIX 10.2:

SUMMARY OF EFFECTS OF DIFFERENT VARIABLES IN PREDICTING ENTRY INTO COMMERCIAL CONSTRUCTION AND ENGINEERING TRAINING DERIVED FROM DIFFERENT LOGIT MODELS*

1. Predicting Entry into Commercial Training

VARIABLE	MODEL A	B	C	D
COMSAME	5.3	3.4	3.3	3.9
COMSUB	ns	8.2	8.2	8.3
COMAREA	ns	ns	ns	-
SEX	ns	-	-	-
LIKECOM	ns	ns	-	ns

2. Predicting Entry into Construction Training

	MODEL			
VARIABLE	E	F	G	H
CONSAME	4.3	4.3	4.1	4.3
CONSUB	2.9	3.8	ns	2.8
CONAREA	ns	1.6	-	ns
SEX	ns	-	-	ns
LIKECON	2.6	ns	ns	2.4

3. Predicting Entry into Engineering Training

	MODEL			
VARIABLE	I	J	K	L
ENGSAME	3.0	3.2	3.0	ns
ENGSUB	4.0	8.7	5.2	3.9
ENGAREA	ns	-	ns	ns
SEX	ns	-	-	-
LIKEENG	ns	ns	-	ns

* All effects expressed in terms of impact on the odds of a student entering specific type of training. These were derived from the estimates for parameters (see Nie et al, 1983).

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