

## ACKNOWLEDGEMENTS

I would like to express thanks to my supervisor Graham F Wagstaff for his assistance and support throughout this project; to Norman Marsh for reassurance and assistance throughout the phase of analysis, to those members of staff and students without whose cooperation this project would have been impossible, to Mrs B Blackie for typing, and to my family for their moral support throughout.

OCCUPATIONAL SPECIFICITY AND FACTORS ASSOCIATED WITH  
OCCUPATIONAL CHOICES OF UNDERGRADUATE STUDENTS.

Thesis submitted in accordance with the requirements  
of the University of Liverpool for the degree of  
Doctor of Philosophy

by

JOAN EVELYN MCDONOUGH

OCTOBER, 1985

OCCUPATIONAL SPECIFICITY AND FACTORS ASSOCIATED WITH  
OCCUPATIONAL CHOICES OF UNDERGRADUATE STUDENTS

ABSTRACT

This thesis comprises an analysis of the way in which personal, interpersonal and demographic factors inter-relate in predicting the occupational specificity of the discipline selected for study at university by undergraduate students in a number of British Universities.

Previous research has tended to focus on these factors separately, rather than as coexistent correlates of the behaviour, and is for that reason inadequate to explain the complexities of the choice process. The objectives of the present research are to examine the way in which these variables are inter-related in an attempt to provide prediction equations which will serve to identify those young people most likely to benefit from careers guidance.

Evidence is presented to demonstrate that a consensus exists as to the occupational specificity of a range of disciplines, and that therefore the entry into an occupationally specific discipline is a partial implementation of an occupational choice.

Prediction of the specificity of discipline entered is optimized when undergraduates are categorized simultaneously on the basis of sex and choice status, and the resultant six sub-groups are shown to differ in the variables which predict the level of specificity.

It is suggested that further research should assess the stability of the equations produced over time, and should utilize the equations to produce economical instruments for use in the guidance process.

## PREFACE

This thesis is concerned with predicting the specificity of discipline chosen for study at University, on the grounds that the selection of an occupationally specific discipline for such study is an operationalization of an implicit occupational choice. It attempts to consider the way in which variables from different sources - personal, interpersonal and extra-personal have a differential impact upon sub-groups within the sample under consideration.

The thesis consists of nine chapters. Chapter 1 presents a critical review of previous theoretical and empirical work on the subject of occupational choice and on variables which have been considered to have some influence within the span of the choice process. This provides a background to the empirical work reported in Chapters 2 to 9. Chapter 9 contains the major findings and concludes that the project has succeeded in providing predictive equations. The project differs from previous research in that it utilizes a new construct, that of Occupational Specificity, as the dependent variable. The use of this construct overcomes the Arts/Science dichotomy, and allows discipline to be converted to a continuous variable, OSI, along which undergraduates

fall. Evidence is presented in Chapters 2, 3 and 4 for the validity of this construct in terms of the perceptions held by sixth-form pupils in two regions of the country. The accuracy of these perceptions are also considered in Chapter 7. Specificity is distinguished from the related construct of Utility, and is examined in relation to the dimensions of Arts/Science and of Desirability.

It should be noted that certain variables which might well be relevant have been excluded from the study. For example, at the time at which the study was conceived, there existed no British measure of Career Maturity, and after consideration of the USA version it was felt that the many alterations which would have been necessary entailed a complete revision of the instrument. The difficulty in interpreting the responses to Rotter's Locus of Control Scale, and the measure of self-esteem (both of which were in many cases incompletely answered) led to these variables being dropped from the analysis, despite their theoretical relevance. Similarly, no measure of Androgyny was used.

### Aims

The thesis has two aims which may be summarized as follows:

1. To investigate the construct of Occupational Specificity.
2. To provide empirically derived tools for its prediction.

## CONTENTS

	<u>Page No.</u>	
Acknowledgements	i	
Title page	ii	
Abstract	iii	
Preface	v	
Contents	viii	
CHAPTER 1		
LITERATURE REVIEW		
1.1	Introduction: the nature of work	1
1.2	Recent development in research into occupational choice	10
1.3	Ginzberg, Ginzburg, Axelrad and Herma's Theory	45
1.4	Holland and the person/environment matching approach	51
1.5	Behavioural Decision Theory	84
1.6	Janis and Mann's Conflict model of decision-making	92
1.7	Attitudes, beliefs and personality approaches	103
1.7.1	Personality	105
1.7.2	Occupational interests	107
1.7.3	Constructs related to personality	109
1.7.3.1	Locus of Control	110
1.7.3.2	Self-efficacy	111
1.7.3.3	Fear of Success	112
1.7.3.4	Androgyny	113
1.7.4	Attitudes	117
1.7.5	Vocational/Career Maturity	119
1.8	Super's Developmental self-concept theory	123



CHAPTER 2

STUDY 1: A PRELIMINARY SURVEY TO TEST THE CONSTRUCT VALIDITY OF A THREE-LEVEL APPROACH TO OCCUPATIONAL SPECIFICITY	135
--	-----

CHAPTER 3

STUDY 2: SIXTH-FORMERS' PERCEPTIONS OF SPECIFICITY AND UTILITY AND THE RELATIONSHIP BETWEEN SIXTH-FORMERS' AND UNDERGRADUATES' PERCEPTIONS OF SPECIFICITY	143
---	-----

CHAPTER 4

STUDY 3: THE RELATIONSHIP BETWEEN SPECIFICITY AND THE ARTS/SCIENCE CONTINUUM	152
---	-----

CHAPTER 5

STUDY 4: A COMPARISON OF RATINGS OF SPECIFICITY AND UTILITY MADE BY WIRRAL SIXTH-FORMERS WITH THOSE RATINGS MADE BY A LONDON SAMPLE	157
--	-----

CHAPTER 6

STUDY 5: A COMPARISON OF RATINGS OF UTILITY WITH DATA RELATING TO GRADUATE EMPLOYMENT	163
---	-----

CHAPTER 7

STUDY 6: THE "DESIRABILITY" OF VARIOUS DISCIPLINES	174
---	-----

CHAPTER 8

CONSTRUCTION OF DEMOGRAPHIC/INTERPERSONAL FACTORS QUESTIONNAIRE AND PRELIMINARY STUDY	188
--	-----

CHAPTER 9

MAIN STUDY TO INVESTIGATE THE FACTORS  
ASSOCIATED WITH OCCUPATIONAL CHOICE AND THE  
SELECTION OF A VOCATIONALLY SPECIFIC  
DISCIPLINE

9.1	Introduction	209
9.2	Method	212
9.3	Analysis and Results	221
9.4	Results: Final equations and their significance	248
9.5	Discussion of Results	253
9.6	Summary and Conclusions	262

CHAPTER 10

CONCLUSIONS	265
-------------	-----

Further Research Suggestions	277
------------------------------	-----

References	281
------------	-----

Appendix 1: Occupational specificity Questionnaire	422
---	-----

Appendix 2: Arts/Science Questionnaire	425
--	-----

	<u>Page No.</u>
Appendix 3: Occupational decision-making Questionnaire	426
Appendix 4: Interpretation of Prediction equation	432
Appendix 5a: Scoring for the Occupational decision-making Questionnaire	438
Appendix 5b: Transformation of Parental occupations into prestige levels	446
Appendix 6: Correlations of NEWOSI and OSI by NEWOCSEX	448
Appendix 7: Letter to Heads of Departments	451
Appendix 8: Letter to students (1) (Where Department cooperative)	452
Appendix 9: Letter to students (2) (Where Department less cooperative)	453

## CHAPTER 1

### INTRODUCTION: THE NATURE OF WORK

Before one can talk meaningfully about occupational choice or work, it is necessary to have a moderately clear idea as to precisely what is meant by these terms.

Various writers have put forward an assortment of criteria by which they proposed to distinguish "work" from other activities; many of the most influential of these have been the subject of a very comprehensive review article by Shimmin (1966), and it is not proposed to deal with the matter in as great depth within the present work.

The most striking point of agreement between the various writers is that it is difficult to provide a suitable criterion, and that all such definitions must be, to a certain extent at least, arbitrary. Indeed, Cohen (1953) has suggested that it might be more profitable to abandon dichotomous thinking in favour of viewing activities as falling along a work-play continuum. The point along the continuum at which a specific activity was located would be a potentially shifting location specific to the individual. Some of the criteria which

have been regarded as of at least moderate utility are:

1. Work is purposive activity
2. ...which entails some element of constraint or obligation
3. ...and involves the expenditure of some effort
4. ...which yields income.

In addition, it is often assumed (mainly by sociologists; see, for example, Hedges and Beynon, 1982) to be in some way unpleasant, and lacking in intrinsic satisfaction, or conversely, to be the main source of a person's satisfactions, the means whereby they can become fulfilled, self-actualizing beings and inherently rewarding (the latter view seeming more prevalent among psychologists; e.g. Kelvin, 1981).

However, despite the above mentioned difficulties in defining "work" and "occupation", an attempt must be made if we are to consider factors which pertain to "occupational choice". Superficially, it might appear self-evident what is meant, but while in an industrial society with full employment occupying a substantial portion of a person's day this might well be the case, as we move towards a euphemistically described "leisure society", previous distinctions become blurred or in-

appropriate. Since any psychological theory should be such as to transcend the specific conditions prevailing in a given society, it is necessary to arrive at an operational definition which encompasses work as a psychological, and not merely sociological phenomenon. When Freud, described the healthy individual as one who was able to "Work and to love" (Erikson, 1968), the conditions under which many were employed were exhausting and dehumanizing, and it is surely the case that he was envisaging something more than foregoing a degree of volition over the content of a proportion of an individual's time in return for an economic advantage. Generally, those writers who have referred favourably to work have had a concept in mind of which the converse would seem to be idleness, sloth, selfishness or a lack of purpose, rather than simply the absence of a regular wage, and it must be remembered that the ancient Greeks did not by any means share the Protestant Work Ethic view of work as good; on the contrary, to Plato and Socrates it was incompatible with the duties of Citizenship. That is to say, they did not regard their civic duties as of the same nature as "work", a menial activity fit only for slaves. (See, for example, Clough, 1982.) One may also recall the Old Testament view of work as a curse laid upon humanity at the time of the expulsion from paradise (Genesis 3:17-19).

It is possible that the notion of work as involved in self-fulfilment arises due to the proportion of time which has, in the past been devoted to it; if the majority of a person's time is given to a certain activity, then this may make it impossible for him to obtain any satisfactions outside that activity, simply because so little time remains in which to do so. Similarly, if the people with whom he associates in the course of that activity are uncongenial, little opportunity may exist for alternative social intercourse. That is to say, work as the source of satisfactions may simply be a "default value".

In considering occupations, psychologists have tended to over-focus upon the content of that occupation, and upon the personalities of past and present incumbents, neglecting contextual factors and overlooking the higher-order question of purpose. To clarify this point somewhat, a person may spend a major part of their time making cups of tea and sandwiches (CONTENT), at a hostel for down-and outs (CONTEXT), in the company of other social workers (CONTEXT) not because the content is, per se rewarding, but because of a sense of purpose, such as "bettering the lot of humanity". This notion of purpose is perhaps closely similar to the old-fashioned notion of vocation. Although it is impossible to say how

influential this factor may be, both in absolute and relative terms, its neglect in theorizing must inevitably impoverish the resulting conclusions.

One essential component could be the proportion of time devoted to an activity; although no hard and fast rule could be given as to the absolute number of hours required in order to qualify as a person's primary "occupation", either within a short or an extended period.

From an orientation which stressed work in the sense of economically useful activity and which required experts to perform a matching task in order to maximize both individual satisfaction and collective efficiency, vocational psychology moved gradually in the direction of a more holistic approach in which the work role was seen as one of a number of sequential and simultaneous socially defined roles (see, for example, Super, 1981), and the emphasis may now be seen to be on "occupation" rather than either "work" or "employment".

The terms "work" and "employment", although used interchangeably by many writers on occasion, are, nonetheless, conceptually distinct from one another, but both are multi-faceted. The distinctions are related to the various types of economies in which they operate;



Pahl (1980) distinguishes between the formal economy, the black economy, the communal economy, and the household economy; while work may occur in each form of economic system, legitimate employment is confined to the first.

The notion of vocation is deeply and inextricably linked with occupational choice, and it is debatable to what extent "vocation" can be distinguished from "occupation" when the latter term is used in its broader sense. While the concept of a "vocation" as a "calling" has a long tradition within the Judeo-Christian historical context, the "calling" was generally to a socially sanctioned "occupation", and the earliest schools were "vocational" in that they provided aspiring clerics with the literacy and command of Latin necessary to perform the various tasks within a work-role. As Williams has noted (Williams, 1961), from their foundations in the sixth century through to the eighteenth century, English schools prepared their pupils for the occupations they were to enter and the implied place in society. With the Industrial revolution, this preparation became inappropriate as a training, but retained a privileged position which was justified by appeals to the notion that all real learning was undertaken for its own sake, and without thought to any material advantages which might follow. The emerging work roles were of a less

encompassing nature, and it is perhaps at this point that the distinction between "vocation" and "occupation", with "occupation" seen in its narrow sense as the primary form of economic activity begins to emerge. "Leisure" is time free from both employment-related and non-employment work related demands, and various writers (for example Dumazedier, 1967) have claimed that the West is on the verge of becoming a "leisure society". In a delightful passage quoted by Watts (1983), Keynes (1931) draws a Utopian vision of the future:-

I see us free, therefore, to return to some of the most sure and certain principles of religion and traditional virtue - that avarice is a vice, that the exaction of usury is a misdemeanour, and the love of money is detestable, that those walk most truly in the paths of virtue and sane wisdom who take least thought for the morrow. We shall once more value ends above means and prefer the good to the useful. We shall honour those who can teach us how to pluck the hour and the day virtuously and well, the delightful people who are capable of taking direct enjoyment in things, the lilies of the field who toil not, neither do they spin.

The leisure ethic might be summarized as the belief that work is neither necessary nor desirable, and varied estimates have been put forward as to the maximum number of man-hours needed in order to provide society with all its material needs; Jenkins and Sherman (1979) optimistically suggest that in the future the "collapse of work" may be referred to, instead, as the "ascent to leisure". Such a Post-Industrial society would do away

with the need for soul-destroying drudgery on production lines and could bring about the reality for the majority of citizens the possibility of the good life as envisaged by Aristotle, in which the individual would be free to devote himself to affairs of greater import with concomitant satisfactions than he is presently afforded.

It could. It might not.

Jahoda (1982) has enumerated several psychologically important latent functions associated with employment; it imposes a time structure; it implies regularly shared experiences and contacts with non-family members; it links a person with goals and purposes other than his own; it defines aspects of personal identity and status and it enforces activity. It has been argued by Kelvin (1981) that leisure activities are "play", and are not sufficient for psychological growth into maturity, and the fact that employment has been widely used in the rehabilitation of psychiatric patients (Morgan and Cheadle, 1975) would seem to lend some support to this notion.

Jahoda (1982) has argued that although the psychological and material benefits associated with work can be met in alternative ways, work is the best single solution. In the light of the current unemployment

situation this is unfortunate.

There seems no logical reason to suppose that an activity which is engaged in for only a portion of the life-span of by no means the entire population can be grounded in any innate need to work (at least in the sense of participation in the labour market), and thus it may be inappropriate to search for a psychological theory to explain a sociological phenomenon.

On the basis of the above it seems evident that the concept of work is arguable, and that therefore any theory of occupational choice must be seen in its situational context, as inherently dependent upon a specific society rather than upon universally shared psychological needs and drives.

## 1.2 Recent Developments in Research into Occupational Choice

The field of vocational psychology is a wide-ranging one; in 1984 when Tinsley and Heesacker searched for suitable material for inclusion in their excellent review article they identified 445 articles published in 42 different journals during 1983, and were unable to include books in their survey from considerations of space.

These articles were found in publications ranging from the Journal of Vocational Behavior (55 articles) through such less familiar journals as The Journal of Leisure Research (1 article) and Industrial Relations (12 articles).

The more recent trends seem to indicate a fragmentation process occurring within the field, with little movement between the various branches of vocational research; the main division is between the counselling psychology perspectives - including such topics as assessment and intervention strategies - and the Industrial/Organizational Psychology perspectives. In addition, one must be aware that a certain amount of material pertaining to the topic

of work and occupations is to be found within the fields of sociology, economics and anthropology.

Ancillary material concerned with methodological and statistical issues is to be found throughout the social and managerial sciences, and the volume of such publications is such as to render it impossible for any single individual to be thoroughly conversant with its entirety. While this is, perhaps, inevitable, one consequence is that researchers seem frequently to be unaware of relevant developments occurring within other nominal disciplines. In many ways, the topic of occupational choice cannot be seen as the private property of any single discipline, and an attempt to do so will necessarily produce a partial, and perhaps distorted picture of the whole.

The topics covered by Tinsley and Heesacker (1984) cover Career Development, Vocational Choice, the Vocational Behaviour of Women, Assessment, Intervention Strategies, Personnel Functions, Worker Adjustment Problems and Criteria of Work Adjustment. They do not include references to the expanding area of research into unemployment, although in previous years this topic received considerable

attention in Britain, most notably, perhaps, that emanating from the MRC/SSRC unit in Sheffield.

One of the problems with much of the published material on occupational/vocational choice is that it is from the USA. This is not, of course, to suggest that the vocational behaviour of Americans is an unworthy topic for research; indeed, given their numerical and financial superiority to us, clearly it is only reasonable to expect that a substantial proportion of the research conducted should be based upon large numbers of American undergraduates, particularly as such persons are readily available to serve as subjects in psychological research programs and may even obtain course credits to do so. However, since occupations and employment are very much a function of the culture within which they exist, the generalizability of material deriving from the other side of the Atlantic must be questioned.

Of course, when one is concerned with the processes underlying overt behaviour, such cultural differences may be of less importance, but in an exploration of the behaviour itself they remain of paramount import, and it is essential not to

assume that because Americans do certain things supposedly for certain reasons from whence various factors can be derived, that when a British person does a similar thing it is for the same reason. Similarly, the generalizability of the Australian and New Zealand material is questionable, since the educational systems are different, both from each other, the American and the British systems.

A major difference between the two cultures (ie America and Britain) is that of their educational systems and the financial structures which are associated with them.

Clearly, in a society in which many students need to pay fees for their University/College education, a potential student needs either to have parents who are both willing and able to support him, or to be prepared to work his way through college (Freeman, 1971; Paachaud, 1975). This raises financial questions (Vander Well, 1970; Rosenberg, 1977) which are of far less relevance to the British undergraduates. Similarly, where the possession of a college degree is more widespread, its absence is a greater disadvantage. A further difference is that the American system does not treat a first



degree as of much vocational significance in itself; further professional training occurs after graduation for intending lawyers, doctors and engineers. (See, for example, Goodson, 1978.) The current British system, on the other hand, is more clearly a progressive narrowing down of possibilities, with certain O-Levels prerequisites for the study of particular A-Levels, and particular A-Levels necessary for admission to corresponding degree courses. The choice of O-Levels or equivalent at the age of 14 may well occur before a clear occupational choice has been reached (Ryrie, Furst and Lauder, 1979), but such choices will delimit the subsequent scope available to the young person (cf Ginzberg et al, 1951; Ginzberg, 1972; Hays and Rothney, 1961).

This naturally leads to a different approach to guidance, and Herr and Watts (1978) have provided an overview of this topic. Briefly, the British approach to guidance is primarily crisis-interventionist, whereas the American model is more developmental in nature. See, for example, Avent, Sisterson, Fawcett, Watts and Newsome, 1983; Clarke, 1980 (a,b,c); Hearn, 1981; Herr, 1982; Holcomb and Anderson, 1977; Watts, 1977 (a,b); 1981; Roberts,

1977; 1980; Weinrach, 1982; and Watts, Super and Kidd, 1981.

This point has been made by Moracco (1978) in his warning against the transplantation of American practices into the indigenous school or governmental institutions of developing countries, and he cites Esen's (1972) comment that:-

All developing nations that see guidance as worth importing into their social or educational system will do well to heed this warning...more problems might be created than solved, if guidance practices were based on indiscriminating imported alien philosophies.

The self-actualization orientation which has typified the American contribution to vocational guidance, and in particular, Super's self-concept theory, may not be, and if Moracco is correct, is not, applicable to nations where the psychological readiness, freedom to choose and availability of options are significantly different from the situation in the USA.

This thesis is concerned with the prediction of whether a young person will be in a position to make a clear choice of occupation and take the appropriate steps to implement it as operationalized

by the selection of an occupationally specific discipline for study at University. A young person who selects such a discipline is by implication choosing the occupation they wish to enter, and further choice entails merely a narrowing of fields within that occupation, as has been shown by Brown's (1979) work on undergraduate engineering students. As Starishevsky and Matlin (1968) have stated, the non-verbal occ-talk statement of applying to medical school is the equivalent of saying "I am going to be a physician". Starishevsky and Matlin have provided a model for the translation of self concepts into vocational terms, and are firm that no distinction need be made between the various ways of asserting statements in the realm of occupational terminology.

The British student who selects a non-vocational discipline is not simply deferring the choice of, for example, engineering, but has excluded the possibility insofar as a degree in engineering is a necessary condition for entry into the profession.

The identification of such persons who are likely to postpone their choice of occupation beyond the time which the structure permits would clearly

be of value to the young person concerned, and given that the resources available for guidance are finite, a method whereby such identification could take place would permit a more effective use of guidance resources.

Considerable American material is available on the undecided student, his problems and appropriate counselling approaches (for example, Baumgardner, 1982; Berger-Gross, 1983; Fiume, 1976; Gordon, 1977; 1981; 1982; Greenhaus and Simon, 1977; Hartman and Fuqua, 1979; 1980; 1982; Hawkins, 1977; Holland and Holland, 1977; Lowe, 1981; Lunneborg, 1976; McGovan, 1977; Mendonca and Siess, 1976; Slaney, 1980; Slaney, Stafford and Russell, 1981; Taylor and Betz, 1983; but the British student is in a rather different situation, since he either is, or is not registered on a specific degree course, and the question of selection of a "major" after entry to University does not arise as such. The modular nature of American degrees, and transferability of course credits between institutions allows an area of research to American theorists of which their British counterparts are deprived.

Various factors have in the past been identified

which have bearing upon an individual's occupational choice, and in reviewing the literature it is proposed to concentrate attention on factors which are known to do so and which are capable of measurement, together with sufficient theoretical material to place such pragmatism in context.

A conceptual framework has been provided by Blau, Gustad, Jessor, Parnes and Wilcox (1955), and it is the author's view that despite the passage of thirty years, this framework is still valid as a meta-theory within which the specific details obtained by their successors may be located. Their framework is too well known to require elaboration here; the interested reader is referred to the original formulation which is exemplary in its clarity and coherence.

#### Demographic variables

The great advantage of looking at demographic factors is that they are objective, tend to be relatively measurable and are less prone to faking than are the more "psychological" types of variable. Variables to be considered here include sex, parental

occupation, the presence or absence of siblings, the type of school attended (both in terms of selective vs. non-selective and single-sex vs. co-educational), and the place of origin, both in terms of its location and size.

### Sex

Sex, sex-role socialization, the formation of gender identity, the sex-role self-concept, the differential expectations held by and of the sexes and the correlates of these factors have attracted much research in terms of their relationships to educational outcomes.

Clearly despite the recent legislative changes which have outlawed certain discriminatory practices in Britain, and in parts of the USA, there are still attitudes and structural factors which mean that many occupations are numerically dominated by one or the other sex, and even when the total number of women in a given occupation is greater than or equal to the number of men, they tend to be concentrated at the lowest levels.

There is a wealth of material on the topic

of sex-role socialization, both overt and covert; on the way in which parents and teachers respond differently to children on the basis of their sex; on the different personality traits which are encouraged for boys and girls; on the representation of the sexes in the media and in school textbooks; on children's beliefs about sex-appropriate behaviours and occupations; on the tendency for schools to channel a disproportionate number of girls into academic disciplines with less value in obtaining employment; on the differential expectations held by and about girls' future careers; on sexism in counsellor attitudes; on biases in selection procedures; on the "Fear of success" motive in women; on the perceived and objective conflicts for women between home and work and between pressures to achieve and to be "feminine"; on the importance of "role models" and "mentors" for young women; on sexual harassment of women both within the educational system and the workplace, and on the topic of psychological androgeny, and there is insufficient space within this thesis to do more than provide a few illustrative references.

Discrimination starts early; studies by Goldberg and Lewis (1969) and by Lewis (1972), to cite but

two, found that boy babies were more likely to be handled and encouraged in motor activity, whereas girl babies were more likely to receive more verbal stimulation.

Maccoby and Jacklin (1975) found that young boys received more attention, both positive and negative than did girls, and that cross-sex behaviour was tolerated far less in boys than in girls. (By "cross-sex" is meant behaviour stereotypically considered appropriate for the other, such as aggression in girls or crying in boys.) Boys are actively discouraged from "girlish" behaviours, especially by their fathers (Maccoby and Jacklin, 1975; Hartley, 1959; Biller and Borstlemann, 1967; Feinman, 1974; Fagot and Litman, 1975), although "boyish" behaviours are tolerated to a greater extent and for a longer period in girls.

The message that girls should be passive, nurturant and non-competitive is reinforced by the "hidden curriculum" (Jackson, 1968) of the school, and by the overt discriminatory practices which, certainly in the past obtained.

Thus Bryne (1975) and Davies and Meighan (1975)



found that girls were channelled into such subjects as languages, domestic science and biology, while boys were directed into physics, chemistry, metal and woodwork. The amount of expenditure on pupils was found to differ as a function of sex (Byrne, 1975), with considerably more being spent on boys in single-sex schools than on girls in single-sex schools, and boys in mixed schools being given priority in the use of scarce science-related resources.

The preponderance of male head teachers at the secondary level (Plowden, 1967; Byrne, 1975) has been thought to convey the message that maleness is necessarily associated with power, while femaleness is associated with a lower status and an inability to have power - and, indeed, that the overt use of power is inappropriate for women, and this message is reinforced by media representations of women as occupying subordinate positions, or as being unfeminine hags if they are successful in a career.

(The more recent tendency to portray women in nominally dominant positions frequently shows them as really being dependent upon the good will

of boss or spouse who allows them to behave in this way, and rallies to their rescue when they have been trapped by the villain or have bitten off more than they can handle - a prime example being the American TV series "Cagney and Lacey", in which the two heroines have (a) a paternalistic boss, who is seen to hold the real power, (b) supportive partners and (c) are ridiculed humorously for their obvious commitment to their careers.)

Curricular material has been analyzed to look at the way in which females are represented (or fail to be represented), and Lobban (1975a) has reported on the incidence of the portrayal of girls (they appear less frequently), on the behaviours which they are shown as being engaged upon (crying, being submissive, nurturant or a nuisance) and the occupational roles which they are shown to occupy; a comparison of depicted occupational roles within two reading schemes showed males in a total of thirty-three different but realistic occupational roles, while females were confined to eight, only two of which were of any real occupational nature; teacher and shop assistant. (The other roles provided were mother, grandmother, handywoman-about-the-house, princess, queen and witch!)

Textbooks on history and (especially) science have tended to ignore the existence of women, or to treat them as belonging to a different species from the rest of humanity; before the recent interest in non-sexist writing and terminology, "Mankind" meant just that, and Scott (1980) has categorized social studies texts into three sexist groups; those which are openly derogatory about women, presenting them as either grotesque or merely decorative; those which simply ignore the existence of women, and those which convey the impression of the insignificance of women.

She cites as examples of the second category (invisibility) a book on the first world war which made no mention of the contribution made by women (Hoare, 1973), and a geography text in which the agricultural contribution of women in third world countries was ignored (Young, 1961), and of the third, (their insignificance) a history text by Case and Hall (1976).

Within the context of mathematics teaching, the concrete examples used frequently are drawn from the fields of masculine interests, such as cricket, cars and cement mixing, rather than the

domestic, and some research suggests (see, for example, Chetwynd and Hartnett, 1978) that when the context is changed to incorporate more "feminine" activities such as cooking, while keeping the mathematical content similar, girls do significantly better. For example, the concept of proportions can be readily communicated by asking pupils to modify the ingredients of a recipe to take account of a different number of dinner guests. However, the stereotype of girls as unable to comprehend maths persists despite the number of women who successfully modify recipes and knitting patterns and balance the household finances. Goldman and Hewitt (1976) have argued that the sex difference in the take-up of science courses at college can be almost totally explained by the measured sex differences in mathematical performance (although images of Science and scientists are also likely to be involved - see DES, 1980; Bradley and Hutchings, 1973; and Weinreich-Haste, 1979).

Sex differences in occupational aspirations begin early in childhood; Looft (1971) found that there was far wider variability when small boys aged between 6 and 8 years were asked what occupation they hoped to enter than was the case with girls

of the same age for whom 75% of responses fell into two categories, teacher and nurse.

Prediger, Roth and Noeth (1974) found that of their sample of 11th grade students, 50% of the girls selected occupations within the three job families of education and social services, nursing and related care and secretarial, while only 7% of the boys chose jobs within those categories. Boys were far more likely than girls to choose jobs within engineering, natural sciences, business management and technology.

Occupations are frequently seen as being more appropriate to one sex than the other; Schlossberg and Goodman (1972) showed elementary school children a set of pictures of various work settings and asked them "Could a man work here?", "Could a woman work here?", and found that children were more likely to exclude women from men's jobs than men from women's jobs.

Frost and Diamond (1979) found that for Black, Hispanic and White children in the fourth to sixth grades of Los Angeles schools, children showed clear preferences for occupations stereotypically associated

with their own sex, although Black girls were more ready to cross stereotyped lines.

The extent of stereotyping is associated with social class, with higher social class individuals having less stereotyped views; see Albrecht, 1976; Burlin, 1976(b); and Gettys and Cann, 1981.

Examination Board data is available to show that there are sex differences in the choice of exam. subjects, which increase with level.

Although some writers have argued that there are differences in intellectual functioning which would make this appropriate, Maccoby and Jacklin, in their (1975) review of articles on sex differences, rejected the suggestion that there were differences other than spatial ability, verbal ability and quantitative ability; their work was criticized by Fairweather (1976) and Block (1976) both for its conclusions and also for its omission of much of the European and British literature. (They felt that Maccoby and Jacklin accepted spurious differences between the sexes.)

According to Murphy (1979), all that can be

said with certainty concerning sex differences in innate ability is that great uncertainty exists, and the evidence does not permit sweeping statements to be drawn. It therefore seems most probable that sex differences in the choices of academic subjects, and exam entries and successes are due primarily to differences in sex-role socialization and in the differing expectations held by parents and teachers for the two sexes.

Data on GCE O-Level and CSE (for example, the figures cited by James and Rouve, 1979), show girls to be concentrated in Modern Languages and boys in Science, and University Grants Committee statistics show the differential to increase with level so that by University level women constitute 80% of students of French and less than 10% of students of Engineering and Technology (UGC, 1984/5).

Since formal qualifications of this sort facilitate or preclude entry to certain occupations, the attitudes held by students, their parents and their peers regarding the sex-appropriateness of disciplines and occupations are clearly of the greatest importance in determining the career possibilities and choices. The present thesis

therefore includes questions intended to elicit perceptions of these attitudes.

Nonetheless, it should not be forgotten that a considerable proportion of University graduates (approx. 30%), enter employment positions which are at least notionally open to graduates of any discipline.

Even should a girl wish to enter a traditionally masculine field, and possess the educational qualifications, the perceived inappropriateness of such a choice may arouse a certain degree of hostility from others. Whether this is likely to affect her choice will be related to the relationship existing between the girl and the other, and the power (either overt or covert) of the other. Some recent evidence for this has been provided by the Institute of Electrical Engineers' Survey of its women members; 5% of their sample had experienced harassment from staff while at University, and 10% had been harassed by other students. 23% had experienced harassment at work. Unfortunately, no base rate data is available on the overall incidence which would allow these findings to be compared with the general University population.



Gutek, Nakamura, Gahart, Handschmaker and Russell (1980), and Gutek (1982) have reported further on the problems of sexual harassment at work, as has Whitbread (1980).

It remains to be seen whether the recent initiatives by the Engineering Council to attract more young women into engineering will result in a modification of the prevailing stereotype of engineering and technology as "Masculine", and if so, the effect which this will have upon the status of engineering as a profession, since it has been suggested that the status of an occupation is inversely related to the percentage of women engaged within it.

The opinions held by "significant others" might be expected to carry greater weight than those held by "people in general", (cf Oliver, 1975; Sewell and Drenstein, 1964), and the existence of role models for atypical choices to encourage such atypical behaviours. Indeed, there is an extensive body of literature which has looked at the presence of working mothers, other role models and "mentors" in this context; for example (Medvene, 1969; Pallone, Rickard and Hurley, 1970; Piotrkowski and Katz,

1982; Plas and Wallsten, 1983; Rollins and White, 1982; Rounds, Dawis and Lofquist, 1979; and Sorensen and Winters, 1975).

Additionally, the possibility of marriage and childrearing is a factor which is known to affect young women's career planning; some occupations are seen as difficult to combine with marriage, some are seen as better able to tolerate a discontinuity, others as involving an unacceptably long period of training and so on.

This area, the anticipated combination of a career with marriage, has been dealt with with thoroughness by Tittle (1981), and has interested a number of other researchers, such as Baruch, Segal and Handrick (1968); Betz and Hackett (1981); Fitzgerald and Crites (1980); Gaddy, Glass and Arnkoff (1983); Gottfredson (1981); Harmon (1981); Osipow (1975), Sekaran (1985) and Richardson (1980).

Klemmack and Edwards (1973) concluded that marriage and family plans played a critical mediational role in the choice of "feminine" occupations. Angrist (1974) hypothesized that the socialization process for women was one which

stressed contingency training and that a contingency orientation was reflected in personality development, belief systems and choices. Since in the past it has been viewed as socially acceptable for married women not to remain in the labour market, and indeed to reflect adversely on their husbands' effectiveness as a provider if they did, and since also the familial roles of women have been accorded a greater degree of recognition although not status than those of men, the question of career salience is of particular relevance to women and to the occupational decision-making of young females.

Women are statistically likely to marry at least once, and the objective probability of any given woman marrying is greater than that of any given man, since although similar numbers enter upon first marriages, divorced men are more likely to remarry than are divorced women (who appear to learn from their mistakes). This has been described as "serial monogamy" by the sociologists. Until relatively recently, the role of "wife", and especially that of "wife and mother" was regarded as an occupation, albeit one with few direct economic advantages. In terms of social desirability it was viewed as superior, at least within certain

social classes, for a female to marry rather than to support herself by direct participation in the labour market, and the path of upward mobility was one of selecting a suitable spouse with prospects. The reality of the situation, of course, has been rather different, with large numbers of married women working in order to bring the familial income up to an acceptable level. However, under circumstances where women encountered considerable discrimination in access to education and in employment, it would seem that the occupation of "marriage" had its advantages for many females. The consequence has been that for a considerable number of women a career has been seen either as a lamentable necessity, or as an optional extra, rather than as an automatic and integral component of adult life. This attitude is not shared by men; while some may regret the need to work, few, at any rate in this culture decide to base their lives upon the probability of finding an amiable wife to support them. Her income may be appreciated, but is not the "real" support of the family, except under exceptional circumstances. (NB this belief is not directly related to the actual incomes of the two spouses.) The belief (realistic) held by many young women that they will marry is accompanied by a

further belief (unrealistic, but supported by many parents, teachers and cultural myths) that the employment prospects of women are less relevant.

The "Cinderella complex" (Dowling, 1982) means that the career is of lesser salience to them than to their potential mates.

That is not to say that all women view their careers as stop-gaps until the next white charger, nor that all men are dedicated to the furtherance of their job prospects. Salience is a continuum, but on average, within the present culture, one can expect to find a higher level of salience amongst young men. "Salience" can be taken to mean "relevance", (although "salience" and "centrality" have been treated separately by some) and clearly there are groups for whom the employment career is less relevant; the handicapped or retired, for example. The way in which the term is used in the psychological literature is clearly evaluative; salience is assumed to be a good thing.

Certain attitudinal/personality variables, such as Fear of Success (Horner, 1968), Achievement motivation (Atkinson, 1958) and Androgeny (Bem, 1974)

are differentially associated with the two sexes, and are considered under the topic of Personality/attitudes, below.

### **Social class**

Social class is generally agreed to be the best predictor of eventual adult status, both in educational and employment terms; although a limited amount of social mobility occurs, for the majority it does not. (See, for example, Halsey, Heath and Ridge, 1980).

Even when apparent mobility occurs, this must be set against the shifting occupational structure; if a person enters a graduate level occupation, this clearly has a different meaning in a context in which graduate-level study is available to an increased proportion of the population.

Social class has generally been measured in terms of the occupational status of the "head of household", which for intact families is generally taken to be the father; the background of the mother is invoked to explain the unexpected, rather than treated as a variable in its own right. Clearly,

while the mother may be (and frequently is) employed in a capacity which does not reflect her qualifications or abilities, her attitudes regarding education and occupation are likely to be communicated to her offspring, and will carry a greater or lesser influence in accordance with other factors. (See the following references on the effects of role models, and Lunneborg, 1982.) The present study therefore incorporates the educational level and employment status of both parents, although the tendency for selective mating means that the social status of the parents prior to their marriage will tend to be highly correlated, and the variables cannot be treated as independent.

#### Location

The various parts of mainland Britain differ considerably in their social and demographic composition, in the quantity and types of employment opportunities, in their access to resources and in the histories of their inhabitants. Detailed information on the present position can be obtained by an examination of the HMSO publication: "Britain, 1985 - the official handbook".

In the era of selective education, the proportion of children gaining grammar school places varied between Local Education Authorities (LEAs) so that in some areas more than thirty per cent of the eleven year-olds obtained places while in others less than ten per cent did so. (Ministry of Education 1959 data, cited by Douglas, 1967). These differences did not then reflect the differences in occupation followed by the children's fathers; according to Douglas, the largest proportion of semi-skilled and unskilled workers' children were in Wales, which was well provided with grammar school places, while the largest proportion of professional workers' children were in the South, where there were few places available. Douglas also related childrens' academic chances to their material background, type of housing occupied, size of family and the occupation and educational background of their parents.

Halsey, Heath and Ridge (1980), provide further evidence for the influence of social background in the educational achievements of young people from O-Level or equivalent through to Higher Education; in brief, the higher the social class of origin, the greater the likelihood that a young person will stay on at school beyond the minimum



leaving age, succeed in obtaining examination qualifications and entering higher education. When the various types of institution offering education beyond school level are compared, the more prestigious the institution, the higher the social class backgrounds of its students.

Obviously, social class is a complex phenomenon, and covers a variety of factors which, correlating with fathers' occupations, affect the aspirations and achievements of young people. While it is by no means proposed to argue that innate, genetically determined factors differentially associated with social class play an important role, the differences in background inevitably lead to differences (given our present system) in access to educational resources, differences in parental attitudes towards education, towards sex-stereotyping and towards the occupational aspirations of offspring.

Although taken overall, certain predictions can be made on the basis of social origin (both in terms of parental occupation and location), the complexity of the interactions occurring between these factors make it difficult if not impossible to tease out causal connections.

The fact that the crude categories used in most surveys of class cover many different sub-groups makes the task more difficult still, and while it is possible to say (for example) that middle-class parents are likely to hold certain liberal views to a greater extent than are working class parents, one would not necessarily expect social workers, hospital consultants, computer programmers and small-businessmen to have identical aspirations for their offspring or similar views on child-rearing practices.

The present study therefore includes separate measures of the components of background - eg education of both parents, geographical origin etc.

**Family related background variables, other than SES**

Other variables which have been studied in relation to occupational choice include the employment status of the parents, ie employed versus not employed, rather than a comparison of different socio-economic backgrounds. This is a rather complex area, since whether or not this has a direct effect on the young person, it most certainly does upon the parent in question, and therefore upon their

interactions with spouse and offspring. Since both un- and non-employment are associated with an above-average propensity to psychiatric disturbance (although the directionality of the relationship is unclear), and the unemployment of a family member cannot be presumed to be independent of that of another family member resident in the same household, since the availability of employment in the area will affect both, although not necessarily to the same degree, the relative effects of direct and indirect influence cannot readily be separated.

The evidence for a relationship between employment status and mental health within Britain comes mainly from the Sheffield MRC/ESRC team; Stafford, Jackson and Banks (1980); Stafford and Jackson (1983); Banks, Jackson and Stafford (unpub); Banks and Jackson (1982); Warr (1983); Warr and Jackson (1983); Warr and Jackson (1984); Warr, Jackson and Banks (1983); and Warr and Parry (1982 a,b).

Within dual-career families, different factors influence the mental health of husbands and wives; Sekaran (1985) found that while both life satisfaction and job satisfaction had direct influence upon the health of husbands, life satisfaction, multiple

role stress and number of children were related to the mental health of wives. The fact that the number of children was positively related to the mental health of wives means that the presence or absence of siblings is likely to influence individuals in an indirect, as well as a direct manner, being mediated by the effect of their presence upon the mother.

The presence or absence of siblings, and if present, their sexes and relative ages is also a relevant factor for consideration.

#### School type

The vast majority of children in Britain between the ages of five and sixteen attend school, and those that do not are so atypical as to be beyond the scope of this study.

The type of school is therefore an important source of potential influence on a young person, and while not necessarily independent of social background must be considered separately.

The sex composition of a school affects its

pupils in various ways - see above. Additionally, a school may be State sector or private (including the so-called Public schools), and selective or non-selective.

Bell and Perret-Clermont (1985) have considered the socio-psychological impact of school selection and failure (including chronological retardation), and the interested reader is referred to their article; their main findings were that failure in school, as operationalized by assignation to the less prestigious streams, was reflected in a tendency to attribute their position to the school authorities, whereas the academically successful attributed their success to their abilities. The implication made was that such ascriptions of causality might be generalized to result in a lowering of self-esteem and perceived self-efficacy which could have potential long-term consequences in terms of self-presentation and expectations. The school emphasises an individualistic interpretation of scholastic failure by reference to the pupils' characteristics such as lack of ability, achievement motivation, interest and attention, an interpretative schema which fails to explain the close interrelation between social origin and school success often

observed by sociologists (for example, Alexander, Cook and McGill, 1978; Halsey, Heath and Ridge, 1980; and Boudon, 1974).

Again the factors which result in a child's attending a particular institution are not independent of other social factors. While financial factors are involved in the "choice" between State and private sector institutions, it cannot be assumed that only the rich send their children to private schools. However, atypicality in any form may generally be taken to indicate that some thought has been given to the matter, rather than it being seen as the "normal", or obvious thing to do. That is to say, attendance at a private school can be taken as evidence that the parents are either affluent, moving in a sphere where private education is the "norm"; highly concerned regarding the child's education, or in unusual circumstances; or that the family is in some way fragmented.

Again, the fact that a school is notionally non-selective does not mean that its places may not be competed for, and even when catchment boundaries are strictly adhered to, the affluent and motivated parent is hard to exclude. The size

of school, and the size of its sixth-form are factors which are likely to affect the availability of different disciplines and combinations of disciplines; while the actual availability will be a function both of the logically possible available subjects and the policies of the school - the attitudes held by the head or demanded by parents - by and large, the larger the school, the greater the resources available.

In summary, it has been demonstrated that there are firm grounds for the inclusion of variables concerned with demographic factors, especially sex, perceived sex-role appropriateness of an occupation, social class, location within Britain, family background and factors related to school experiences. Since there is a body of evidence for the influence of each of these, it remains to be seen in what way they interact with one another.

### 1.3 Ginzberg, Ginzburg, Axelrad and Herma's Theory

The interdisciplinary approach adopted by Ginzberg, Ginzburg, Axelrad and Herma (1951) has resulted in one of the most influential theories of occupational choice; although in recent years it has been subjected to much criticism, and might be viewed by some as having been superseded by Super's work no account of the historical background to the present state of the art would be complete without giving this theory the consideration which it deserves. The team consisted of an economist, a psychologist, a psychiatrist and a sociologist, and their theory stemmed directly from their empirical observations of the events influencing vocational selection. Their theoretical formulation was perhaps a reaction against the atheoretical position of vocational psychology at that time, and is a developmental stage theory in which a sequence of invariant phases follow one another in a uni-directional manner. Four main factors are central to an appreciation of the theory; the reality factor, the educational process, emotional factors and individual values, and the entire process is characterized by a series of compromises made by the individual between his wishes and the



available possibilities. To summarize the theory simply, vocational choice is seen as an irreversible decision-making process, occurring in reasonably clearly marked periods; the major periods have been called the Fantasy, Tentative and Realistic periods, and the Tentative period has been further subdivided into the stages of Interest, Capacity, Value and Transition. The Realistic period has also been divided into three stages; Exploration, Crystallization and Specification.

(Ginzberg et al.'s theory has been considerably refined by Tiedeman and O'Hara (1963) into a more complex system which they feel more closely reflects reality; nonetheless their debt to their predecessors cannot be readily dismissed.)

Before proceeding with a more detailed exposition of the above enumerated periods of the Ginzberg, Ginzburg, Axelrad and Herma theory it should be observed in passing that the sample from whence it was derived was by no means typical of the general population; nor was it intended that it should so be; an intentional effort was made to select for study a group who would be relatively unhampered by pragmatic constraints upon their choice,

the underlying assumption being that such individuals would reflect the "purest" features of the process. Thus the sample was composed of white, Anglo-Saxon Protestant or Catholic boys from middle or upper class backgrounds who retained both parents, were of above average intelligence, were emotionally stable and whose parental income was, in the 1940s, between 10 and 12 thousand dollars.

The first stage, the Fantasy period, is one in which the child gradually moves from what has been termed a "play orientation" towards a "work orientation"; initially vocational preferences are enunciated upon the basis of intrinsic, interest factors, but gradually extrinsic factors, such as social reinforcement come to play a part. According to Ginzberg et al., children state clear vocational preferences which are reflected in their play, and based upon what has been referred to as "function pleasure". Towards the end of the Fantasy period, a reorientation occurs in the direction of a preference for vocational activity which leads to accomplishments which will result in abstract satisfactions; the child seeks out activities with potential to bring about extrinsic rewards such as parental approval, money and so on. Within the

Fantasy period, in general, reality is ignored, and no account is taken of the child's abilities or potentials, neither is any consideration given to the question of timing.

The Tentative period, which occurs between roughly the ages of 11 and 18, is divided into three stages, each with different developmental tasks. During the Interest stage, the child begins to delimit the area of choice on the basis of his recognized interests, those activities liked and disliked, and choices are tentative, with the recognition that subsequent developmental changes may be of relevance. In the second stage, that of Capacity, children begin to evaluate their abilities in the areas of interest. The Value stage, occurring at approximately 15 years of age, shows a marked change in orientation towards an emphasis on normative beliefs; occupations are considered not solely on the basis of the extent to which they will provide the chooser with interesting activities but also in terms of, for example, their benefits to society. If idealism is to occur, it is at this stage that it will do so. The individual also begins to acquire a clearer notion of the differing life-styles associated with various occupations, and

begins to develop the idea of specific abilities that may be of occupational relevance. Additionally, the individual begins to see the matter in a broader time perspective as the core component of his day to day actions for many years. By this point a sense of urgency may have emerged, due to the necessity of making a decision. The final stage of the Tentative period is the Transition period, in which the individual faces the need to make and implement a vocational decision, and assumes a greater awareness of the externals of occupations.

The Realistic period, which was seen to be of even greater variability in its timing, opens with the Exploration stage, in which the college student, while having narrower aspirations than formerly still retains a certain degree of flexibility vocationally [it must be remembered that the sample was by no means typical, and that this process would have of necessity to have been condensed or abridged in the case of boys of lower ability from less affluent backgrounds]. At the Crystallization stage, the student will be committed to a particular major field, and will have a fairly clear idea as to the occupations which they wish to avoid. The process of sequential delimitation culminates with the

Specification stage, in which a specific job is selected.

As with most theories, the theory put forward here is appropriate only to a privileged academic elite; for the average person, specification of a job must occur at or before the time at which they leave the educational system. The job thus specified may not be ideal, but failure to indicate a preference will inevitably result in unemployment.

#### 1.4 Holland and the Person/Environment Matching Approach

Despite the criticisms which have been levelled, perhaps with some justification, at Holland's theory of occupational choice as a person/environment matching process, it must be admitted to have a certain degree of plausibility. In brief, Holland postulates that personality can be described in terms of six attributes arranged around the sides of a hexagon and summarized by a three-digit code (e.g. SAI), and that environments likewise can be so described. The extent to which the code of the person is similar to that of the environment in which they are, or which they aspire to enter can be defined as CONGRUENCE (Holland, 1973), and much research has been conducted with the aim of ascertaining those factors associated with congruence of choice, both as predictors and as outcomes.

However, although a considerable amount is now known about organizations and their "climates", it is over-optimistic to infer that each job can be readily assigned to a category code; certainly similar jobs occur in a wide variety of organizations, and thus the job context may differ considerably from one position to another. In the case of a

large, bureaucratic organization, the immediate contextual climate in which one job incumbent works may have little in common with that of a colleague, supposedly engaged in the same occupation.

Furthermore, it seems reasonable to suppose a differential effect of climate upon workers as an interaction of climate, job involvement and the salience of organizational factors. To attempt any matching, then, becomes of questionable validity, and may be seen to fall in the same tradition of that of Cattell, Parsons, Connelly and the other prominent personality/interests theorists.

In a sense, Holland's approach depends, as does that of Super, on the notion of self-concept; indeed, it might be said of all such approaches as are dependent upon the self-report of the individual. The two theories are not then, necessarily in opposition, although there are areas of both overlap and consensus. More salient criticisms to have been levelled at Holland include the accusation of sexism, and flawed methodology.

Certainly, the use of the Self-Directed Search has value as an exploratory instrument, and may

well prove a fruitful basis for dialogue between the counsellor and his client; it could be said that exposure to any item likely to broaden the possibilities of which the client is aware has its uses in the guidance context.

At this point, however, it is worth raising the "Minimax vs. Maximum" question as to whether it is better to broaden a person's horizons (or at any rate, to make him aware of possibilities irrespective of their suitability), or to concentrate upon narrowing down myriad options until they assume more manageable proportions. Is it better to attempt to find the best of all outcomes, or simply to minimize disliked consequences? It must further be borne in mind that the choice process is not solely a function of the individual but involves the multiply-layered choices of numerous others who may have little regard for the evaluation placed upon their decision by those affected.

The importance of the self-concept in the decision-making process is beyond dispute, although the way in which it may be elicited and subsequently utilized undoubtedly varies; this point has been quite explicitly made by Heriot (1984), who goes



so far as to advocate the use of the self-concept by the selectors of graduates. He argues, rather persuasively, that since the applicant cannot readily know the future self-concept (i.e. concept of oneself at some future date) which the selectors have in mind, such an approach is less amenable to faking, or to compliance. One drawback however is the difficulty of determining whether the self-concept reported would objectively be compatible with the long-term needs of the organisation entered, that is, the problem of criterion, and there is as yet no reason to presume that a clearly elaborated self-concept and the inclination to display such would be associated either with subsequent job performance or with the probability of turnover. Indeed, it might be the case that such clarity at the time of application would be negatively related to flexibility. The possibility of censorship on the part of the applicant would continue, with views of self seen as unlikely to win the approval of selectors being withheld. Perhaps such an approach provides a measure of the individual's motivation to procure a job offer, or his interpersonal sensitivity, and these may quite possibly provide predictors.

Indeed, the notion of the self-concept, despite

the attendant difficulties of definition, might be said to be central to the modern (i.e. post-war) perspectives on vocational choice. As early as 1909 one can see the precursive approach to the more explicitly elaborated expositions of such theorists as Super, Starishevsky Matlin and Jordan (1963); Rogers (1951); Bannister; Kelly; Erikson; and Gergen (1971); and Osipow, in his (1971) review, concluded that the research data firmly supports the view that self-concept plays an important role in occupational preference.

Super (1951) saw vocational development as a compromise process in which the self-concept is a product of the interaction of inherited aptitudes, neural and endocrine make-up, opportunity to play various roles and evaluation of the extent to which the results of role-playing meet with the approval of superiors and fellows.

This approach in which the vocation is intrinsically associated with the development of the individual must be seen against the matching approach associated with much of traditional guidance, where the person is taken as a relatively static entity separate from, although involved with,

his actions. The incorporation of such a humanistic and universalistic world-view into the mundane context of "Getting a job" naturally results in the automatic assumption that it is a matter of the greatest importance that an individual is concerned about his anticipated entry into the labour market, his subsequent progress within it; that he approaches the awe-full decision points with due reverence and a full realization of the magnitude of the task before him. Should there be doubt on this matter, his "Readiness to Make Career Decisions" can be tested, and his "Career Maturity" assessed. "Vocational Decidedness" is presented as typifying the mature and well-adjusted individual, and research resources are dedicated to the defence of the Protestant work ethic, documenting the vast array of evil consequences arising from unemployment without, in many cases, according due weight to the concomitant evils of poverty, stigmatization and isolation. Lack of employment per se is assumed to be a causative factor, and the correlates are insufficiently teased out. Similarly, "Career Undecidedness" is frequently presented as a clinical syndrome in its own right, from which the sufferers must be delivered. A quick perusal of recent issues of "The Journal of Counselling Psychology" will

reveal evidence of this "Medical Model" approach to guidance.

To return to the original exposition of Holland's theory, however....

Holland's theory has gone through a number of refinements since his first exposition in 1959, which itself rested to a certain extent upon his (1958) personality inventory employing occupational titles. In 1966, he produced a more systematic statement of the ideas previously advanced (Holland, 1966b), in order to provide more explicit definitions of the main concepts, to provide more comprehensive formulations and to "attract the help of other researchers" (Holland, 1973). The version which he propounded in 1973 was clearly a more systematic and intelligible theory, and since then he, and many others, have been active in producing a wealth of quantitative data bearing upon the matter.

The third (1973) statement of the theory is more fully a theory of careers rather than solely of choice, and can be seen to deal more completely and successfully with vocational problems throughout a person's life: the choice of vocation, work

history and occupational achievement. In this, he perhaps foreshadows Super in adopting a life-span approach, although, of course, it has been left to Super to provide a fuller life-span developmental approach.

Holland's theory is in the tradition of typologies of personality, but differs in that

- (a) It is a typology both of persons and of environments
- (b) It has been revised in response to data
- (c) All-or-none distinctions between types have been replaced by degrees and patterns of resemblance to models, so that the theory can more successfully cope with the infinite complexities of human behaviour
- (d) The concepts of learning theory have been employed in order to cope with the processes of development, stability and change
- (e) All major concepts have been given empirical definition, and
- (f) A spatial model has been utilized to coordinate all the concepts in the theory.

The primary, and indeed laudible, concern of the theory is "To explain vocational behaviour and suggest some practical ideas to help young, middle-aged and older people select jobs, change jobs, and attain vocational satisfaction..." and it is also concerned with "personal competence, educational behaviour and social behaviour" in as much as these may be seen as a natural outcome of the theory's development.

The theory consists of several simple ideas and their more complex elaborations.

- (a) People can be classified by their resemblance to each of six personality types: realistic, investigative, artistic, social, enterprising and conventional (R,I,A,S,E and C respectively).
- (b) Environments may be characterised by their resemblance to ideal type environments using the same set of categories.
- (c) The pairing of persons and environments lead to predictable outcomes including vocational choice, stability, achievement, personal competence, social behavior and susceptibility to influence.

Four assumptions are used by Holland, and may be said to constitute the heart of the theory.

These are:

1. Most people can be categorized as one of the six types, R,I,A,S,E or C.
2. Environments can be classified on the basis of the same typology.
3. People search for environments that will let them exercise their skills and abilities, express their attitudes and values and take on agreeable problems and roles.
4. A person's behavior is determined by an interaction between his personality and the characteristics of his environment.

Four supplementary assumptions are also used:

1. **Consistency.** Within either a person or an environment, some pairs of types are more closely related than are others, and the degree of relatedness is assumed to affect vocational preference.
2. **Differentiation.** Both people and environments may be defined with greater or lesser clarity;

they may, to a greater or lesser extent, resemble a pure type.

3. **Congruence.** Different types require different environments, and congruence is an expression of the similarity between the actual and ideal environment on the basis of the above typology. Incongruence is said to occur when, for example, a Social type finds himself in a Realistic environment, rather than in the appropriate Social environment. (The degree of congruence is related to the proximity of the category when all six are arranged around the sides of a hexagon.)
4. **Calculus.** The relationships within and between types or environments can be ordered according to a hexagonal model in which the distances between the types or environments are inversely proportional to the theoretical relationships between them. This spatial arrangement provides explicit definitions of both consistency and congruence, and in this way the internal relationships of the theory are defined and organized by a single geometric model (Holland, 1973).



(It is curious to observe in passing the extraordinary fascination held by such spatial models for enthusiastic theoreticians, cf Roe's tubular model and the semicircle of Super's later work.)

The typology put forward by Holland, although derived from empirical observation, is not dissimilar to that of Guilford's (1954) factor-analytic study, and considerably earlier, Darley (1938), put forward the potential utility of organizing occupational knowledge according to occupational stereotypes. There is reason to suppose that six categories are probably about the maximum number which can readily be utilized, cf Miller (1954). The types put forward are also in some ways analogous to those of Spranger (1928), Adler (1939), Jung (1933), Fromm (1947) and Sheldon (1954), but differ in their origin and empirical definitions. The characterization of environments stems from the work of Linton (1945), who suggested that a major part of the force of an environment is transmitted through other people, and environments are categorized on the basis of the distribution of types within them, rather than of, for example, structures, a procedure which carries a certain risk of circularity. Holland

has employed this technique to provide an instrument to describe college environments, the Environmental Assessment Technique (Astin and Holland, 1961).

Murray's (1938) formulations of personal needs and environmental pressures provided the immediate stimulus to Holland for the assumption that a person's behavior depends both upon personality and environment, although it would appear to be self-evident that environmental possibilities and constraints provide a moderating influence on behavior; one presumes that Holland could not seriously have contemplated otherwise.

Further principles are regarded, by Holland, as highly plausible:

1. That the choice of a vocation is an expression of personality.
2. That interest inventories are personality inventories.
3. That vocational stereotypes have reliable and important psychological and sociological meanings.

4. That because people in a vocational group have similar personalities, they will respond to a wide variety of situations and problems in similar ways, and will create characteristic interpersonal environments.
5. That vocational satisfaction, stability and achievement depend upon the congruence between a person's personality and his environment.

#### A brief description of the six personality types and their origins

In his description of the personality types and the way in which they develop, Holland adopts an interactive approach; although he does not enter into any discussion of the possibility that to some extent, at least, personality is influenced by genetic factors, he explicitly recognizes that parental personalities and attitudes provide the child with its earliest, and perhaps most influential environment, and in its youth permit or deny the possibility of other sources of influence.

To a limited extent, the child influences its own environment by virtue of the demands which it

makes and the responses which its behaviour elicit from others. Thus the personality cannot be seen in isolation from its environment, but must be envisaged as an ongoing process of adaptation. The six types of personality put forward by Holland represent "Ideal Types"; a person is most unlikely to have all the characteristics of one, and none of another, but will show a tendency to resemble one type to a greater extent. In passing it might be observed that, as with the concept of androgyny put forward by Bem (1980), this results in two factors; dominance of one type vs. a lack of differentiation, and the strength of similarity. To continue the analogy, where Bem has "Masculine" and "Feminine" Holland would have each of the six types, and the dominance of a specific type recalls her distinction between the "Androgynous" person who displays features from both categories to a considerable extent (that is, both masculine and feminine) and the "Undifferentiated" person who shows few characteristics from either category.

### **The Realistic Type**

Holland's description of the realistic type includes the preference for interaction with the

material world of objects, tools, machines in an orderly, systematic manner, avoiding the need for social competencies; the realistic type perceives himself as possessing mechanical skills, uses down to earth skills to solve problems and values concrete things and tangible personal characteristics. Thus he is likely to appear frank, masculine, practical, materialistic, stable and lacking in insight.

Curiously, Holland gives the example of a craftsman, although one might expect that crafts shared many similarities with the expressive, material world of the physical arts, such as sculpture and painting.

### **The Investigative Type**

The description of the investigative type reads like the archetypal scientist of horror movies; he

...prefers activities which entail the observation of physical, biological and cultural factors in order to control such phenomena...has an aversion to social, persuasive or repetitive activities, and acquires mathematical skills...he perceives himself as scholarly and intellectual...and is apt to show himself to be introspective, critical, precise, pessimistic, independent and unpopular.

### **The Artistic Type**

Here again we have the stereotypic person, in this instance, the bohemian, creative, moody artist of fictional representation, disorderly, impulsive, emotional and nonconformist.

### **The Social Type**

The social type enjoys the manipulation of people; unlike the investigative type, however, his dealings with them are generally positive; to train, inform or cure them, and his social skills are developed at the expense of practical and intellectual abilities. He sees himself as helpful, and values social and ethical activities and problems. He also has an aversion to systematic activities, and is generally seen as cooperative, generous, sociable and tactful.

### **The Enterprising Type**

This personality type shows a preference for activities that involve the manipulation of others for economic gain, and sees himself as aggressive, having leadership abilities, sociable and lacking

scientific competencies. He values political and economic achievement, and despises the aesthetic and sensitive.

Matteson, Ivancevich and Smith (1984) draw a parallel between Holland's Enterprising type and Friedman and Rosenman's (1974) Type A personality, citing Stanton and Buskirk's (1978) description of the successful salesperson as being typified by six attributes; (1) A high level of energy (2) Abounding self-confidence (3) A value system marked by a hunger for money, more status and a better standard of living (4) A habit of working hard (5) A habit of perseverance and (6) a tendency to be very competitive. This is in keeping with Holland's allocation of the sales occupations to the Enterprising category. However, Matteson et al. found no difference between Type A and Type B sales personnel on three measures of job performance and one measure of job satisfaction, and suggested that possible explanations for this could include the lack of interpersonal competencies associated with empathy, the fact that aggressive approaches may be counter-productive in certain types of selling situations and the higher level of stress-related health problems, despite a tendency amongst Type A's

to deny problems (Glass, 1977).

### The Conventional Type

The conventional type shows a marked attraction towards order and systematic skills involving data; he is in antagonism to ambiguous situations, and somewhat resembles the dogmatic F personality of Adorno et al. (1954). Each type uses their specific behavioural tendencies in solving problems both at work and in other situations.

A person can be assigned to a personality type, and, additionally, his profile of scores on each (using Holland's Vocational Preference Inventory, Holland, 1965) represents his personality pattern. A person's profile, using the three-point coding system, would give the three types, in order, to which he was most similar, e.g. SAI would indicate that a person's strongest similarity was to the social type, the second strongest similarity was to the artistic type and the third strongest similarity was to the investigative type. This coding makes no reference to the absolute degree of each, or the interval between S and A or A and I. Thus it cannot readily be seen to what extent a



person is differentiated.

### The Environmental Models

Holland's view of environments rests heavily on Linton's (1945) model, which suggests that a major part of a person's environment is transmitted through other people, that the character of an environment reflects the nature of its members and that its dominant features reflect those of its members. However, environments are rarely, if ever, homogeneous, and impinge upon the consciousness of the individual to a greater or lesser degree. Thus it is also of importance to be aware of the perceived psychological field in which the person operates.

The descriptions of the environments given by Holland reflect and parallel those of the personality types, and focus on activities, competencies, perceptions and values. In short, a realistic environment is one containing a preponderance of Realistic persons, as described in the preceding section, an Artistic one, a preponderance of Artistic types and so on.

(It therefore follows that should anything occur to influence the recruitment process and disturb the balance of types within an organization or occupational group then the environmental classification will be liable to change. Thus, although in 1973 accountancy might have been characterized as a Conventional occupation, the increase in graduate unemployment might well have resulted in non-Conventional personality type students seeking entry to it, with a consequent shift in the characteristics of the environment. It therefore follows that the assignment of any job or occupation to a classificatory category is essentially ephemeral. Furthermore, changes within an organization or industry, such as the introduction of new technologies, may affect the skills which the incumbents of that organization are called upon to practise, irrespective of their preferred styles of dealing with environmental problems.)

Holland has cited numerous validation studies to demonstrate the homogeneity existing within occupational groups, which it is not proposed to discuss in detail; at the time in question certainly, the categories seemed to be empirically supported, but as has already been observed, the force of market

influences has yet to be integrated into the model, and no longitudinal studies using the Vocational Preference Inventory or the Self-directed Search would appear to be available as yet.

In his discussion of the practical applications of his theory, Holland returns to the work of Parsons (1909), and concludes that the goal of vocational guidance is still to help people to find fulfilling jobs that they can do well, and that the only significant shift in viewpoint has been towards seeing the processes of vocational behaviour and decisions in a developmental context, and it must be observed that at no point did Parsons himself deny this. It is discouraging to think that so little should have been accomplished in seventy-five years.

#### The Self-Directed Search

The Self-Directed Search (SDS), (Holland, 1970) is a self-administered instrument to facilitate the process of occupational choice, and is primarily oriented to the requirements of high school students. It consists of five main sections: Occupational daydreams, in which the user is asked to list

occupations which he has considered, either as realistic possibilities or as daydreams; Activities, in which he works through a checklist of activities organized under the R,I,A,S,E and C headings, indicating whether he likes or dislikes each; Competencies, which has a similar format to Activities, Occupations, in which he works through a list of job titles, indicating whether or not they appeal; and Self-Estimates, in which he compares himself with peers on Mechanical, Scientific, Artistic Teaching, Sales and Clerical Abilities (corresponding to the RIASEC categories respectively).

The user scores his replies using the Occupations Finder, in which the 456 most common occupations in the U.S. are arranged in a system that uses the code letters RIASEC in triads, assigns a number corresponding to the educational level required by each, and gives the DOT (Dictionary of Occupational Titles) six-digit code.

The scores on the various sub-sections are integrated to produce a final summary code, e.g. SAI, ASI, RCE etc. This allows the user to return to the occupations finder and consider the job titles under that heading, and at an appropriate occupational level.

While the SDS is undoubtedly of value in providing a systematic framework for exploration, a number of criticisms can, and indeed have, been levelled at it. One major criticism which has been made is that it is sexist, and reinforces existing stereotypes. While it is not proposed to dwell at length on the various articles on this topic, the interested reader is referred to the vitriolic interchange of papers between Prediger, Cole, Hanson and Holland; e.g. Prediger and Hanson (1976 a,b); Prediger and Lamb (1982); Prediger (1980); Prediger (1981); Holland (1975; 1976; 1981; 1982) etc.

One of the ways in which this sexism is manifested is in the activities listed as Realistic; these are: "Fix electrical things", "Repair cars", "Fix mechanical things", "Build things with wood", "Drive a truck or tractor", "use metalworking or machine tools", "Work on a hot rod or motorcycle", "Take shop course", "Take mechanical drawing course", "Take woodworking course" and "Take auto mechanics course". These activities are socially considered appropriate only for males, and thus it is almost impossible for a female to obtain a high score on R. It does not include the practical skills which are socially acceptable for females such as dress-

making and pattern drafting, although these are informally considered as good predictors of engineering ability in women (Clarke; informal communication, 1984).

Similarly, the activities listed as "Social" are primarily conventionally feminine activities, such as "Write letters to friends", "Attend religious services", "Take care of children", rather than masculine equivalents such as going down the pub with mates. The Investigative activities are strictly limited to the hard science (e.g. "Build model rockets", "Take physics course"), rather than including other intellectual research possibilities. This means that males and females are unequally distributed amongst triadic codes, with males being primarily in the Realistic, Investigative and Enterprising categories and females in the Social, Conventional and Artistic categories (for some obscure reason typically feminine artistic activities such as needlework and other crafts are not included here, pushing the unfortunate women further into the Conventional and Social categories. The educational levels are not equally distributed amongst codes; the levels range from 1 and 2, which require only high school education, through 3 and 4, which

require some technical, college or business training to 5 and 6, which require college/university level qualifications.

The Investigative occupations typically require the highest levels of education, being mainly at levels 5 and 6, whereas the Conventional occupations are typically at levels 3 and 4. Social and Artistic occupations are typically 4 or 5 and Realistic, which offers the widest choice of titles, is typically 3 or 4. Enterprising is primarily 4 or 5.

Further, even where the educational level required is similar it does not follow that the job carries comparable status or remuneration, nor that the prospects are similar.

In assisting the choice process it would seem only responsible to consider such factors as the difficulty of entering the various occupations, the long-term state of the occupation and the prospects for advancement and/or security. The SDS take no account of this, and lists such jobs as Fashion Model and Entertainer as the only possibilities for a female obtaining a code of AES. (The category also contains "Advertising Man" and "Public

Relations Man", rather than gender-neutral synonyms.)

The male obtaining a code of SAC is also in an unfortunate position, since the four jobs thus classified are Cosmetologist, Electrologist, Hair Stylist and Manicurist.

However, the limitations of the occupation finder are not insuperable, since further DOT (or, for British users, CODOT) titles could be translated into Holland codes, using the table available (Holland, 1973, Appendix E). More serious is the tendency to direct individuals into socially approved occupations consistent with stereotypes, taking no account of the realities of the labour market.

While the shortcomings of the SDS are insufficient to invalidate Holland's theory, they weaken his case. A further criticism is his static approach; it is difficult to envisage, for example, how the theory would attempt to cope with, for example, mid-career changes in direction. It takes no account of developmental changes, nor of differing levels of career salience or centredness. By an over-focussing on activities and (by implication) job content, it neglects the fact that every occupation



occurs within a social context, which may be, for some at least, equally or indeed more important. Holland might argue that since different Types are disproportionately to be found in different fields, the social matrix surrounding the job has been implicitly stated, but this is by no means necessarily the case; the working conditions of, for example, a personnel manager will differ according to the size, objectives and policies of the organization for which he works.

Holland's theory has stimulated a considerable body of research; for example, Barak and Rabbi (1982) attempted to test Holland's hypothesis of consistency, looking at the extent of persistence with majors and the achievements attained by undergraduates; Benninger and Walsh (1980) looked at the relevance of Holland's theory to non-college-degreed working men and women; Bruch and Krieschok (1981) compared Investigative and Realistic types' adjustment in theoretical engineering majors; Crawley (1979) looked at work environment preferences and self-concept in the light of the theory; Erwin examined the predictive validity of the construct of consistency advanced by Holland; Viernstein (1972) developed a method for estimating the codes corresponding

to each of the 20,000 occupational titles listed in the US department of Labor's (1965) Dictionary of Occupational Titles; Gottfredson and Brown (1978) provided Holland codes for the detailed occupational titles used in the 1960 and 1970 censuses; Gottfredson, Holland and Gottfredson (1975) showed that over 50% of the jobs in the USA can be classified as Realistic, whereas only 2% are Artistic; Career stability (Gottfredson, 1977); age, sex and time differences in employment (Gottfredson and Daiger, 1977) and racial and income differences (Gottfredson, 1978) have all been investigated using data grouped according to Holland categories; Guthrie and Herman (1982) looked at the relationship of vocational maturity to Holland's theory, finding both age and congruency to be related to vocational maturity as measured using Crites' Career Maturity Inventory; Prediger (1982) looked for a link between occupations and interests, and produced a number of articles (Cole and Hanson, 1975; Prediger and Hanson, 1974a; 1974b; Prediger and Hanson, 1976; Prediger, 1976b; 1981; 1982a; 1982b) concerning the sex-fairness or unfairness of the SDS, which were replied to by Holland (1975; 1982), who asserted vehemently that Prediger et al. had misinterpreted his theory, and read into it things which were not there, had

used poor analyses based on "gerrymandered scales which are grotesque" and preferred "methodological argument, rather than direct tests of their hypotheses". It is strongly suggested that the interested reader refer to the articles in question!

McGowan (1977) looked at Vocational Maturity and anxiety among vocationally undecided and indecisive high school students, and found the SDS to be effective in reducing career indecision but not anxiety, and to produce no increase in vocational maturity; a follow-up study (McGowan, 1982) lent some support to the validity of using SDS summary codes to predict eventual career decisions, as 21.4% had made career choices predicted by their primary summary codes, and a further 51.2% had made choices predicted by their secondary summary codes, leaving only 27.4% whose career area was not predicted by either primary or secondary codes.

Meir and Hasson (1982) examined the congruency between Holland personality type and environment type as a predictor of stay in an environment, looking at rural settlements, "Moshavim", in Israel (these organizations are similar to Kibbutzim). Since the Moshav is a total institution, the

compensatory aspects of an urban environment are not available to the individual member who may find himself incongruent with the environment, and lacking such compensatory processes the only available options are either to adjust to the environment or to leave the settlement. They found that the tendency of nuclear families to stay in the settlements was correlated with the extent to which each of the partners' personality type was congruent with the modal personality type of his or her sex, but that couples with both partners congruent did not differ in their intentions to remain from those couples with only one congruent partner, a finding which they interpret as meaning that the congruent partner exerts a dominant influence in the direction of staying which is reflected in their partner's intentions.

Periano and Willerman (1983) looked at personality correlates of occupational status according to Holland types, using Cattell's 16PF questionnaire on a sample of employed adult males participating in a large adoption study. These men were drawn disproportionately from Holland categories, underrepresenting the population in their membership of Realistic occupations (25% compared with a

national figure of 82%) and overrepresenting the Investigative, Social and Enterprising occupations.

They found that, within occupational types only the 16PF factor "cortertia" was significantly related to status, and across personality types only "Anxiety" was significantly associated with status, an effect due solely to the Social group. However, the personality factors associated with occupational types were generally consistent with Holland's theory.

Spokane (1979) examined the validity of the Holland categories for men and women and found only modest sex differences which could be attributed to the use of raw rather than normalized scores, and differences in predictive validity according to personality type. His predictive validity of 34.4% for women, and 39.7% for men is in line with the other studies which have been conducted, although this does not seem especially high.

Spokane and Derby (1979) looked at the relation between congruence and satisfaction in college women, and found that, while congruent women were more consistent in their occupational choices and reported

higher levels of certainty, there were no differences in satisfaction between congruent and incongruent women.

Varca and Shaffer (1982) looked at the stability of avocational interests in college students, whom they were able to follow-up after a nine-year interval. They found significant differences between groups in the leisure interests pursued by asking subjects to rate their activity in 8 categories of leisure pursuits presumed to be comparable to Holland environments.

To summarize: Holland's theory has the virtue of clarity, but would seem a simplistic approach to the complexity of the occupational choice process. It does not provide an account of the process of choice, nor the factors which influence the person choosing. It lacks the richness of the Life-Span approaches, and the accuracy of the Expectancy-Value/SEU theories.

## 1.5 Behavioural Decision Theory

Any discussion of occupational choice would be incomplete without a brief mention of the decision theory approaches; since the techniques employed in relation to this are inappropriate to the survey method adopted in the current research, it is not proposed to provide a detailed review of the extensive literature which has been generated in this area, and the interested reader should refer to the original sources. Several review articles and collections of readings provide an accessible introduction to the topic.

The basic notion underlying the various formulations of decision theory (For example, Edwards, 1954; Fishbein, 1975; Vroom 1964) is that people hold "values" or "utilities", and can assess the subjective probability of a given course of action leading to an increase in the level of total utility. In its simplest form, where one is concerned with a single value, the options believed to be available to the person choosing are considered with respect to that value, and the option which produces the greatest increase in that value will be selected.

For example, if the person was choosing between a number of different brands of cornflakes, and the relevant value was cost, the person would be expected to choose the cheapest, whereas if the pertinent value was taste, a different brand might be selected as having the greatest probability of satisfying that criterion. Naturally, in most decisions, a number of criteria will be utilized.

In the process of choice, the factor determining which criteria will be employed is generally agreed to be the salience of the criteria to the desired outcome, and the aspects of the product which are salient will vary between individuals, and for the same individual over time. Similarly, the probabilities attached, being subjective, will also vary. Although certain probabilities are more objective than others, it is not the actual probability which is of relevance, but the believed probability, which may or may not correspond.

One of the better known expectancy-value models is that of "subjective expected probability" (SEU), advanced by Edwards (1954). Edwards has proposed methods for measuring the SEU of any given choice alternative; he measured the subject's expectation



that the choice of any given choice alternative would bring him a certain value (i.e. the subjective probability). This is formally expressed as  $SP_i$ : the subjective probability that the choice of a certain alternative will lead to outcome  $i$ . The subjective value of outcome  $i$  is also given a numerical position on a scale, and is symbolized as  $U_i$ , the subjective utility or outcome of alternative  $i$ . The overall subjective utility of any given choice can be assessed by calculating a summation of the probabilities of all relevant outcomes of any given choice combined with the values attached to those outcomes.

In equation form this may be stated as:

$$SEU = \sum_{i=1} SP_i U_i$$

Although Edwards' model was developed outside the realm of attitude theory, it can be seen to be expressing the relationship between beliefs (SPs) and attitudes (SUs).

Reich and Adcock (1976) stated that "It is difficult to predict specific behaviour by knowing someone's values and attitudes. The relationship

between these concepts and behaviour is tenuous"; however, the expectancy theorists are more optimistic about the matter, asserting that the relationship is not incalculable.

One of the fullest statements of expectancy-value theory has been given by Fishbein and Ajzen (1975). Essentially, this theory is operationalized through the use of paper-and-pencil tests. People are asked to assign numbers to their assessments of probability, their intentions and their assessments of the "goodness" or "badness" of various outcomes. Assessments as to the probable truth of statements, ranging from "very true" to "very untrue" are given numbers on a scale ranging from +3 through to -3, and the values and ratings of intention are treated in a similar manner.

The formal statement of Fishbein's theory is:

$$BI = Aactw1 + SNw2$$

where BI = behavioural intention, Aact = attitude to the act, SN = subjective norm and w1 and w2 = the regression weights of the equation to be empirically determined.

Further,  $Aact = \sum Biei$ , where Bi = belief about

the act; that is, the probability that the act is related to some other object  $x_i$ , and  $e_i$  = the evaluative aspect of  $B_i$ , that is, the respondent's attitude towards  $x_i$ .

The subjective norm (SN) component can be expanded:

$$NB = \sum SNB : Mc$$

Where NB = generalized normative belief, SNB = measured belief strengths of social normative beliefs and Mc = motivation to comply with the referent.

"Social" normative beliefs are beliefs about what other people expect one to do, and the people whose expectations are considered will depend upon the situation. Again, this is subjective, and may or may not be a realistic assessment of their expectations (if any).

Although clearly there can be an infinite number of beliefs about an act, the theory does not propose that all should be measured; it states that the beliefs which combine to form attitude are those which are "salient" at the time the attitude is considered for a given person. "Salient" beliefs are operationally defined as being the first beliefs which a respondent produces in response to an open-ended question such as "Tell me what you think about

(the act in question)".

There is reason to believe that it is the first seven or so beliefs produced in this way which are influential in forming attitudes (Kaplan and Fishbein, 1969; Thomas and Tuck, 1975), which may well be for reasons concerned with information-processing (cf Miller, 1956).

Other expectancy-value models have been advanced by various theorists; for example, Tolman (1932), Rosenberg (1956), Osgood (1957), Vroom (1964).

The main point which it is wished to make is that all these theories are concerned with the prediction of behavioural intention rather than with actual outcome, and the measurement techniques, by necessitating that individuals generate their own lists of salient beliefs are unsuited to the survey methodology utilized in the present piece of research, where the primary concern is on actual outcome, rather than on behavioural intention. A person's intention is by no means the same thing as their actual behaviour, since this will be partially determined by the environmental constraints acting on them (including the intentions held by others!).

The area of behavioural decision theory has stimulated a wealth of research, some, although by no means all, pertaining to occupational choice. Some researchers have focused upon alternative formulations of the process, comparing their predictive efficacy, others have concentrated upon small scale laboratory experiments while yet others have concerned themselves with particular occupational groups.

For example, Mitchell and Beach (1976) provided a review article of the then extant literature on expectancy theory and occupational preference; Matsui and Ikeda (1975) attempted to improve prediction by using self-generated outcomes, rather than a standard list; Muchinsky and Fitch (1975) looked at SEU and academic preferences; Muchinsky and Taylor (1976) manipulated components of the valence model; Parker and Dyer (1975) looked at the within-person decision-making process, and Peters (1977) provided an analysis and empirical test of cognitive models and expectancy theory.

Taylor (1977) utilized expectancy theory in his study of the sub-field choices of young engineering students, and Wanous, Keon and Latack

(1983) provided a further review of expectancy theory and occupational/organizational choice.

To summarize: behavioural decision theory can, under appropriate conditions, be a powerful predictor of outcomes; however these conditions are so restricted as to render the approach of limited usefulness in assisting career decision-making within the population as a whole.

## 1.6 Janis and Mann's Conflict Model of Decision-Making

There is an extensive literature on decision-making; e.g. Etzioni, 1968; Hoffman, 1965; Janis, 1972; Katz and Kahn, 1966; Maier, 1967; Miller and Starr, 1967; Simon, 1976; Taylor, 1965; Vroom and Yetton, 1973; Wilensky, 1967; Young, 1966; from this Janis and Mann (1977) have extracted seven major criteria that can be used to ascertain whether decision-making procedures are of high quality, and although they acknowledge that systematic evidence is not yet available, these criteria would seem to be imbued with a high degree of plausibility.

These are:-

The decision-maker, to the best of his ability and within his information-processing capabilities

1. thoroughly canvasses a wide range of alternative courses of action;
2. surveys the full range of objectives to be fulfilled and the values implicated by the choice;
3. carefully weighs whatever he knows about the costs and risks of negative consequences, as well as positive consequences, that could flow from each alternative;
4. intensively searches for new information relevant to further evaluation of the alternatives;

5. correctly assimilates and takes account of any new information or expert judgment to which he is exposed, even when the information or judgment does not support the course of action he initially prefers;
6. reexamines the positive and negative consequences of all known alternatives, including those originally regarded as unacceptable, before making a final choice;
7. makes detailed provision for implementing or executing the chosen course of action, with special attention to contingency plans that might be required if various known risks were to materialize.

Such vigilant information processing seems, to Janis and Mann, to be a necessary, albeit insufficient condition for obtaining a long term satisfactory outcome for the decision-maker.

Various decision-making strategies exist, and have been the subject of research. The optimizing strategy has been described as having the goal of selecting the course of action with the highest payoff, and requires the decision-maker to estimate the comparative value of every viable alternative in terms both of anticipated benefits and costs, in the context of the respective probabilities of the potential outcomes. This is a strategy rarely adopted; in all but the most clear-cut cases it entails so much effort and time to be spent, and



produces such an overwhelming surfeit of information that the individual is likely to suffer from what Miller and Starr, 1967, have referred to as "Information inundation", which is, they claim, as debilitating as information scarcity.

Miller (1956), set the limits for man's information-processing capabilities as  $7\pm 2$  bits of information, and this means that all relevant variables in a complex decision cannot be kept simultaneously in mind.

A further disincentive to the adoption of the maximizing strategy is the increasing costs associated with a more thorough review of the possibilities, to the point where it is counter-productive. A decision, even a bad one, may be better than to spend further time and energy in the choice process, particularly when there may be a critical time for the decision to be made.

Another strategy, and one which has been put forward by Simon (1976) as providing a description of most decision-making, is that of satisficing. This strategy consists of looking for an acceptable, but not necessarily ideal solution, and is economic

in terms of effort and time involved; the decision-maker simply reviews the possibilities sequentially as they present themselves, comparing each with a minimum acceptable solution and taking the one which is the first to meet his criteria, rather than then continuing the search. Clearly this is far less demanding in terms of information processing, and a strategy which will produce the quickest solution. Indeed, in its simplest form, this strategy can involve the use of a single criterion, and this is consistent with much consumer behaviour (see for example, Hansen, 1972).

A variant on the above is quasi-satisficing, which Schwartz (1970) describes as "moral decision-making" (NOT to be confused with moral decision-making a la Kohlberg et al.!), in which a single moral precept is used as the single decision rule, and the action is regarded, not merely as "good enough", but as the best possible action, or indeed the only possible action, under the circumstances. The greater the perceived responsibility for the situation, the greater the probability that this simple, normative approach will be adopted (cf the literature on altruism and bystander intervention, for example, Latane and Darley, 1970).

Although reliance upon a simple decision rule may make life simpler in the short term, there is always a danger, as George (1974) has pointed out, that this may lead to a premature choice that overlooks the less obvious negative consequences.

Both satisficing and quasi-satisficing differ from optimizing in a number of ways which have been enumerated by Janis and Mann:-

1. The number of requirements to be met - satisficing typically uses few, whereas optimizing uses a considerable number.
2. The number of alternatives generated - satisficing produces relatively few, while optimizing will typically produce many.
3. The ordering and retesting of alternatives - only optimizing examines and reexamines the alternatives in a systematic manner.
4. The type of testing model used - satisficing generally limits enquiry regarding each criterion to seeing whether it falls above, or below an acceptability cut-off, and tends to treat each cut-off point as of equal importance, rather than producing a weighted

additive model, as would be the case in optimizing.

These four factors are continuous in nature, and a decision-maker could fall towards the optimizing end of the continuum on one and towards the satisficing end on another, varying strategy with situation.

A more elaborate version of the satisficing approach is that of elimination by aspects, in which a hierarchy of criteria are sequentially considered, and the range of options progressively narrowed. By starting with the most valued criterion and working downwards, the final choice may rest upon the most trivial reason as the only factor differentiating between two or more acceptable alternatives. A danger is that the inclusion early in the sequence of an over-valued criterion may exclude quite satisfactory options which in fact would be better than that in fact selected.

The effect of a series of satisficing decisions may be incremental in reaching towards an optimizing outcome, while providing acceptable short-term outcomes of a less optimal nature. Following

Ginzberg et al. (1951), Janis and Mann suggest that for some individuals at least, occupational choice is handled in this way; that the person may not address the explicit problem of choosing a career, but by a series of series of shorter-term decisions find that, in effect, they have entered one. This stepwise, drifting process has been reported by Matza (1964) as typifying the careers of criminals, and a similar slide has been reported for the decision to marry (Waller, 1938). The road to hell is, they say, paved with good intentions!

A combination of rationality and "muddling" has been outlined by Etzioni (1967), and termed "Mixed scanning"; in this model, certain features of the optimizing approach are used for basis directional policy decisions, and an incremental, satisficing approach for the more minor decisions consequent upon policy.

Janis and Mann differentiate between "hot" and "cold" decisions; "hot" decisions being those in which the decision-maker has a high emotional involvement, and "cold" decisions being those of routine. "Hot" decisions frequently involve a degree of conflict and can be stressful to the point

where it becomes imperative to make a choice - any choice - to escape from the stress engendered by uncertainty. Experimental investigations of the physiological concomitants of decision-making show marked increases in autonomic arousal as the decision-point approaches, followed by a post-decision return to normal over the following period (see, for example, Gerard, 1967; Fleischer, 1968; Mann, Janis and Chaplin, 1969; Jones and Jackson, 1973). While low-level stress may facilitate action and decision-making, providing a necessary impetus, higher levels of stress have an adverse effect upon information-processing capabilities, and consequently upon decision-making.

Janis and Mann's conflict-theory model of emergency decision making is fairly straightforward, and is represented by them as a simple flow-diagram. The starting point is that of an authentic warning of impending danger. The first question to be asked by their model is

"Are the risks serious if I don't take protective action?"

If the answer to this is "no", the person enters a state of unconflicted inertia, i.e. does not take

action in response, since it is of no importance to do so. If the answer is either "yes" or "maybe", the individual may ask the second question;

"Are the risks serious if I do take the most available protective action?"

If the answer to this question is "no", the person may be said to take the route of unconflicted change, and carries out the protective action. If the answer is "yes" or "maybe", the third question is

"Is it realistic to hope to find a better means of escape?"

"No" leads to defensive avoidance, in which the person seeks to deny the reality of the threat, or adopts a fatalistic approach.

The fourth question, which presupposes the hope of a better means of escape is

"Is there sufficient time to search and deliberate?"

Should the answer "no" be forthcoming, hypervigilance or panic sets in, in which the person takes grossly inappropriate or inefficient action. The end outcomes of the above four responses are all defective should the threatened event occur. However,

should all questions receive the answer "yes" or "maybe", then the person proceeds to a state of adaptive vigilance which will result in effective coping. It is not necessary for the questions to be asked in the order given, nor in strictly verbal rather than visual form.

This model, although originating in an account of emergency decision-making, can be applied to all consequential choices, but not to the cold, hypothetical decision-making of the laboratory studies.

The extension of the model to all cases of consequential decision-making - by which is meant all decisions that evoke some degree of anxiety or concern in the decision-maker related to the possibility that he may fail to gain his objectives or incur costs that he cannot afford - entails two conceptual leaps; firstly that psychological stress has similar consequences for decision-making processes as does the threat of survival-threatening disasters, and secondly that the model can be applied to political and organizational decisions.



The model is modified by the substitution in questions one and two of "change" (to a new course of action) for the previous "take protective action", and in question three of "better solution" for "means of escape". Moreover, the processes are firmly anchored in their antecedent conditions, which may include communications, prior experiences and personality variables.

Janis and Mann do not claim that their conflict theory should replace all other theories which attempt to explain decision-making; on the contrary, they acknowledge that under certain conditions attribution theory can predict the way in which new information will be assimilated, expectancy theory can predict changes in preferences for alternatives, cognitive dissonance can predict whether bolstering of alternatives will occur and so on. Although they do not explicitly refer to developmental theories of decision-making, clearly the importance given to antecedent conditions would allow for the accommodation of such theories.

To summarize: Janis and Mann have put forward a model of decision-making based upon the notion of conflict reduction which is of particular relevance to those decisions which contain an emotional element.

## 1.7 Attitudes, Beliefs and Personality Approaches

The literature concerning the ways in which beliefs and attitudes interact has been discussed in the above section on Behavioural decision Theory, and also in the section describing Janis' and Mann's approach to decision-making. However, that is distinct from a consideration as to the ways in which the beliefs and attitudes are acquired, and the socio-demographic factors with which they are correlated.

Strictly speaking, these factors cannot be operationally separated; one cannot measure personality save by measures which ask (either directly or by means of projection) for belief, attitudinal or hypothetical behaviour statements, and it has been argued persuasively that both formal measures and less structured evocations of self-concept are measuring the same thing, albeit in different ways, and with different theoretical groundings.

All formal measure of personality utilize behavioural (generally written) behaviour, and the different theoretical stances are all concerned

with the prediction of behaviour.

In everyday language, if one speaks of a person's personality, one is presuming a relatively stable propensity to respond to certain classes of stimuli in a particular manner. Thus, to say that a person has (for example) an introverted personality is to ascribe certain traits, such as being quiet, liking solitary activities and so on, from which one can make predictions about behaviour. (See, for example, Anastasi, 1976.)

However, because of the frequency with which belief statements are utilized in the measurement of personality, it is difficult, if not impossible to draw a clear distinction between the two. Generally, beliefs appear to be treated as subordinate to traits which are in their turn subordinate to personality, but when one considers such factors as the "Sense of self-efficacy", is this to be regarded as a personality trait in its own right, a subdivision of a trait of confidence or simply as a realistic appraisal of the person's actual ability to produce desired effects?

### 1.7.1

The main approaches to the relationship between occupation and personality in the past have used such measures as Eysenck's EPI, Cattell's 16PF, the Maudsley Personality Inventory, measures of interest such as the VPI or the Occupational Interests Blank; or have inferred personality from childhood experiences (cf Roe, 1956). More recently, researchers have utilized measures such as those of Locus of Control, Self-efficacy and Sex-Role self-concept in attempts to understand people's reasons for their occupational behaviour. All personality approaches can be subordinated in principle to self-concept theories, since it is the person's self-concept of his personality which is being accessed, but there is a wealth of data which has attempted to provide personality profiles for various occupational groups using the longer-established inventories, for example, Cattell (1965).

The prototype of the statistical method of relating personality traits to occupation is probably that used by Cattell, Day and Meeland (1956), in which the 16PF was administered to groups drawn from different occupations, such as clerks, salesmen, nurses, psychological technicians and salesmen.

Although the differences between the groups were slight on particular scales, the profiles obtained by the groups could be used to predict with greater than chance accuracy the probability of a person's membership of a particular occupational group.

The discriminant analytic method used by Cattell is one of several main approaches to the problem.

Other researchers have used the factor analytic approach, for example Sternberg (1955) administered a battery of inventories and concluded that while significant differences existed in the personality attributes of students of different disciplines, the differences were not sufficient to permit the prediction of an individual profile from a knowledge of his major. However, there is a body of literature which links certain personality factors with scientific interests; those persons with scientific interests have, in general shown a 16PF profile of being reserved (A-), emotionally stable (C+), dominant (E+), sober-minded (F-), conscientious (G+), tough-minded (I-), self-sufficient rather than group dependent (Q2+) and controlled (Q3+), (see, for example, Cattell and Drevdahl, 1955; Hudson, 1966; Child and Smithers, 1971; Roe, 1961, 1965 and Pont, 1970), and there is evidence to suggest (Thistlethwaite,

1969, 1973) that pre-existing differences are accentuated by exposure to a discipline.

Meredith and Bradley (1976) found significant personality differences between sixth-form boys studying sciences, and their arts/social science counterparts, and between fifth-form girls, although their data collection method makes a comparison by sex invalid, but the differences did not provide support for a hypothesis that scientists were thing- rather than person-oriented. They suggest that it is the exposure to the increasingly abstract discipline which produces the scientist as thing-oriented effect.

### 1.7.2 Occupational Interests

While it might seem, superficially, that a simple way of determining an individual's interests in certain activities and types of work would be to ask, early investigators in this area soon discovered that this was not in fact the case, and such answers were often unreliable, superficial and/or unrealistic. (See, for example, Fryer, 1931). This is particularly true in relation to younger people and children,

when such information would be particularly useful for counselling and guidance purposes. This is not surprising, given that most people have little information as to the content of jobs in which they are not, or have not been engaged, or with which they have had no direct contact. Even in the case of the most visible occupations, the aspects seen by the outsider are only a portion of that which is entailed by occupational membership, and minimizes the effect of the organizational membership which is a normal function of occupational entry. Then again, for certain occupations the day to day routines are obscured by stereotypes which romanticize and distort the reality.

For these reasons, several standardized interest inventories have been constructed which ask not only about likes and dislikes for activities directly connected with occupations, but also about day to day activities, where the individual's likes and dislikes can be compared with those held by members of various occupations (cf the personal profile matching of standard personality inventories).

The most well known interest inventories are probably the Strong Vocational Interest Blank (SVIB),

(updated into the Strong-Cambell Interest Inventory of SCII in 1974) the Kuder Vocational Preference Record (KVPR), the Kuder Occupational Interest Survey (KOIS), and the Edwards Personal Preference Schedule (EPPS). Much research has been carried out upon these instruments, and using them as tools in other research....

The use of interests in personality assessment reaches its limits with Holland's Self-Directed Search (SDS), which has been discussed above.

### 1.7.3 Constructs Related to Personality

In this section it is proposed to consider briefly those aspects of personality which are generally treated as distinct from the personality factors contained within the usual personality inventories, namely, locus of control, self-esteem, self-efficacy, self-concept, achievement motivation and fear of success. Although these will be considered separately, it must be borne in mind that they are inter-related, and frequently correlated, either positively or negatively, with one another. Additionally, several of these constructs are situationally determined, and any hypotheses regarding their relation



to occupational choice must be treated with circumspection.

#### 1.7.3.1 Locus of Control

The construct of locus of control has received a considerable amount of attention in connection with academic and occupational aspirations and achievement, and has been considered in relation to sex-role self-concept, androgyny and achievement motivation.

In most research it has been treated as a single-factor construct, although there is some evidence that it in fact encompasses at least two distinct dimensions (Lindbloom and Faw, 1982; Lange and Tiggemann, 1981) corresponding roughly to personal, and to political control.

It is generally hypothesized that individuals with an Internal Locus of Control will be more likely to succeed academically, and to aspire to higher level occupations, since they perceive themselves as having power to influence events.

### 1.7.3.2 Self-efficacy

A construct which is rather similar to locus of control is that of self-efficacy (Hackett and Betz, 1981), which is largely based on social learning theory (Bandura, 1977b; Krumboltz, Mitchell and Jones, 1976), and stresses the role of cognitive-mediational factors in behaviour.

Self-efficacy expectations are the beliefs held by a person concerning his ability to successfully perform a given task or behaviour, and these expectations vary in level (the degree of perceived difficulty) and in strength (confidence in one's ability) between persons, being the result of learning experiences, both direct and vicarious.

According to Hackett and Betz, these efficacy expectations are especially useful in attempting to understand the vocational behaviour of women, because the sex-role socialization of females (see above) is less likely than that of males to facilitate the development of a strong sense of self-efficacy, and in particular, a sense of career-related self-efficacy.

### 1.7.3.3 Fear of Success

The idea that women have a Fear of Success (FOS), was advanced by Matina Horner (1968; 1972; 1974), and conceptualized as a stable personality disposition acquired early in life in conjunction with sex-role standards that acts as an inhibiting factor on women's achievement motivation.

FOS was investigated using projective testing in which subjects were asked to respond to the cue:-

"At the end of her (his) first term finals Ann (John) finds herself (himself) at the top of her (his) medical school class."

Female subjects were given the "Ann" version, and male subjects the "John" version, and the amount of negative imagery produced by the two groups was compared.

Women produced negative imagery in about 65% of the stories, whereas men produced negative imagery in less than 10% of their responses. Horner interpreted this to mean that women experience anxiety in competitive situations, particularly in situations in which they compete with men. Fear of Success is especially likely to occur in high

ability women with a traditionally feminine orientation; in order to fear success, success must be reasonably probable.

It should, however, be noted that since sex discrimination and harassment do in fact occur, the negative consequences envisaged by the women may well have been an accurate assessment of the situation, rather than the projection of irrational fears; the sex difference might well be attributable to objective differences in probable outcomes for the two sexes.

A good review of the concepts and material relating to Fear of Success has been provided by Ward (1979), and the interested reader is referred to her article. The conclusion that the effects are most marked for feminine women leads to the consideration of another factor which has been related to occupational behaviour, namely, the construct of androgyny put forward by Bem (1974).

#### 1.7.3.4 Androgyny

"Femininity" and "Masculinity" are socially constructed stereotypes of women and men within

a given culture. Certain personality traits, dispositions and behaviours are differentially associated with the two sexes, and have in the past been viewed as largely "natural", and certainly as appropriate, whether or not the attribute in question is in general regarded as admirable.

Thus women have been regarded as "naturally" nurturant, submissive, scatty, less good at sciences and so forth, while men have been regarded as "naturally" strong, unemotional, scientific, sensible and less artistic. The words used to describe the real or imagined differences carry evaluative connotations. To the extent that a person behaves in accordance with the stereotype associated with their biological sex they may be rated as "Masculine" or "Feminine". This initially gives the impression of a single dimension ranging from "Masculine" at one extreme to "Feminine" at the other, making the two logically incompatible.

Bem's approach led to a reappraisal of this dichotomy, and the presentation of the dimensions of "Masculinity" and "Femininity" as orthogonal factors. Thus the opposite of "Feminine" is not "Masculine", but simply "Not-Feminine". (In popular

usage some confusion exists, as "Unfeminine" is generally used to suggest the presence of "masculine" characteristics in a woman, in addition to the absence of "feminine" attributes. The negated term is only applied to the sex for whom the stereotype is thought appropriate.)

Bem's (1974) model provides for the individual to be rated independently on both masculinity and femininity, and this produces four quadrants; "Feminine" (high rating on femininity, low rating on masculinity), "Masculine" (high on masculinity, low on femininity), "Androgynous" (high on both) and "Undifferentiated" (low on both).

The "androgynous" individual, who may be either male or female, possesses, in addition to the traits generally associated with their gender, those associated with the other. Thus an androgynous male is capable of expressing tenderness, appreciating the artistic and behaving cooperatively, while still being competent in the traditional masculine spheres; the androgynous man is not "Effeminate" nor wimpish.

The majority of the research articles dealing

with androgyny and occupational choice or career development focus on women, and would seem to agree that being androgynous is good for women, both in terms of general well-being and occupational success. For example, Garland and Berwick-Smith (1981) related occupational achievement motivation to both sex-linked personality and the occupational stereotype; Kantner and Ellersbusch (1980) failed to find a significant difference between the androgyny scores of male nurses and teachers; Marshall and Wijting (1980) found masculine women to be more Career Centred than Career Committed, and Career Centredness to be correlated with achievement motivation (The correlation obtained, 0.43, is sufficiently low to show the two to be separate factors); Moreland, Harren, Krinsky-Montague and Tinsley (1979) found androgynous women to be significantly more advanced on educational-vocational decision-making tasks, and to be more likely to use a rational than an intuitive decision-making style, although androgynous men were not significantly different from masculine or undifferentiated men on the tasks of selecting a major or occupation, but were more advanced than feminine men.

The general conclusion which may be drawn from

this body of research findings is that androgyny is good for people.

However, although the notion was popularized by Bem, the idea can be traced back to Jung's concepts of the anima and animus, representing the feminine side of the male psyche and the masculine side of the female psyche respectively. According to Hall and Nordby (1973) in their excellent introduction to Jung's thought, if the personality is to be well adjusted and harmoniously balanced, the feminine side of a man's personality and the masculine side of a woman's personality must be allowed to express themselves in consciousness and behaviour.

#### 1.7.4 Attitudes

The role of attitudes and values in the selection of, and progress within an occupation has received some attention, for example, Rosenberg, 1957; Cherry, 1975; Cotgrove and Weinreich-Haste, 1982; and these job values have been found to reflect both the sex and the social origins of the students and young workers who have been studied.



While these background factors can be used to predict the values held, the values themselves then serve as valid predictors of actual field and level of employment, a fact which carries implications for any schemes which seek to redress the influences of discrimination.

The work values identified by Cherry (1975) are firstly, an "educational orientation", secondly a "self-benefit orientation", thirdly a "people contact orientation" and finally a "security orientation". (Factors 1 to 4 respectively.) She found that the jobs being performed by the survey sample at the age of 26 bore a significant relationship to their evaluations as final year undergraduates, and that the job values provided a sufficient explanation for the jobs actually held.

Cotgrove and Weinreich-Haste (1982) found student engineers to differ from student sociologists in their views on economic growth, individualism, management making decisions, reward of talent, market forces, business taking risks, authority, rule following and strong defense; in their political affiliations and their levels of radicalism, and girl students to differ from their male counterparts on

dimensions of little work-related relevance.

#### 1.7.5 Vocational/Career Maturity

A further construct which has been employed by several researchers in their investigations is that of vocational, or career maturity (see below, Ch. 1.8). There would appear to be no logical distinction between the two names given, but in general, the usage is related to the instruments utilized in the operationalization of the construct, with Crites' Career Maturity Inventory (Crites, 1965) being one measure, and Super's Career Development Inventory (1976) being another. Westbrook (1970) has advanced a Cognitive Vocational Maturity Test, and Gribbons and Lohnes (1968) developed their Readiness for Vocational Planning Scales.

All of the above measures are largely dependent upon the Career Pattern Study (Super et al., 1957; Super and Overstreet, 1960), although the term "Vocational maturity" had been used previously by Dysinger (1950) and by Norton (1953), but differ considerably in the variables they try, with a certain lack of both concurrent and predictive validity to assess. Kidd (1981) has reviewed these

instruments, and suggests that the term "Vocational maturity" might well be dispensed with. In any case, the administration of the CDI to a British sample did not show much relationship between test scores and teacher ratings of behaviour.

In addition to such practical considerations, items in both the Decision-Making Scale of the CDI, and in the Attitude Scale of the CMI are clearly value laden, assuming that it is more "mature" (and that term itself carries evaluative connotations) to seek intrinsic rather than extrinsic rewards from work, and of greater importance to seek for information about job-content and training than for facts about working conditions of pay. While "Hygiene factors" (Hertzberg, 1966) do not lead to job satisfaction, inadequacies in this area do lead to dissatisfaction, and the avoidance of unpleasantness may well be of especial salience for the incumbents of lower-level occupations, while expectations of self-actualization through work may seem so far removed from reality as to be farcical (cf Huw Beynon's observations on working for the Ford Motor Company). As Willis (1977) has pointed out, it is often the extrinsic factors such as company and pay which distinguish one factory

job from another, and to base occupational decisions upon these factors may reflect a mature and realistic attitude on the part of the young person. The notion of "Readiness for Career Decision-Making" seems inappropriate in a context where choices are made at decision-points determined by the educational and opportunity structures, although it might conceivably be used as a diagnostic and remedial instrument with the unready student.

The idea of "Realism" of occupational objectives seems highly suspect as a means of maintaining the status quo; Althen and Stott (1983) have produced an article in which they discuss the "problem student" with "unrealistic" aims; these difficult people do not wish to hear the discouraging conclusions of their advisors, are described as being rigid, inflexible and idealistic, with the deplorable tendency to assume that they will be the exceptions to the generalizations which are made about them, and arouse negative stereotypes in the minds of their counsellors. It is worth quoting from their article in order to provide something of the flavour of their approach:-

In the case of the aspiring graduate or professional student, the typical GPA and

prerequisite college coursework, along with information about age, sex, ethnic, nationality, or financial criteria can be eyeopening. A student can be shown a profile of successful students and then asked "in the light of this information, can you explain to me what it is in your academic background that could lead you to succeed in this field?"

To summarize: it seems clear that factors related to personality are relevant to the issue of occupational choice, and should thus be included in the present research.

## 1.8 Super's Developmental Self-concept Theory

One of the most conspicuous contributors to the arena of occupational choice is almost certainly Donald E Super. His publications extend over a period of thirty years and have been highly influential.

Super's approach is developmental, and draws heavily on self-concept theory. Basically, the individual strives to implement his self-concept in the world of work, by attempting to find an acceptable match between his concept of himself and his concept of the occupations considered. Different vocational behaviours are appropriate at different stages of the life cycle, and the "Vocational maturity" of the individual is based on a comparison between that person and his peers.

Super distinguishes between "occupations", based on the old trait-factor, round peg in round hole approach, and "careers", which are essentially developmental in nature. His emphasis is primarily upon "careers" and "career patterns", which are regular and predictable.

He argues that to fully understand a person's vocational life, the entire cycle must be observed, and this stance has led him to undertake a considerable amount of longitudinal research.

Super's first formal statement of his theory occurred in 1953, when "Ten propositions in search of a theory" appeared.

1. People differ in their abilities, interests and personalities.
2. They are qualified, by virtue of these characteristics, each for a number of occupations.
3. Each of these occupations requires a characteristic pattern of abilities, interests and personality traits, with tolerances wide enough, however, to allow both some variety of occupations for each individual and some variety of individuals in each occupation.

The first three propositions are hardly novel or controversial.

4. Vocational preferences and competencies, the situations in which people live and work, and hence their self-concepts, change with time and experience (although self-concepts are generally fairly stable from late adolescence until late maturity). Making choice and adjustment a continuous process.
5. This process may be summed up in a series of life stages characterised as those of growth, exploration, establishment, maintenance and decline, and these stages

may in turn be subdivided into (a) the fantasy, tentative and realistic phases of the exploratory stage, and (b) the trial and stable phases of the establishment stage.

These propositions are a straightforward exposition of stage theory, by no means unique to Super (cf for example, the theory of Tiedeman and O'Hara)\*.

6. The nature of the career pattern (that is, the occupational level attained and the sequence, frequency and duration of trial and stable jobs) is determined by the individual's parental socioeconomic level, mental ability and personality characteristics, and by the opportunities to which he is exposed.
7. Development through life stages can be guided, partly by facilitating the process of maturation of abilities and interests, and partly by aiding in reality testing and in the development of the self-concept.
8. The process of vocational development is essentially that of developing and implementing a self-concept: it is an interactive process in which the self-concept is a product of the interaction of inherited aptitudes, neural and endocrine make-up, opportunity to play various roles, and evaluations of the extent to which the results of role-playing meet with the approval of superiors and fellows.
9. The process of compromise between individual and social factors, between self-concept and reality, is one of role-playing, whether the role is played in fantasy, in the counselling interview, or in real life activities such as school classes, clubs, part-time work, and entry jobs.
10. Work satisfactions and life satisfactions depend upon the extent to which the



individual finds adequate outlets for his abilities, interests, personality traits, and values; they depend upon his establishment in a type of work, a role which his growth and exploratory experiences have led him to consider congenial and appropriate.

Although the propositions are described as being a theory of vocational development, they can be interpreted in a far wider sense than the merely economic; although Super is evidently concerned here with the employment sense of vocation, the implications go far beyond that. Essentially this is a theory of the development of personal authenticity, and can stand with only minor modifications in a post-employment society, although when Super wrote the above it is unlikely that he would have envisaged this.

Since the exposition of the theory in 1953, a considerable body of research has accumulated, and the theory has been increasingly refined from the general principles to more specific details of the process of development, operationalizing the concept of vocational maturity, and adding an additional two propositions (Super and Bachrach, 1957):

11. The degree of satisfaction which the individual attains from his or her work is proportionate to the degree to which he or she has been able to implement self-concepts.
12. Work and occupation provide a focus for personality organization for most men and many women, although for some people this focus is peripheral, incidental or even non-existent, and other foci such as social activities and the home are central.  
(My emphasis)

It is extraordinary that even having acknowledged the non-universality of work centredness, Super continued to focus on this topic; it was not until his "Life span life space" article (Super, 1980), that employment was relegated to a less dominant position, as one of several "theatres" in which people, for a time, play certain roles which overlap with their other roles.

The "Life-career Rainbow" is diagrammatically represented as a semicircle, with life stages arranged around the circumference, approximate ages underneath stages at the periphery, and nine roles arranged as partial bands within the semicircle.

The nine roles may not all be played by all individuals, but emerge in a typical, although not invariant sequence, and occupy varying amounts of

the "Life-space" (the residual space within the semicircle). A person's "Life-space" may best be thought of as the totality of their roles at a given time, and the "theatres" are those settings in which the individual acts out certain roles. Again, although most people enter the four main theatres in a certain order, circumstances may operate to prevent a particular theatre being entered, and there are other, less frequented theatres which may be entered only by a few.

To be more specific, however; the principal roles are: Child, Student, Leisurite, Citizen, Worker, Spouse, Homemaker, Parent and Pensioner, and the principal theatres are: Home, Community, School and Workplace.

Theatres and roles tend to be linked, in that one theatre is the major focus of a role, but may also be played in other theatres. The role of Worker, for example, will predominantly be played in the Workplace, but may also be played in the Home if work is done in one's own time; the distinction between Home and Workplace may not exist for certain occupational groups, for example, some farmers; the role of Child may be played with

decreasing frequency as the person's parents age, and other roles assume a greater relative importance.

It will clearly be seen from the above that Work, in the sense of employment provides only one of many roles, and may occupy more or less of the "Life-space".

The "Life cycle" or "Career patterns" are composed of the waxing and waning of the roles which structure life and give it meaning, varying in both absolute and relative importance with the life stage, according to the developmental tasks encountered (O'Toole, 1972; Friedman and Havighurst, 1954), and "importance" can be operationally defined both in terms of time and of emotional involvement (Super, 1983).

Super (1980) suggests representing the roles in colour, assigning a hue to each role, and varying the saturation to denote the degree of involvement. "Life style" is the summation of the number and types of role, and the depth of involvement in each.

Decision points occur before and at the time of giving up an old role, exploring or taking on a new

role, or making significant changes in the nature of an existing role.

"All the world's a stage...."

Although Super demonstrates a greater than usual tendency toward visual representations, it is hard to see anything particularly novel in his formulations; while he at least draws attention to the multiplicity of potential roles he has continued to put his main emphasis upon the role of Worker, and has not really provided any explanation as to the reasons underlying the individual's preferential involvement in one, rather than a co-existing role, or the interplay between the individual and his social matrix in scriptwriting (to continue the metaphor further).

The lack of apparent novelty suggests that the approach is probably sound in terms of psychological plausibility; the obvious frequently needs to be articulated, rather than left implicit, and often such statement is necessary in order to dispel mistaken assumptions.

However, Super's theory, while not introducing

any particularly novel components, brings together various strands of thought, and would seem to be of value in asserting that the different approaches are, at their best, complementary, rather than antagonistic. This may perhaps be a groundwork for an eventual synthesis of research areas which have been somewhat deficient in cross-fertilization.

Super himself acknowledges that developmental theories tend to neglect the processes by which decisions are made, and that decision making is the essence of career development (Super, 1983), and hopes that:

Some day global theories of career development will be made up of refined, validated and well-assembled segments, cemented together by some synthesising theory to constitute a whole which will be more powerful than the sum of its parts.

It would seem more likely that should such a synthesis ever be within the realm of possibility, the resultant theory would be a theory of lifestyle, rather than of career, and would have passed beyond the bounds of psychology. The value of such a metatheory is dubious, in that while it might provide conceptual framework, it would of necessity be too general and unwieldy to allow the frequent incorporation of new data on which any predictive

power would depend.

It would seem implausible that such an approach would yield useful tools for counsellors confronted by clients seeking meaning in the face of continued upheaval and ambiguity in their roles and available theatres.

In a sense, the various attempts to provide theories of occupational choice may be seen as answers to a non-question; by assuming that a person's sense of purpose and identity are necessarily tied up with their economic activities they have focussed on the employment-related aspects to the neglect of the coexisting and superceding sources of satisfaction. Super's main contribution is to begin the process of the reinstatement of non-economic factors as either additional or alternative determinants of the individual's degree and mode of self-actualization.

That is not to denigrate the immense value of the decision approaches but rather to call for their extension into all spheres of decision-making, such as the choice of leisure activities, wallpaper and spouses, and the inter-relationships between

choices made in different spheres.

Man has a need to make sense of his existence, and the concentration on employment may be seen as an example of what Fromm (1949) calls "frames of orientation and devotion" - secular forms of religion which provide structure and a philosophy of life for their adherents.

In the consideration of an individual's commitment to the materialist Protestant work ethic, many writers have assumed that system to be a valid answer to what is essentially a metaphysical question about the meaning of existence, and have not (except in a few isolated instances) questioned the implicit ideology of their discipline.

"Why do people do what they do?", the question underlying the entirety of the social sciences, is essentially unanswerable as a scientific question save by solutions which merely push the question back a stage in an infinite regress. That is not to say that answers cannot be found, but that they are more likely to be either analytically true propositions or faith statements than based in objectivity, as it is generally understood.



Thus the search for metatheories is self-defeating, and a digression from the proper place of applied research, which is to produce effective answers to tangible problems.

The present thesis is an attempt to examine the way in which some of the factors discussed above as being related to occupational choice operate in combination with each other; while there can be little doubt of their separate influences on the choice process it remains to be seen whether the effects of these variables are different when taken together than when considered singly, and whether the same variable predicts differently for various sub-populations.

The present research focusses upon groups for whom prediction of occupational/educational choices might be of value, and does not attempt an analysis of the way in which the individuals within those groups arrive at their decisions.

A major factor upon which individuals can be categorized is their occupational choice status, that is, whether a choice has been made as to the intended occupation, and this factor is given

considerable attention. However, academic disciplines may be seen as being to a greater or lesser extent associated with entry into particular occupational fields, and a further focus of the present thesis is upon the disciplines themselves and the perceptions which are held regarding them.

The time scale of the research to be reported precluded the possibility of investigating the developmental aspects of the choice process; this must not be taken to imply that such aspects are unimportant.

## CHAPTER 2

### STUDY 1: A PRELIMINARY SURVEY TO TEST THE CONSTRUCT VALIDITY OF A THREE-LEVEL APPROACH TO OCCUPATIONAL SPECIFICITY

2.1 "Occupational Specificity" may be operationally defined as the extent to which a discipline is perceived as being related to a subsequent occupation. Although for certain disciplines it is clear that they are highly vocational, in that their study is a necessary condition for entry into a particular occupation, and that most if not all graduates of such courses do in fact enter that particular occupation, for most disciplines the relationship is less clear-cut, both in objective terms and in terms of the way in which they are perceived.

Since it was hoped to compare students from disciplines varying in occupational specificity, it was necessary to establish whether there was a general consensus as to the way in which disciplines were perceived, and whether a three-level approach was potentially suitable.

Method:-

Fourteen disciplines were selected for this study, the criteria for inclusion being that

- a) University courses in the discipline contained a reasonable number of students in each year,
- b) that each course (with one exception) contained a reasonable number of both male and female students,
- c) each course was of similar duration.

A brief questionnaire was drawn up on which the fourteen disciplines were listed in alphabetical order, each being followed by a three point rating scale (see Appendix 1).

Subjects consisted of a sample of undergraduate students of both sexes<sup>\*</sup> (N = 114).

Each S was approached individually, given a copy of the questionnaire and asked if S/he would agree to participate. Of 116 students approached only 2 declined. This method of administration

resulted in a 100% response rate, although in a few cases questionnaires were not fully complete. These were included in the subsequent analysis.

#### Analysis and Results:-

In order to establish whether there was significant agreement between S as to the level of occupational specificity of each discipline, the category which contained the largest percentage of judgements for each discipline was compared with the combined values of the remaining categories. This procedure seemed justifiable in view of the fact that a  $\chi^2$  test of significance across all categories would fail to distinguish between cases where a large majority of S assigned a discipline to one category, and cases where S's judgements were equally divided between two categories.

(See Table 2.1.)

Three disciplines were judged to be "occupationally specific",; these were computational science, engineering and law ( $p < .005$  in each case), five were judged to be "non-specific"; English, History, History with Politics, Philosophy and

TABLE 2.1 The percentages of Ss assigning each discipline to each level of specificity.

Discipline	Category		
	S	I	N
Biology	18.91	61.26 <sup>xx</sup>	18.01
Chemistry	35.13	55.85	9.00
Commerce	33.33	48.14	18.51
Computer Science	70.00 <sup>xxx</sup>	24.54	5.45
Engineering	88.99 <sup>xxx</sup>	9.17	1.68
English	2.7	13.51	81.08 <sup>x</sup>
Geography	2.63	43.85	53.50
History	7.27	22.72	70.00 <sup>x</sup>
History with Politics	5.71	25.7	68.57 <sup>x</sup>
Law	78.89 <sup>xxx</sup>	19.26	1.83
Philosophy	3.7	12.03	84.25 <sup>x</sup>
Physics	34.21	57.01	8.77
Psychology	7.96	43.36	48.67
Sociology	5.45	27.27	67.27 <sup>x</sup>

S = "Occupationally specific"

I = "Intermediate"

N = "Non-specific"

x p < 0.05

xx p < 0.025

xxx p < 0.005

Significance levels were calculated on the raw data using the Chi Squared statistic

Sociology ( $p < .05$  in each case) and one discipline, Biology, was judged to be intermediate in specificity ( $p < .025$ ).

The results for Chemistry, Commerce, Geography, Physics and Psychology were all non-significant, owing to the fact that in these cases opinion tended to be divided between adjacent categories. However, in no cases were judgements equally divided across all three categories.

#### Discussion:-

The inability of Ss to concur on disciplines of intermediate specificity may be attributable to insufficient instructions as to the criteria to be used in categorization, to some inadvertent sampling bias, or to a genuine lack of agreement. However, even in those cases where opinion was divided, there was agreement as to one category in which the discipline was definitely not. That is to say that while Ss may have difficulty in deciding between adjacent categories they are agreed in their rejection of the remaining possibility. On the basis of the above it appeared that it might

be more profitable to introduce a weighting system in order to construct an index of Occupational Specificity.

## 2.2 Construction of Index of Occupational Specificity

### Method:-

The percentage of subjects assigning a discipline to the "occupationally specific" category was given a weight of 3, the % Ss assigning it to the "intermediate" category was given a weight of 2, and the % Ss assigning it to the "non-specific" category was weighted 1.

These figures were combined to yield a figure in the range of 100, meaning that there was 100% agreement that the discipline was non-specific, to 300, where there was 100% agreement that the discipline was occupationally specific.

$$\begin{aligned} & \text{Occupational Specificity Index (OSI)} \\ = & 3 (\%S) + 2 (\%I) + 1 (\% N). \end{aligned}$$

Disciplines were then ranked in terms of their OSI score (see Table 2.2).



TABLE 2.2. Occupational Specificity Index scores (OSI)  
of disciplines ranked in order of decreasing  
specificity.

Rank	Discipline	O.S.I.
1	Engineering	286.99
2	Law	277.02
3	Computer Science	264.53
4	Chemistry	226.09
5	Physics	225.42
6	Commerce	214.78
7	Biology	197.26
8	Psychology	158.91
9	Geography	149.09
10	Sociology	138.16
11	History	137.25
12	History with Politics	137.10
13	Philosophy	119.41
14	English	116.20

Discussion:-

The use of OSI rather than crude categories would appear to be better insofar as it allows finer discrimination between disciplines. However, it is noticeable that disciplines with high OSI are, on the whole, more scientific than those with low OSI (with the exception of Law), and are also those which may be more useful in gaining entry into employment, not necessarily in a relevant field. Before OSI can be confidently accepted as having construct validity these possible sources of confusion must be examined.

SIXTH-FORMERS' PERCEPTIONS OF SPECIFICITY AND UTILITY  
AND THE RELATIONSHIP BETWEEN SIXTH-FORMERS' AND  
UNDERGRADUATES' PERCEPTIONS OF SPECIFICITY

The previous study (Ch. 2) described perceptions of academic disciplines held by undergraduates. These perceptions might be attributable to a variety of possible influences, and clearly further data is required before these perceptions can be inferred to have exerted any effect on the choices of degree discipline made by undergraduate students.

Since application to university is normally made while the prospective student is in the sixth-form at school, and it is at this point that an applicant must state the degree courses for which he/she wishes to be considered, any perceptions or attitudes related to choice of discipline must exist at this time if they are to exert any causal influence on the decision to apply for a particular course.

The present study attempted to establish whether the perceptions held by sixth-formers concerning academic disciplines were similar to those held by undergraduate

students, and also whether their perceptions of specificity were in fact simply perceptions of the utility of each discipline for obtaining employment of any sort after graduation. Although occupationally specific disciplines may produce graduates with better employment prospects, the issue with which we are concerned is whether or to what extent there is a relationship between the discipline and the subsequent employment. It therefore appeared necessary to obtain separate ratings of utility.

British sixth-formers are by no means a homogeneous group, even if one ignores pupils in Scottish schools, where the educational system is different from that prevailing in England and Wales.

In some schools, the sixth-form is an academically able group of pupils studying for Advanced (A) level exams or even Scholarship (S) level with the majority aspiring towards university, while at the other extreme many pupils may be about to retake Ordinary (O) level or CSE (Certificate of Secondary Education) examinations failed in the fifth-form.

The term "sixth-former" generally refers to any person continuing in the state school or private sector

systems beyond the age of compulsory education, although "sixth-form" is subdivided into first-year, second-year and occasionally third-year sixth.

If the perceptions of undergraduates preceded application to university, it would be expected that sixth-formers who planned to apply to university would either share their perception with those not intending to apply, or be more similar to the undergraduates than would the non-applicants, that is, that any differences between sixth-formers as a group and undergraduates should be mainly attributable to the non-applicants. (Minor differences remaining might be attributable to the process of applying to, or being accepted by university.)

It was therefore felt necessary to obtain information on whether or not a sixth-former intended to apply to university or for some other form of further education.

### Method

A brief questionnaire was constructed for the purpose of the present study, based on the considerations

outlined above (see Appendix (a)).

The first page listed the original fourteen disciplines rated by undergraduates, and an additional three, medicine, pharmacy and architecture, which, while departing from the criteria on which the original were selected (see Chapter 3) were felt to be of interest. The disciplines were listed in alphabetical order, which subjects were required to assign to one of three levels of specificity, as in the previous study.

The second page was similar, but required the discipline to be judged on the basis of its utility (i.e. its usefulness in rendering its graduates employable, even if their jobs were in all other respects unrelated to the discipline studied) and the final page asked for background information including sex of subject, type of school attended and intentions regarding further (i.e. post sixth-form) education.

The principals of twenty-one schools in the Wirral area of the County of Merseyside in North-West England were approached by letter with a request for their co-operation in the study. Replies were received from thirteen, of whom twelve agreed to participate. The low response rate may be at least partially attributable

to the fact that the approach was made at a time of year when many schools were holding "mock" exams.

The participating schools were all within the state sector, and included both grammar (selective) and comprehensive (non-selective) schools and single-sex and co-educational schools distributed throughout the area. The Wirral area is relatively self-contained, being a peninsula, and its inhabitants cover a broad range in terms of socio-economic background.

The questionnaire was administered in four schools by the author and in the remaining schools by staff. The distribution of Ss by sex, type of school and intentions regarding Further Education may be seen in the chart on page 151.

### Results

Indices of specificity and of utility were produced using the procedure previously described in Chapter 3, and the relationship between the two indices (i.e. of specificity and of utility) was examined using the Spearman Rank Order correlation coefficient.

The correlation between specificity and utility yielded a coefficient of 0.822 ( $p < 0.005$ ).

Similarly, the ratings of specificity made by the sixth-formers were compared with those made by the undergraduates in the previous study, omitting those disciplines rated only by the sixth-formers, and a correlation of 0.921 ( $p < 0.005$ ) was obtained.

This latter correlation was interpreted as providing support for the hypothesis that the perceived specificity of a discipline was not attributable to the university milieu, nor to experiences related to the process of applying to university, but predated application to university.

As the OSI correlation between the independent samples was greater than the correlation between OSI and Utility obtained from the same sample, it was thought appropriate to hypothesise that Utility and OSI are closely related, but distinct constructs.

Results were further analyzed using the SPSS package subprogram "Crosstabs", which compares groups using the  $\chi^2$  statistic.

Significant sex differences were found in the rated specificity of architecture, which males perceived as more specific than did females, while pharmacy was perceived as more specific by females. Males perceived



TABLE 3.1 A Comparison of ratings of Specificity made by Sixth-formers and by Undergraduates

NB In this comparison the ranks allocated to the disciplines which were only rated by the Sixth-formers have been ignored

<u>Discipline</u>	<u>Sixth-formers</u>	<u>Undergraduates</u>
Biology	8	7
Chemistry	5	4
Commerce	7	6
Computer Science	3	3
Engineering	2	1
English	14	14
Geography	11	9
History	13	11
HP	10	12
Law	1	2
Philosophy	12	13
Physics	6	5
Psychology	4	8
Sociology	9	10

Spearman's rho = 0.921    p < 0.01

TABLE 3.2 A Comparison of ratings of Utility made by Sixth-formers and by Undergraduates

NB In this comparison the ranks allocated to the disciplines which were only rated by the Sixth-formers have been ignored

<u>Discipline</u>	<u>Sixth-formers</u>	<u>Undergraduates</u>
Biology	7	7
Chemistry	3	4
Commerce	6	6
Computer Science	1	3
Engineering	2	1
English	10	14
Geography	11	9
History	13	11
HP	12	12
Law	4.5	2
Philosophy	14	13
Physics	4.5	5
Psychology	9	8
Sociology	9	10

Spearman's rho = 0.906      p < 0.01

TABLE 3.3 A Comparison of ratings of Specificity and Utility made by Sixth-formers

---

<u>Discipline</u>	<u>Specificity</u>	<u>Utility</u>
Architecture	4	10
Biology	11	9
Chemistry	8	5
Commerce	10	8
Computer Science	6	2
Engineering	5	3
English	17	13
Geography	14	14
History	16	16
HP	13	15
Law	3	6.5
Medicine	1	1
Pharmacy	2	4
Philosophy	15	17
Physics	9	6.5
Psychology	7	12
Sociology	12	11

---

Spearman's rho = 0.822    p < 0.005

architecture to be more useful (i.e. of higher utility) than did females, whereas females considered commerce and sociology to be more useful ( $p < 0.05$  in all cases). Only one consistent difference was found according to the type of school attended; subjects attending single-sex schools considered pharmacy to be of greater utility than did subjects attending coeducational schools. This difference was significant for both males and females ( $p < 0.05$  in each case).

Responses for specificity and utility were homogeneous according to Kendall's coefficient of concordance ( $p < 0.001$  in both cases).

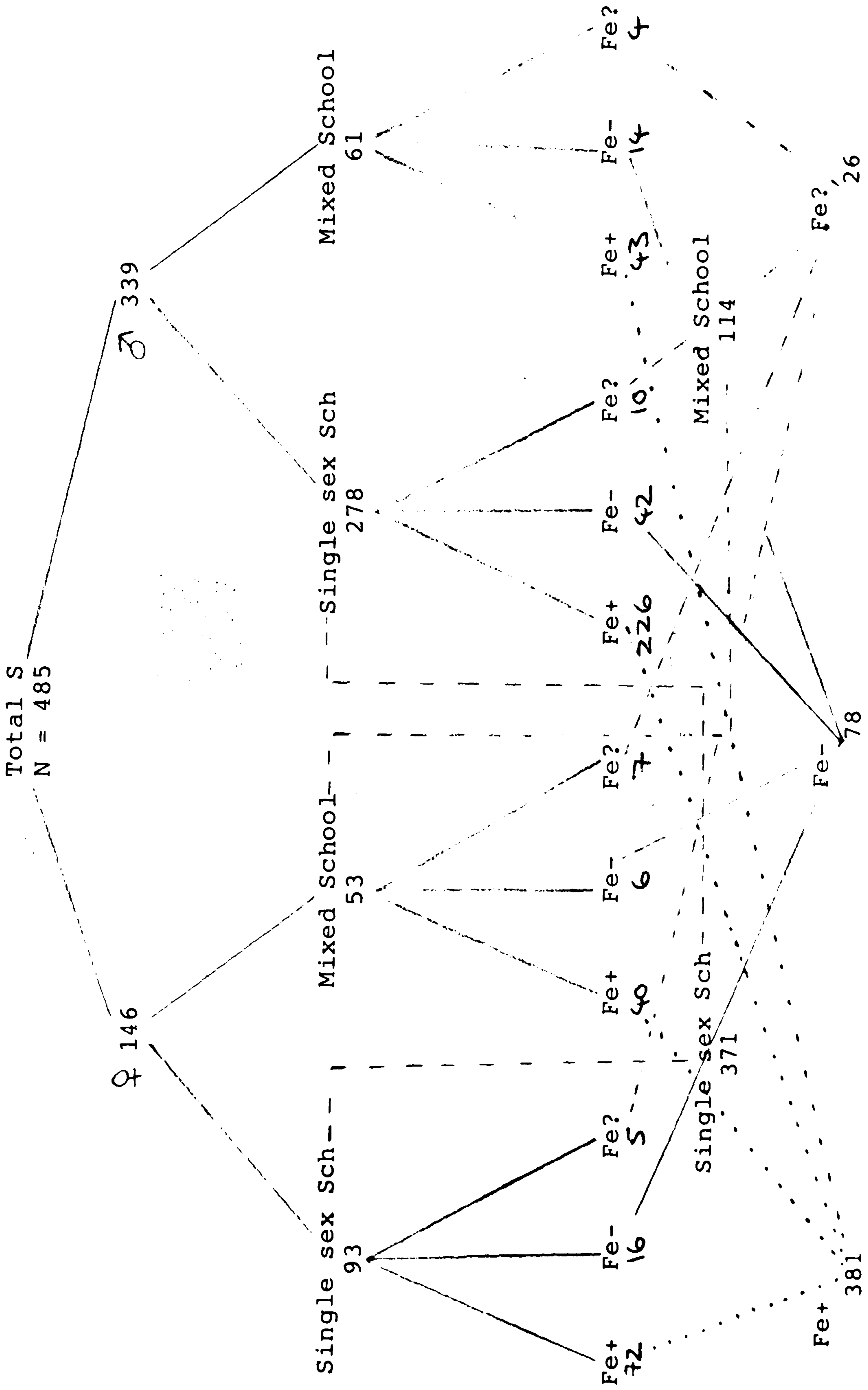
Specificity =  $w = 0.05$   $p < 0.001$

Utility =  $w = 0.14$   $p < 0.001$

This provides further support for the hypothesis that perceptions predate application to university, and are held in common by sixth-formers, irrespective of future educational plans. It does not of course follow that such perceptions exert any influence over the choice of discipline studied at university, but it is at least possible that they might. At all events, the availability of such information raises the question of why an applicant selects a discipline of a given

level of specificity, or ignores this factor in his or her career planning.

DISTRIBUTION OF SIXTH FORM Ss BY SEX, SCHOOL TYPE AND FURTHER EDUCATION INTENTIONS.



## CHAPTER 4

### STUDY 3: THE RELATIONSHIP BETWEEN SPECIFICITY AND THE ARTS/SCIENCE CONTINUUM

In view of the fact that a number of the disciplines obtaining high OSI scores appeared to be highly scientific (e.g. engineering) while disciplines with low OSI scores seemed more stereotypically "arts" based (e.g. philosophy) it was felt necessary

- a) to establish the extent to which the various disciplines were perceived as "Science" or "Arts" based by university students, and
- b) to investigate the relationship between Occupational Specificity and the science orientation of each discipline since there exists ample documentation of individual differences related to arts vs. science students (e.g. Hudson, 1966) and that science is perceived as predominantly a masculine sphere (e.g. Weinreich-Haste, 1979), factors which could potentially confound any comparisons made between students from disciplines varying in OSI.

It seemed more profitable to consider the arts/

science orientation of disciplines as representing points along a continuum rather than as necessarily dichotomous, particularly when disciplines such as architecture are considered, although a dichotomy may adequately distinguish between the long-established fields of the pure science and English/history/philosophy, where stereotyped perceptions may prevail.

### Method

A brief questionnaire was drawn up on which was listed the 17 disciplines considered in the previous study of sixth-formers' perceptions, each discipline being followed by an eleven-point (0-10) rating scale where "0" represented "Arts" and "10" "Science" (see appendix). It was felt that a broad range of possible responses would permit Ss to respond in ways which would allow dichotomous or continuous perceptions to be clearly expressed, although perhaps the very range might engender expectations that continuous perceptions were allowable, even if Ss had been accustomed to a dichotomous view.

The subjects were a sample of undergraduate students of both sexes<sup>\*</sup> (N=35), (18 ♂, 17 ♀). Subjects were required to rate each discipline in terms of its arts/



science orientation, by circling the number felt to be most representative. See Appendix 2.

## Results

The average rating assigned to each discipline was calculated, the averages rank-ordered in terms of decreasing science-orientation, and the ranks correlated with those previously obtained for specificity and for utility, using the Spearman rank order correlation statistic (see Table 4.1).

The correlation between science-orientation and OSI was found to be 0.602 ( $p < 0.01$ ) while that between science orientation and OUI was 0.735 ( $p < 0.01$ ).

## Discussion

The results indicate that although a dichotomous view of "Arts" vs. "Science" is meaningful when the pure sciences are considered, and also when English is considered, there is less consensus than might have been expected for geography (traditionally stereotyped as "Arts"), and the continuous approach seems appropriate

TABLE 4.1. Perceived science-orientation of disciplines,  
(mean scores) ranked in order of decreasing  
science-orientation.

Discipline	Mean score	r
Architecture	5.485	8
Biology	9.085	5.5
Chemistry	9.914	1
Commerce	4.647	10
Computer Science	9.085	5.5
Engineering	9.114	7
English	0.400	17
Geography	4.470	11
History	1.771	15
History with Politics	2.142	14
Law	2.942	13
Medicine	9.200	4
Pharmacy	9.657	3
Philosophy	1.571	16
Physics	9.771	2
Psychology	4.771	9
Sociology	3.228	12

to the disciplines of architecture, psychology, sociology and law.

These results would appear to show that while the science-orientation is significantly related both to the specificity and particularly the utility of a discipline it is by no means identical with either, and therefore that the measure of specificity may be regarded as a valid construct to employ in further research.

CHAPTER 5      STUDY 4

A COMPARISON OF RATINGS OF SPECIFICITY AND OF UTILITY  
MADE BY WIRRAL SIXTH-FORMERS WITH THE RATINGS OBTAINED  
FROM A LONDON SAMPLE

The studies previously described (Chapters 3 and 4) demonstrated that the perceptions of Specificity and of Utility held by a sample of Wirral sixth-form pupils were homogeneous, and that their perceptions of specificity were highly correlated with the perceptions held by a sample of university undergraduates.

However, both samples were obtained in the North-West of England (data on the undergraduates' place of origin not being available) and the results obtained are an insufficient basis for assuming such perceptions to be more widespread across the country.

The present study sought to rectify this geographical limitation by obtaining further sixth-form data from a different part of the country.

The choice of a suitable geographic region for comparative purposes is somewhat problematic; it might be argued that London shares some factors with Merseyside,

in that it is an urban area, with the amenities generally available in large cities; however it differs in its levels of unemployment and in its socio-economic/demographic make-up. The differing levels of unemployment existing in the two areas might conceivably affect perceptions of utility, and, insofar as specificity and utility are related, perceptions of *specificity*. Although strictly speaking it would be necessary to obtain samples from throughout Britain in order to demonstrate that perceptions of specificity and utility were independent of regional conditions, it was felt that data from London would, if findings were similar, provide considerable support for the hypothesis that such perceptions were widespread.

### Method

The questionnaire previously described and employed with the previous Wirral sample (see Chapter 4) was administered to the sixth-form pupils attending a large London comprehensive school. Ss consisted of 52 females and 50 males, and 67.4% of the sample intended to apply for further (although not necessarily higher) education.

Indices of specificity and of utility were

constructed as previously described.

## Results

Results were analysed using the Spearman Rank Order correlation coefficient statistic to compare ratings of specificity and of utility obtained from the London sixth-formers, and to compare ratings of specificity and of utility between the London and Wirral samples.

a) Specificity with Utility (London)

$$r = 0.84 \quad p < 0.005$$

b) Specificity: London with Wirral

$$r = 0.979 \quad p < 0.005$$

c) Utility: London with Wirral

$$r = 0.925 \quad p < 0.005$$

It had previously been found that the correlation between specificity and utility for the Wirral sample was 0.822 ( $p < 0.005$ ); these correlations were interpreted as providing support for the hypothesis that no regional differences existed.

Since the index values accorded to the disciplines under consideration appeared to differ somewhat, despite the similarity of rankings, the  $\chi^2$  statistic was employed in order to ascertain whether such differences were significant, and in no case was a significant difference found.

TABLE 5.1 Specificity Indices from Wirral and from London sixth formers

	Wirral	London
Architecture	278.1	269
Biology	195.9	195
Chemistry	204.4	202
Commerce	196.5	205
Computer Science	249.8	239
Engineering	259.4	248
English	141.5	124.2
Geography	162.4	156
History	154.5	154.9
History with Politics	171.8	196
Law	278.3	275.7
Medicine	283.5	280
Pharmacy	278.9	271.2
Philosophy	160.9	168.7
Physics	200.6	202.1
Psychology	210.3	226
Sociology	176.9	176



TABLE 5.2 Utility Indices from London and Wirral sixth formers

	Wirral	London
Architecture	218.2	230
Biology	220.1	214
Chemistry	244.0	235.8
Commerce	222.5	224.5
Computer Science	264.0	259.4
Engineering	263.9	265
English	172.4	183.7
Geography	167.6	153.6
History	147.7	142.4
History with Politics	167.0	181.0
Law	243.9	254.9
Medicine	269.8	294.0
Pharmacy	248.9	247.5
Philosophy	143.4	154.0
Physics	243.9	238.8
Psychology	174.0	186.5
Sociology	211.5	148.9

CHAPTER 6      STUDY 5

A COMPARISON OF RATINGS OF UTILITY WITH DATA RELATING  
TO GRADUATE EMPLOYMENT

In view of the findings in Chapter 5 it was felt advisable to evaluate the accuracy of sixth-formers' perceptions of the utility of each discipline under consideration, i.e. the extent to which perceptions accorded with the objective probability of obtaining employment.

Since data on the first destinations of university graduates are published annually by the University Grants Committee (UGC) it was possible to obtain a crude indication of the number of graduates of various disciplines who were unemployed by pooling the number known to be unemployed six months after graduation with the number failing to respond to enquiries, converting that figure into a percentage of the total number of graduates of each discipline considered, and deriving ranked probabilities of employment or further study as a function both of discipline and sex (see Table 6.1).

These ranks were correlated with those ranks obtained from sixth-formers' ratings of utility, separate

TABLE 6.1 Graduate employment by discipline and sex  
1978/9.

Discipline	T grads	Unkn/unempl	%	r*	combined*	
					%	r
Arch	423 83	43 14	10.16 16.86	3 10	11.26	4
Biol	859 711	173 98	20.14 13.78	9 8	17.26	9
Chem	1152 415	177 45	11.63 10.84	6 6	14.16	8
Comm	1641 954	341 175	20.78 18.34	10 13	19.88	11
Engi	6625 355	712 36	10.74 10.14	4 4	10.71	3
Engl	1106 1806	292 350	26.40 19.38	14 14	22.04	14
Geog	1157 917	191 98	16.50 10.68	8 5	13.93	7
Hist	1365 1162	303 202	22.19 17.38	11 11	19.98	12
Law	2295 1124	295 126	12.85 11.21	6 7	12.31	5
Med	112 56	11 4	9.82 7.14	2 3	8.93	2
Pharm	342 399	12 10	3.5 2.5	1 1	2.97	1
Phil	290 134	95 39	32.75 29.10	15 15	31.60	15
Phys	1609 180	240 8	14.91 4.44	7 2	13.86	6
Psych	536 962	126 153	23.50 15.90	12 9	18.62	10
Soc	540 929	137 167	25.37 17.97	13 12	20.69	13

\*rank

correlations being calculated

- a) For both sexes combined (Table 6.2)
- b) For sixth-form girls and women graduates (Table 6.3)
- c) For sixth-form boys and men graduates (Table 6.4).

A comparison of Tables 6.3 and 6.4 shows quite a striking sex difference in the extent to which sixth-formers misjudge the utility of each discipline.

However, it must be borne in mind that the objective figures refer to graduates of 1978/9, the most recently published figures at the time this study was carried out, and the time lag may have exerted some influence; since the employment situation has altered markedly in recent years it is possible that perceptions of utility shift accordingly, and that the lagged comparison is of limited value.

Subsequent to the above study, the UGC figures for graduates of 1981 (the year in which the utility ratings by sixth-formers were obtained) became available, making it possible to eliminate the time lag by re-computing the same correlations using the more recent figures on the objective probability of employment but

TABLE 6.2      The relationship between probable employment  
and utility ratings from sixth-form date.  
Both sexes combined.

Discipline	Employment (rank)	Utility (rank)	d	d <sup>2</sup>
Architecture	4	9	5	25
Biology	9	8	1	1
Chemistry	8	4	4	16
Commerce	11	7	4	16
Engineering	3	2	1	1
English	14	12	2	4
Geography	7	13	6	36
History	12	14	2	4
Law	5	5.5	0.5	0.25
Medicine	2	1	1	1
Pharmacy	1	3	2	4
Philosophy	15	15	-	-
Physics	6	5.5	0.5	0.25
Psychology	10	11	1	1
Sociology	13	10	3	9

r = 0.7884      p < 0.01

$\Sigma d^2 = 118.5$

TABLE 6.3 Relationship between probable employment and utility ratings from sixth-form girls.

Discipline	Employment (rank)	Utility (rank)	d	d <sup>2</sup>
Architecture	10	9	1	1
Biology	8	8	-	-
Chemistry	6	5	1	1
Commerce	13	6	7	49
Engineering	4	3	1	1
English	14	12	2	4
Geography	5	13	8	64
History	11	14	3	9
Law	7	4	3	9
Medicine	3	1	2	4
Pharmacy	1	2	1	1
Philosophy	15	15	-	-
Physics	2	7	5	25
Psychology	9	10	1	1
Sociology	12	11	1	1

r = 0.6965      p < 0.01

$\Sigma d^2 = 170$

TABLE 6.4 Relationship between probable employment and utility ratings from sixth-form boys.

Discipline	Employment (rank)	Utility (rank)	d	d <sup>2</sup>
Architecture	3	7	4	16
Biology	9	8	1	1
Chemistry	5	3	2	4
Commerce	10	9	1	1
Engineering	4	1	3	9
English	14	10	4	16
Geography	8	11	3	9
History	11	14	3	9
Law	6	6	-	-
Medicine	2	2	-	-
Pharmacy	1	5	4	16
Philosophy	15	15	-	-
Physics	7	4	3	9
Psychology	12	12	-	-
Sociology	13	14	1	1

r = 0.8375      p < 0.01

$\Sigma d^2 = 91$

the same utility ratings. It was also possible to test the significance of the change in the magnitude of the correlations, using the Test for Differences between Dependent Correlations (Bruning and Kintz, 1968). (See Tables 6.5 and 6.6.)

From Table 6.6 it may be seen that ratings of utility by male and female sixth-formers combined are closer to the objective probabilities of employment for combined male and female graduates when there is no time lag, suggesting that perceptions are very responsive to fluctuations in the objective situation, but that this effect is due to the females, who would appear to be especially sensitive to change, whereas the males show a significant decrease in accuracy. ( $p < 0.001$  in each case.)

A comparison of tables 6.1 and 6.5 suggests that while the objective probability of a graduate remaining unemployed for at least six months after graduation has increased markedly, this has had greatest effect upon male graduates. It might therefore be inferred that the lower accuracy of males ratings could be attributable to a greater variation in the objective probabilities.



TABLE 6.5 Graduate employment (combined unknown + unemployed) 1981.

Discipline	T grads	Unkn/unempl	%	r*	combined	
					%	r*
Arch	424	69	16.27	6	15.94	6
	109	16	14.67	7		
Biol	866	261	30.13	11	25.77	12
	705	144	20.42	12		
Chem	1671	346	20.70	8	18.43	7
	488	52	10.65	5		
Comm	1552	226	14.56	5	14.79	5
	544	83	15.25	9		
Engi	7142	1005	14.07	4	13.64	4
	306	11	3.59	2		
Engl	1039	356	34.26	13	26.68	13
	1921	434	22.59	13		
Geog	1177	297	25.23	9	20.72	9
	912	136	14.91	8		
Hist	1334	368	27.58	10	23.99	10
	1212	243	20.04	10		
Law	2156	235	10.89	2	9.74	3
	1396	111	7.95	4		
Med	2071	64	3.09	1	2.78	1
	1156	26	2.24	1		
Pharm	325	36	11.07	3	7.81	2
	430	23	5.34	3		
Phil	341	135	39.58	15	37.84	15
	124	41	33.06	15		
Phys	1789	346	19.34	7	18.64	8
	254	35	13.77	6		
Psych	487	162	33.26	12	24.48	11
	1016	206	20.27	11		
Soc	536	187	34.88	14	29.34	14
	943	247	26.19	14		

\*rank

TABLE 6.6. Correlations between ratings of utility and objective probabilities of employment, comparing 1979 and 1981 data from (a) all graduates, (b) men graduates and (c) women graduates with (a) all sixth formers, (b) male sixth formers and (c) female sixth formers.

	Year of Graduation		Sign. of change
	1979	1981	
(a) (♂ + ♀)	0.7884	0.8205	p < 0.01
(b) ♂	0.8375	0.7875	p < 0.001
(c) ♀	0.6965	0.8500	p < 0.001

However, comparison of the ranked objective probabilities for the two years of graduation shows no difference between males and females (see Table 6.7).

That is to say that while the objective probabilities have decreased, particularly for male graduates, the relative probabilities of gaining employment as a function of discipline have remained quite similar over the period in question.

It may therefore be concluded that sixthformers' perceptions of the relative utility of various disciplines are fairly accurate, and that in choosing a discipline for study the student is implicitly accepting a particular probability of gaining employment after graduation. While it may not be assumed that this subjective probability held by the individual in respect of graduates of a discipline to which he intends entry is identical with his perception of his personal chances of doing so, nonetheless one might expect that the more career oriented young people would be likely to be attracted to those disciplines from which the employment prospects were more favourable.\*

However, the very fact that the objective probabilities permit a greater degree of security on

the part of the student could lead to a lower reported level of career salience insofar as employment prospects cease to be an issue.

It is therefore impossible to hypothesise the direction of the relationship between career salience and the utility of a discipline, but one might tentatively expect that there would be a positive relationship between them for a significant proportion of students.

TABLE 6.7 Rank order correlations between objective probabilities of obtaining employment in 1979 and 1981 for (a) all graduates, (b) male graduates and (c) female graduates.

(a)	(♂ + ♀ )	0.8714
(b)	(♂ )	0.8732
(c)	(♀ )	0.8410

THE "DESIRABILITY" OF VARIOUS DISCIPLINES

In any comparison between students of different disciplines it must be borne in mind that an interaction will have already occurred between the decision-making of each student and that of those persons involved in the selection procedure. Given a situation where there are more qualified applicants to university courses than there are places available and where applicants are not equally distributed across either universities or disciplines, differences between accepted applicants to different disciplines may be at least partially due to differential selection criteria, both academic and non-academic.

Clearly, courses with the highest ratio of applicants to places - the most desired courses - can afford to adopt the most stringent criteria, whether or not such criteria relate to subsequent performance.

The difficulty of gaining admission varies also over time, being in part dependent upon the relative size of an age cohort, the alternatives to higher education available to them and the level of government

spending upon the university system.

Factors which discriminate between students of disciplines of various degrees of specificity may therefore be highly biased by the selection process and be more a reflection of differential admissions criteria than of differential occupational crystallization upon the part of the student. Comparisons of accepted and rejected applicants by discipline would be necessary in order to cast light on this confusion.

Certainly it is necessary to examine the relationship between the specificity of a discipline and its "desirability" to applicants, although it is not assumed that such a relationship need be static.

Indeed, there is ample evidence that the ease of gaining admission to university and also the relative ease of gaining acceptance to study particular disciplines varies considerably over time. University Central Council on Admissions (UCCA) give details in the 1981/82 statistical supplement to the Twentieth Report of a 5% increase in home candidates, and a 5% decrease in home acceptances, of a 17% increase in the number of students achieving at least two A level passes (minimum university entrance requirements), of substantial swings

in the regions from which home candidates apply, and changes in the popularity of disciplines. Ngaio Crequer (THES 9.9.83) reports that there are fewer women admitted or referred to another place through the clearing house system, making it rather more difficult for them to find a place than it is for men.

Heap (1983) states that between 1981 and 1982, in 30% of university courses and 18% of polytechnic courses grades required for admission had increased by one point, and speculates that standards may continue to rise in accountancy, physics, chemistry, computer studies and psychology, particularly in the polytechnic sector.

In Britain at present the vast majority of applications to university first degree courses are made through the UCCA (University Central Council on Admissions) system, and the UCCA annual reports provide data on

- a) the total number of applicants to a given discipline
- b) the number of applicants accepted to study the discipline of their choice
- c) the number of applicants to disciplines other than that under consideration accepted to study that discipline, and



d) the total number of students accepted for each discipline.

These published figures reflect national applications at a particular time, and cannot be broken down to reflect the relative attractions of the various universities; such data as is available on this tends to be piecemeal and/or anecdotal, published in the major newspapers or THES, and is too unsystematic to be utilized in this context.

Furthermore, it is not possible to ascertain for these students admitted to a discipline which they had not chosen the extent to which the two disciplines are related.

While the limitations of these data are recognized it was still felt to be of value in establishing whether differential selection criteria were systematically related to specificity.

Firstly, the number of students choosing and being accepted to study each discipline was calculated as a percentage of the total N of applicants to that discipline (Table 7.1), and ranked from the discipline accepting the smallest % of its applicants (pharmacy)

to that accepting the largest % (chemistry).

However, this is not a sufficient reason to assume that chemistry is the easiest discipline to gain acceptance in; applicants may well be self-selecting and only apply to courses for which they are appropriately qualified.

Secondly the number of students accepted to study each discipline who have initially applied to a different discipline was calculated as a percentage of the total N of students accepted by that discipline (Table 7.2) and ranked, from the discipline accepting fewest "non-choosers" (medicine) to that accepting most (biology).

While it might be assumed that this is merely the inverse of the first, this is not in fact the case. The correlation between the two sets of ranks (using the Spearman rank-order correlation coefficient) is 0.2029 (not significant).

An alternative way of looking at the data is to examine the proportion of students of a discipline who initially applied to study that discipline rather than another (Table 7.3). From this it may be seen that over 98% of medical students initially applied to study

medicine (the highest proportion) whereas only 36% of students of commerce (an estimated figure) and 40% of students of biology had initially applied to those disciplines.

The correlations between this and Table 7.1 and 7.2 are 0.273 (NS) and 0.985 ( $p < 0.01$ ) respectively; i.e. the percentages in Tables 7.2 and 7.3 are simply alternative ways of expressing the same thing.

However, it would still be premature to assume that biology students are studying something totally at variance with their original aims, or are less able students; anecdotal evidence on selection policies (e.g. "Chelsea Contact" May 1981) shows that students failing to gain acceptance to study pharmacy may be offered places in chemistry, which is clearly a related discipline, and applicants thus rejected might conceivably be of equal or higher academic ability than those applying initially to chemistry. Similarly, if biology was picking up would-be medical students it would not follow that it was "easy" to get into.

Table 7.4 gives the mean number of 'A' level points held by accepted students of the various disciplines, and shows students of medicine to have the highest

qualifications (12.8) while students of sociology do least well, with 8.

The correlation between "A" level score (Table 7.4) and "desirability" (Table 7.3) of 0.824 ( $p < 0.01$ ) implies that academic achievement is the main criterion for selection (hardly a novel thought!), or alternatively, that well-qualified students are in a better position to gain entry to preferred disciplines.

While the above may seem too obvious to need stating, it is important to establish this empirically rather than on stereotyped impressions. It also makes it possible to relate the academic achievements of the students of a discipline to the specificity of the discipline ( $r = 0.2769$ , NS) and the "desirability" to the specificity of a discipline ( $r = 0.397$ , NS).

It therefore follows that in comparing students from varying levels of specificity one is not merely comparing students of differential academic ability, but investigating a construct which exists in its own right. Neither is there reason to suppose that highly specific disciplines are more "desirable" to students, still less that their specificity renders them more desirable. Since the previous studies of sixth-formers

made it plain that applicants were in agreement as to the specificity of each discipline either applicants ignore this information when choosing courses, or alternatively, wish to enter the level of specificity of the discipline which they in fact enter. It seems implausible that such information is totally ignored in deciding to which course to apply, and it may therefore be inferred that in ordering disciplines in terms of their specificity one is also (on average) ordering their students in terms of their occupational crystallization or commitment.

Naturally such an inference would need to be tested.

## Summary of correlations

1. Between Table 7.1 and Table 7.2  
r = 0.2029 NS
2. Between Table 7.1 and Table 7.3  
r = 0.273 NS
3. Between Table 7.2 and Table 7.3  
r = 0.985 p < 0.01
4. Between specificity and desirability  
(from Table 7.5)  
r = 0.397 NS
5. Between desirability and mean "A" (Tables 7.3 and 7.4)  
Level points  
r = 0.824 p < 0.01
6. Between specificity and "A" level (Tables 7.2 and 7.4)  
r = 0.2769 NS

TABLE 7.1 Accepted applicants as a percentage of total N  
of applicants to a discipline.  
(UCCA 17th Report, 1978-9)

	%	r
Architecture	27.75	2
Biology	35.86	7
Chemistry	64.13	15
Commerce <sup>*1</sup>	29.19	3
Computer Science	37.22	8
Engineering <sup>*2</sup>	35.55	6
English	42.86	11
Geography	47.86	12
History	54.41	14
Law	32.73	5
Medicine	31.38	4
Pharmacy	24.26	1
Philosophy	51.72	13
Physics	67.20	16
Psychology	41.56	10
Sociology	38.04	9

\*1 estimated

\*2 composite of various types of engineering

TABLE 7.2 Percentages of accepted students who had applied to some other discipline ranked in increasing order of probability, 1978-9.

	%	r
Architecture	5.89	3
Biology	38.88	17
Chemistry	31.65	12
Commerce	38.48	16
Computer Science	26.76	10
Engineering	19.10	8
English	10.30	5
Geography	10.05	4
History	14.83	7
Law	5.40	2
Medicine	1.94	1
Pharmacy	12.01	6
Philosophy	35.82	14
Physics	28.41	11
Psychology	20.50	9
Sociology	38.43	15



TABLE 7.3 Percentages of accepted students who originally applied to that discipline ranked in decreasing order of probability ("desirability").

	%	r
Architecture	93.75	3
Biology	40.87	15
Chemistry	56.09	12
Commerce	36.67	16
Computer Science	64.64	10
Engineering	76.75	9
English	89.45	5
Geography	89.62	4
History	83.98	7
Law	94.05	2
Medicine	98.06	1
Pharmacy	86.34	6
Philosophy	48.52	14
Physics	61.27	11
Psychology	87.44	8
Sociology	50.19	13

TABLE 7.4 Mean 'A' level performance of students  
accepted by various disciplines.  
(UCCA Report 1978-9)

			r
Architecture	9.6		6
Biology	8.5		12
Chemistry	9.5		8
Commerce	-		-
Computer Science	-		-
Engineering i) chem	10.5		
ii) elect	9.8		
iii) mech	9.4	9.16	10
iv) civil	8.9		
English	10.6		3
Geography	9.6		6
History	10.1		4
Law	11.6		2
Medicine	12.8		1
Pharmacy	9.4		9
Philosophy	-		-
Physics	9.6		6
Psychology	8.7		11
Sociology	8.0		13

TABLE 7.5 Relationship between Specificity and "Desirability". \*

	Specificity	Desirability
Architecture	4	3
Biology	11	15
Chemistry	8	12
Commerce	10	16
Computer Science	6	10
Engineering	5	9
English	16	5
Geography	13	4
History	15	7
Law	3	2
Medicine	1	1
Pharmacy	2	6
Philosophy	14	14
Physics	9	11
Psychology	7	8
Sociology	12	13

Spearman's non-parametric rank-order correlation

$r = 0.397, NS$

## CHAPTER 8

### CONSTRUCTION OF DEMOGRAPHIC/INTERPERSONAL FACTORS QUESTIONNAIRE AND PRELIMINARY STUDY

The projected study attempts to incorporate demographic factors and interpersonal factors as possible predictors of the criterion, OSI, together with conventional measures of personality. Since a suitable questionnaire for the purpose did not appear to exist, it was necessary to construct an instrument to obtain the relevant data.

The areas on which it was felt to be important to have information fall into several categories.

- i) Demographic
- ii) Educational background
- iii) Perceptions of and attitudes toward the discipline being studied, the institution attended and subsequent occupation
- iv) The perceived attitudes of significant others, i.e. parents and friends.

There is a considerable amount of literature treating

of factors under these broad headings which is too extensive to review here; in brief, there is substantial reason to anticipate that each of the factors covered by the questionnaire is, at least for sub-populations, a source of influence on the occupational decision-making process. (See Chapter 1, especially 1.7 to 1.7.4)

The format included exhaustive categories for factual information such as age, YES/NO response categories for such items as the existence of older sibs, open-ended questions and five-point rating scales.

It was felt advisable to pilot the questionnaire on a small sample to ensure that the wording of questions was unambiguous, that subjects were capable of answering meaningfully, that no questions were inadvertently offensive and that the questionnaire could be completed in an acceptable length of time.

In view of these aims it seemed legitimate to utilize a small sample drawn from only one of the universities it was intended to include in the main study, since it was not intended to perform any analyses for which truly random sampling would have been necessary. The questionnaire may be seen in Appendix 3.

## Method

Subjects consisted of 25 undergraduate students attending the University of Liverpool, 14 males and 11 females, drawn from "Arts" based disciplines (N = 12) and "Science" based disciplines (N = 13). It was not felt necessary to ensure that all disciplines were represented, and the "Arts vs. Science" categorization seemed sufficient. [NB Arts/Science distinction based on self-report]

Potential subjects were approached individually with a request for co-operation, at various points around the campus, but mainly outside either the Sydney Jones (primarily arts and social sciences) library or the Harold Cohen library (mainly science and mathematics).

Subjects were allowed as much time as they required to complete the questionnaire, and asked for any comments or criticisms they might have afterwards.

## Results

The informal questioning following questionnaire administration gave no evidence of ambiguities, and the questionnaires were analyzed on the basis of sex

and discipline using the SPSS sub-programs "MARGINALS" and "CROSSTABS" (available on version 4.5).

Despite the size and relative homogeneity of the pilot sample, the analysis revealed differences between males and females, and between "Arts" and "Sciences" students on many of the questions, and a considerable number of these differences were found either to be statistically significant (at the  $p < 0.05$  level) or tending towards significance ( $p < 0.1$ ). See pp. 195 onwards.

The analysis on the basis of sex reveals a number of differences, most of which are statistically significant (at the  $p < 0.05$  level) or tending towards significance\*.

- i) Discipline: Women were more likely to be found in "Arts" disciplines.
- ii) Age: a large proportion of the females were mature students (i.e. older than 23 years).
- iii) Place of origin: females were more likely than males to come from either North-West England or the Midlands - i.e. to be relatively local.
- iv) The females were far more likely to have attended

\*In view of the manifest interaction between discipline and sex (see p. 201), the small N of S (N = 25) and the fact that the ODMQ was to be administered to a far larger sample in the projected main study (see Chapter 9) on which a more detailed analysis would be possible, it was felt to be unnecessary to present a detailed quantitative analysis of the present data on the basis of sex, since one of the objectives in piloting the ODMQ was to ascertain that the instrument had the potential to discriminate between disciplines.



grammar school than were the males. This may be in part attributable to their greater age, comprehensives having become more widespread in recent years.

- v) Females were more likely to have attended smaller schools (< 800 pupils); this is likely to be due to their age, and their greater likelihood of having attended grammar schools, which are (or were) typically smaller than comprehensives.
- vi) While few of the sample had an older sister, females were even less likely than males to have one.
- vii) All males applied to university through the UCCA system, whereas 27.3% of females did not. Once again, this may be due to the higher proportion of mature students among the women.
- viii) Females perceived the status of the university, relative to other universities, as lower than did the males.
- ix) Females also perceived the status of their own departments to be lower, relative to departments

of the same discipline at other universities than did males. However, it must be borne in mind that males and females within this sample tended to be drawn from different disciplines, so it is not clear whether such appraisals are based on an accurate assessment of generally held attitudes, or simply reflect the women's own attitude.

- x) Males were considerably more likely to claim to have a firm occupational intention, and
- xi) to perceive the discipline they were following as being related to their intended occupation.
- xii) Although neither males nor females considered that gaining admission to their particular university (i.e. Liverpool) was of greater than average difficulty compared with other universities, males considered it as considerably easier than did females, despite the fact noted above that males regarded the status of their university and department as being higher than did females.

While it may be objectively true that the difficulty of gaining admission was greater for

the females (due to their greater likelihood of being mature students, and of being in "Arts" disciplines) it is curious that they rate the status of department and university lower than do the males despite believing it harder to gain admission. Might it perhaps be that perceptions of difficulty lead the females to lower their aspirations to less highly regarded institutions and disciplines?

- xiii) Differences exist also in the perceived difficulty of gaining admission to the department from which subjects came.
- xiv) Male subjects claimed to attach more importance to a "good career" than did females, a depressing finding among such a population in the 1980s.
- xv) Yet despite this, females claimed to hold more positive attitudes towards employment than did the males!
- xvi) Males were more likely than females to perceive their parents as holding positive attitudes towards higher education.

- xvii) Male subjects claimed to have a stronger wish to enter their chosen occupation, and
- xviii) have a more positive overall attitude towards it.
- xix) Male subjects were more likely to perceive their friends as having positive attitudes towards their intended occupation than did female subjects.
- xx) All male subjects admitted having been influenced by financial considerations in their choice of occupation, whereas the majority of females denied that this was a relevant factor. It is not clear whether this reflects social desirability, the females' lower level of career orientation or pessimism concerning available financial rewards for women.
- xxi) All males perceived their intended occupation as sex-role appropriate, whereas a sizeable minority of females did not.

Analysis by discipline group (i.e. "Arts" vs. "Science") also revealed a number of differences.

- i) Discipline studied is strongly related to sex of subject.
- ii) The fathers of "Arts" students have lower educational qualifications than do the fathers of "Science" students.
- iii) The mothers of "Science" students are of higher occupational status than the mothers of "Arts" students.

It would therefore seem plausible to infer that "Science" students are of higher SES background than are "Arts" students.

- iv) Similarly, the occupational status of the fathers of "Science" students is higher than that of the fathers of "Arts" students.
- v) However, "Arts" students were more likely to have attended public/private or grammar schools than were "Science" students, and
- vi) to be drawn largely from smaller (< 800 pupil) schools, which

vii) were far more likely to be single-sex schools than the schools attended by "Science" students.

viii) "Science" students were considerably more likely than "Arts" students to have an older brother, and/or

ix) to have an older sister.

It therefore follows that "Arts" students are more likely to be first-born or only children.

x) All "Science" students had made their application to university through the UCCA system, whereas only 75% of "Arts" students had done so. This may be due to the predominance of women among "Arts" students, who are more likely to be mature students.

xi) Where application to university had been made through UCCA, all "Arts" students had included Liverpool among their choices, whereas a substantial minority of "Science" students had not. That is to say, their admission presumably took place through the clearing system.

xii) Whilst similar percentages of "Arts" and "Science" students based the ordering of their UCCA choices on "personal preference", a far larger percentage of "Arts" students used "strategic ordering", while only "Science" students combined the two methods.

xiii) Discipline was very highly related to whether or not an occupational choice had been made, and

xiv) where a choice had been made discipline was strongly related to the length of time for which a choice had been held; no "Arts" students had held an occupational choice for more than two years, whereas 50% of "Science" students had held their choices for between two and four years, and an additional 33.3% for longer.

It would therefore seem reasonable to consider "Science" students as being, on average, more occupationally oriented than "Arts" students.

xv) "Arts" students perceived it as being more difficult to gain admission to university than did "Science" students.

- xvi) "Arts" students had more positive attitudes towards employment (i.e. as a means of self-actualization) than did "Science" students.
- xvii) However, "Arts" students had less positive attitudes towards higher education.
- xviii) The perceived parental attitudes towards higher education reported by "Arts" students were more extreme than those reported by "Science" students.
- xix) "Arts" students perceived their friends as holding less positive attitudes towards higher education than did "Science" students.
- xx) They also perceived their friends as having less positive attitudes towards employment in general (i.e. being more inclined to view it as a necessary evil) than did the "Science" students.
- xxi) "Science" students expressed a stronger desire to enter their chosen occupation, and
- xxii) rated the probability of gaining entry to their chosen occupation more highly than did "Arts" students.



- xxiii) "Science" students also had a significantly more favourable attitude towards their chosen occupation than did "Arts" students,
- xxiv) they perceived their friends as having more positive attitudes towards their chosen occupation,
- xxv) they were far less likely to be able to think of a specific person who influenced their occupational decision,
- xxvi) they were more likely to claim to have been influenced by the media,
- xxvii) they were also more likely to recognize the influence of financial factors in their decision.
- xxviii) "Science" students were agreed that their intended occupations were generally perceived as sex-role appropriate whereas half the "Arts" students thought that their choices were not so regarded.
- xxix) Similarly, "Science" students perceived their friends as accepting their choice as appropriate, while "Arts" students were less inclined to view this as the case.

Quantitative Results

NB All statistics are Chi Squared,  
unless otherwise stated

i) Discipline by sex.  $p < 0.0734$

Arts	33.3% ♂	66.7% ♀
Science	76.9% ♂	23.1% ♀

ii) Discipline by fathers' educational level.\*

$p < 0.0747$

	1	2	3	4	5
Arts	25%	25%	33%	16.7%	-
Science	15.4%	-	23.1%	-	61.5%

- \* 1 Until minimum leaving age
- 2 Beyond min., but not beyond school
- 3 Further (other than higher) education
- 4 Higher education
- 5 Don't know

iii) Discipline by mothers' occupational status.

$p < 0.3676$

	I	II	IIINM	IIIM	HW
Arts	8.3	33.3	25	16.7	16
Science	30.8	38.5	-	7.7	23.1

iv) Discipline by fathers' occupational status.

$p < 0.25$

	I	II	IIINM	IIIM
Arts	-	33.3	50	16.7
Science	15.4	38.5	46.2	-

v) Discipline by type of school.  $p < 0.1951$

	Public/private	Grammar	Comp.	Other
Arts	16.7	75	8.3	-
Science	7.7	46.2	30.8	15.4

vi) Discipline by size of school.  $p < 0.1$

	Small	Medium	Large
Arts	66.7	33.3	-
Science	25	66.7	8.3

vii) Discipline by sex of school (i.e. coed. or single-sex).  $p < 0.1281$

	Single	Coed	Other
Arts	75	25	-
Science	38.5	46.2	15.4

viii) Discipline by older brother.  $p < 0.3252$

	Brother	No Brother
Arts	41.7	58.3
Science	69.2	30.8

ix) Discipline by older sister.  $p < 0.1210$

	Sister	No Sister
Arts	30.8	100
Science	30.8	69.2

x) Discipline by whether university application through UCCA system.  $p < 0.1916$

	Yes	No
Arts	75	25
Science	100	-

xi) Discipline by whether, if application through UCCA, university attended was listed.  $p < 0.3581$

	Yes	No
Arts	100	-
Science	76.9	23.1

xii) Discipline by strategy of ordering choice.  $p < 0.294$

	"Personal pref."	"Strategic"	"Mixed"
Arts	37.5	62.5	-
Science	38.5	38.5	23.1

xiii) Discipline by whether an occupational choice made  
 $p < 0.0043$

	Yes	No
Arts	27.3	72.7
Science	92.3	7.7

xiv) Discipline by length of time for which an occupational choice had been held.  $p < 0.0235$

	< 2 yrs	2-4 yrs	> 4 yrs
Arts	100	-	-
Science	16.7	50	33.3

xv) Discipline by perceived difficulty of gaining admission to university.  $p < 0.3916$

	1	2	3	4	5
Arts	-	-	100	-	-
Science	16.7	25	58.3	-	-

xvi) Discipline by attitude to employment.  $p < 0.202$

	1	2	3	4	5
Arts	-	-	-	33.3	66.7
Science	-	-	16.7	66.7	16.7

xviii) Discipline by attitude towards further education  
 $p < 0.0714$

	1	2	3	4	5
Arts	-	-	33.3	66.7	-
Science	-	-	-	58.3	41.7

xviii) Discipline by parental attitude towards further education.  $p < 0.048$

	1	2	3	4	5
Arts	-	-	33.3	-	66.7
Science	-	-	-	58.3	41.7

xix) Discipline by perceived attitudes of friends towards further education.  $p < 0.1312$

	1	2	3	4	5
Arts	-	-	66.7	-	33.3
Science	-	-	16.7	58.3	25

xx) Discipline by perceived attitudes of friends towards employment.  $p < 0.3154$

	1	2	3	4	5
Arts	-	33.3	-	66.7	-
Science	-	8.3	25	33.3	33.3

xxi) Discipline by strength of desire to enter chosen occupation.  $p < 0.0478$

	1	2	3	4	5
Arts	-	-	33.3	66.7	-
Science	-	-	-	36.4	66.6

xxii) Discipline by perceived probability of entry into chosen occupation.  $p < 0.0098$

	1	2	3	4	5
Arts	-	-	66.7	33.3	-
Science	-	-	-	36.4	63.6

xxiii) Discipline by overall attitude towards chosen occupation.  $p < 0.1314$

	1	2	3	4	5
Arts	-	-	33.3	66.7	-
Science	-	8.3	-	50.4	41.7

xxiv) Discipline by perceived attitudes of friends towards chosen occupation.  $p < 0.0963$

	1	2	3	4	5
Arts	-	50	50	-	-
Science	8.3	-	25	50	16.7

xxv) Discipline by whether the subject could think of a person who influenced their career decision:

Fisher's exact test = 0.96703                      NS

Arts	33.3% (Yes),	66.7% (No)
Science	9.1% (Yes),	90.9% (No)

xxvi) Discipline by whether the subject felt that their decision had been influenced by the media.

Fisher's exact test = 0.36264 NS

Arts 0% influence, 100% no influence.

Science 33.3% influence, 66.7% no influence.

xxvii) Discipline by whether or not financial factors influenced decision.

Fisher's exact test = 0.84615 NS

Arts 66.7% (Yes) 33.3% (No)

Science 75% (Yes) 25% (No)

xxviii) Discipline by whether intended occupation perceived as being generally thought of as sex-role appropriate.

Fisher's exact test = 0.16667 NS

Arts 50% (Yes) 50% (No)

Science 100% (Yes) 0% (No)

xxix) Discipline by whether subjects perceive their friends as viewing the chosen occupation as sex-role appropriate.

Fisher's exact test = 0.18182 NS



Arts	50% (Yes)	50% (No)
Science	100% (Yes)	0% (No)

### Discussion

While, owing to the size and homogeneity of the present sample, it would be premature to accord overmuch significance to the particular results of this survey, and while moreover, there would appear to be an interaction occurring between sex and discipline (see p. 201), which means that a consideration of the sex differences would be of little use at this point, it seems reasonably clear that the areas covered by the questionnaire are potentially fruitful topics for investigation. No evidence was encountered to suggest that any questions were ambiguous, impossible to respond to or objectionable to subjects, and it was therefore concluded that the questionnaire fulfilled its purpose and would be a suitable instrument for the projected study.

## CHAPTER 9

### MAIN STUDY TO INVESTIGATE THE FACTORS ASSOCIATED WITH OCCUPATIONAL CHOICE AND THE SELECTION OF A VOCATIONALLY SPECIFIC DISCIPLINE

#### 9.1 Introduction

The studies previously described above (Chapters 2 to 7) established that a wide consensus existed among sixth form pupils as to the specificity of various disciplines.

It therefore seemed plausible that students selecting highly specific disciplines either wanted to enter, or were prepared to risk entering the occupation corresponding to that discipline, and that where they did not plan to enter that occupation it would be because of clear plans which the anticipated qualification would be instrumental in implementing.

Consequently, it was hypothesized that the greater the specificity of the discipline, the greater would be the probability that an individual had made a firm occupational choice (albeit subject to subsequent refinement, cf Taylor, 1979), and

it was further hypothesized that for low specificity disciplines a dichotomy would arise between the majority with no clear occupational plans other than obtaining graduate status, and a small minority of potential "experts" and academics (e.g. lecturers in philosophy).

However, although certain hypotheses were tentatively held, the study was envisaged as essentially explorative, descriptive and predictive, rather than as a rigorous hypothesis-testing exercise.

The reasons for this were various; while extensive literature exists on the relationships between personality and occupation, socio-economic status and occupation, "familial Social" and "Neighbourhood social" factors and occupation, "Career Maturity", multi-attribute and expected utility (MAUT, SEU and VI theories)\* and decision-making under conditions of uncertainty (see above, Chapter 1), no previous project, so far as could be ascertained, had attempted to explore the ways in which these factors interacted, and there was consequently no theoretical base from which to derive sophisticated hypotheses.

Furthermore, at the time of writing there is a high, but non-random level of unemployment which has exerted an influence upon the employment prospects of graduates from different disciplines. It is therefore difficult to disentangle the desire to enter a particular occupational field from the desire to enter employment of any sort. Clearly, this is an area where the personal values held by the individual (e.g. degree of "work orientation" or, more properly, "employment orientation") might well interact with what might loosely be described as "temperamental" factors, such as confidence, ambition and adherence to a capitalist ideology.

Since the depression of the 1930s - which gave rise to so much research into work-related attitudes and the effects of unemployment (see, for example, Jahoda 1980) - considerable social and demographic changes have taken place, while research techniques have improved, and thus hypotheses derived from such findings would seem to be inappropriate.

Similarly, the cultural rift between Britain and the USA limits the applicability of the developmental, "Career Maturity" theories for the present,

although Super's Life-span approach (Super, 1980) would appear to be conceptually useful.

The basic approach taken in the present study was therefore relatively atheoretical.

## 9.2 Method

The survey was designed with the intention of comparing students of disciplines differing in their Occupational Specificity, and to reduce the risks of introducing bias by limiting the survey to one, potentially atypical university, it was decided, upon pragmatic consideration to include six universities in the project, situated in a variety of geographical locations and varying in their historical backgrounds. While these universities were not randomly selected, a point which must be borne in mind when considering the findings, there seems no reason to anticipate specific biases.

The universities included in the survey were

Liverpool  
Manchester  
University College, London  
University College, Cardiff  
U.W.I.S.T.  
Reading .

In addition it was decided to include the Pharmacy department of Chelsea College, London University, this discipline not being available at UCL.

Thus a matrix was envisaged of university by discipline, although since not every discipline was available at each university, it was, from the outset, an imperfect one.

Each head of department was sent a circular letter (see Appendix 7), outlining the proposed research and asking for their cooperation in administering the survey instruments to their students under (relatively) standard conditions.

Where this was permitted, the instruments were administered to the students as a group by the author, in a room made available by the department concerned.

It was appreciated that some heads of departments, while not averse to the project would be reluctant to sacrifice lecture time to it, and it was felt that where the head was so reluctant, students could be given the test battery in individual envelopes circulated through their departmental mailing systems. In some instances, departments were reluctant to cooperate even to the extent of distributing and collecting responses, and in those cases students were approached individually from lists of names provided by the departments. The letters to students approached in this way may be found in Appendices 8 and 9.

The final modes of administration may be seen in Table 9.1.

The differences in mode of administration, while unavoidable, may conceivably have influenced the responses obtained; however, the magnitude of such an effect cannot be estimated.

In terms of the distribution of the sample by university and discipline, this may be seen in Tables 9.2, 9.3, and 9.4. The overall sex distribution may be seen in Table 9.5

TABLE 9.1 Mode of administration of questionnaire.

Discipline	University						
	1	2	3	4	5	6	7
1	A	A			A	B	
2		C					
3	C		A	B			
4	C		B		A	C	
5	B			B		C	
6	C		C	C	C	B	
7	A	A		B			
8		C	C	C		B	
9				A			
10	B						
11	C	B	B				
12			B	C			
13	A	A	A*	A	A		
14	C		C	C			
16							
17	C	C	C	C			B

Key: A - Q admin. by exptr

A\*- Q admin. by other psychologist

B - Q completed individually, and returned via respective depts

C - Q completed and returned directly to exptr in SAE



TABLE 9.2 Discipline by University

	University							T
	1	2	3	4	5	6	7	
1 Architecture	17	26			53	12		108
2 Biology		13			6			19
3 Chemistry	2		32	1				35
4 Elect. eng.	2		5		1	25		33
5 Mech. eng.	13		1	14	10			38
6 English	2		6	17				25
7 Geography	10	49		1		39		99
8 History		9	1	1		9		20
9 Law				15				15
10 Medicine	45							45
11 Philosophy	1	4	12					17
12 Physics			15	1				16
13 Psychology	47	6	16	46	19			134
14 Sociology	6		1	1				8
16 Pharmacy							24	24
17 Miscellaneous	1	1	15	13				30
T	146	108	104	110	89	85	24	666

(N of respondents)

TABLE 9.3 Discipline by University by sex.

Male Ss

	University							
	1	2	3	4	5	6	7	T
1 Architecture	16	21			40	9		86
2 Biology		4			3			7
3 Chemistry	1		25					26
4 Elect. eng.	2		5		1	21		29
5 Mech. eng.	13		1	12	9			35
6 English	2		1	3				6
7 Geography	4	23		1		19		47
8 History		4				8		12
9 Law				8				8
10 Medicine	30							30
11 Philosophy	1	2	4					7
12 Physics			11					11
13 Psychology	17	2	2	16	7			44
14 Sociology	4							4
16 Pharmacy							7	7
17 Misc.		1	3	4				8
T	90	57	52	44	60	57	7	367

TABLE 9.4 Discipline by University by sex.

Female Ss

	University							T
	1	2	3	4	5	6	7	
1 Architecture	1	5			13	3		22
2 Biology		9			3			12
3 Chemistry	1		7	1				9
4 Elect. eng.						4		4
5 Mech. eng.				2	1			3
6 English			5	14				19
7 Geography	6	26				20		52
8 History		5	1	1		1		8
9 Law				7				7
10 Medicine	15							15
11 Philosophy		2	8					10
12 Physics			4	1				5
13 Psychology	30	4	14	30	12			90
14 Sociology	2		1	1				4
16 Pharmacy							17	17
17 Misc.	1		12	9				22
T	56	51	52	66	29	28	17	299

TABLE 9.5 Sex distribution of S by discipline.  
(in order of descending proportion of males)

Rank	Discipline (code)	% ♂	% ♀
1	Elec. Eng (4)	92.3	7.7
2	Mech. Eng (5)	90.3	9.7
3	Physics (12)	83.3	16.7
4	Architecture (1)	77.8	22.2
5	Chemistry (3)	75.0	25.0
6	Medicine (10)	67.4	32.6
7	Sociology (14)	66.7	33.3
8	History (8)	60.0	40.0
9	Biology (2)	57.1	42.9
10	Philosophy (11)	50.0	50.0
11	Geography (7)	47.6	52.4
12	Law (9)	40.0	60.0
13	English (6)	33.3	66.7
14	Psych (13)	32.3	67.7
15	Pharmacy (16)	31.8	68.2
16	Misc (17)	13.3	86.7

The survey instruments consisted of the Occupational Decision-Making Questionnaire, described above; Cattell's 16 PF measure of personality,\* Eysenck's EPI,\* Rotter's Locus of Control scale and a measure of Self-esteem obtained from Diggins (1966). These seemed, from the literature reviewed in Chapter 1, to be of particular relevance to the choice process.

### Scoring

The 16 PF and EPI were scored in the normal fashion, using the norms for undergraduate students given in the respective scoring manuals, and the Occupational Decision-Making Questionnaire was coded as shown in Appendix 5a.

However, problems arose in interpreting the replies to the Self-esteem and Locus of Control measures, due to the tendency for replies on the Self-esteem scale to become out of alignment (i.e. it was unclear in many cases which Actual Self rating related to which Ideal Self rating) and for the Rotter Scale to be left unanswered due to time problems.

The latter two measures were therefore excluded from any further part in the analysis.

\* The 16PF and EPI were selected since there is a considerable body of literature which has utilized them, and comparability may thus be maintained. See above, pages 105 - 107.

The responses within the ODMQ pertaining to parental occupation were scored using the CODOT classificatory system, and CODOT score subsequently collapsed to measures of prestige, using the Goldthorpe and Hope table. (See Appendix 5b.)

### 9.3 Analysis and Results

The results were analyzed in a number of different ways.

The first analyses were descriptive in nature, and concerned with getting an overall view of the data, and with observing frequencies and gross differences between the various groups.

These analyses were performed using the SPSS programs "FREQUENCIES" and "CROSSTABS", and the results may be seen in Table 9.6. Correlations were performed for the various subgroups between the variable OSI and all other variables, and these may be seen in Table 9.7. It appeared that the relationship between OSI and OCCUPCH was so close that it would be advisable to control for this factor and also for sex, and so further, partial

Contd p 236

TABLE 9.6. General Description of Sample.

NB See Appendix 5a for the meaning of the variable names used.

Sex:

367 (55.1%) ♂ , 299 (44.9%) ♀ .

Age:

467 (70.4%) 19 yrs  
 142 (21.4%) 20-23 yrs  
 54 ( 8.1%) 23

Agem:

238 (35.5%) 45  
 325 (48.9%) 46-56  
 76 (11.4%) 56

Agef:

117 (17.6%) (as for agem)  
 354 (53.2%)  
 146 (22.0%)

EducM:

244 (36.8%) - min. leaving age  
 104 (15.7%) beyond min., no post sch  
 116 (17.5%) further (not higher) educ  
 164 (24.7%) higher educ

Educf:

193 (29.1%) (as for educM)  
 70 (10.5%)  
 116 (17.5%)  
 250 (37.7%)

Table 9.6 (cont'd)

Origin:

NE	63 ( 9.6%)
NW	128 (19.5%)
Midlands	88 (13.4%)
SE	191 (29.0%)
SW	126 (19.1%)
Foreign	62 ( 9.4%)

Szorgn:

281 (42.6%)	small town
379 (54.4%)	large town

Tsch:

Private/public	157 (23.7%)
Grammar	214 (32.3%)
Comprehensive	249 (37.6%)
Other	43 ( 6.5%)

Szsch:

Small ( 800)	269 (40.6%)
Medium (800-1,800)	332 (50.2%)
Large ( 1,800)	61 ( 9.2%)

Sxsch

Single-sex	297 (44.7%)
Coed	340 (51.2%)
Other	27 ( 4.1%)

Older brothers:

Y	230 (35.1%)
N	426 (64.9%)

Older sisters:

Y	216 (32.7%)
N	444 (67.3%)



Table 9.6 (cont'd)

Disability:

Y	57 ( 8.6%)
N	606 (91.3%)

UCCA:

Y	645 (97%)
N	20 ( 3%)

Choice:

Y	611 (95%)
N	32 ( 5%)

Pref:

Y	457 (74.4%)
N	156 (25.4%)

Smdisc: (when university attended not chosen)

Y	150 (86.2%)
N	24 (13.8%)

Order:

Personal prefs	288 (44.7%)
"Strategic"	32 ( 5.0%)
Mix of a+b	264 (41.0%)

Occupch:

Y	379 (57.1%)
N	285 (42.9%)

Table 9.6 (cont'd)

SEX DIFFERENCES

$\chi^2$  Sex differences (crosstabs) (where occupch = 1)

♂ & ♀ compared on every variable in isolation, using  $\chi^2$ , and Pearson's r statistic. All comparisons are based upon Chi squared, unless otherwise stated.

Sign. diffs.

1) Sxsch (Pearson's r)

♂ more likely to attend coed schools  
r = .09, p = .0284

2) Disab

p = .04

♂ more likely to have a disability  
perc. as affecting poss. occup choice.

3) Disc.

4) Longch

♀ choice more likely to have been made within  
preceding 2 years (46.3% vs. ♂ 29.7%), ♂ s to  
have been made more than 4 years before (35.8%  
vs. ♀ 25.2%)

p = .0065

5) Fattfed

♂ perc. their friends as having more +ve  
att. towards FE

p = .01

6) Cash

♂ more infl. by financial consid.  
(43.5% vs. ♀ 26.5%)

p = .0013

Table 9.6 (cont'd)

7) Pgsexapp

84.9% ♂ vs. 68% ♀ thought that people in gen. would regard their intended occup as approp. Conversely, 23.8% ♀ vs. 7.3% ♂ felt it would be thought inappropriate.

$p < .0001$

8) Mainfact

♀ more infl. by parents (9.5%) vs. ♂ 6.5%) and intrinsic factors 59.9% vs. 51.7% whereas ♂ more infl. by financial consrd. (13.8% vs. ♀ 2.0%)

$p = .0019$

Extroversion

♂ more extrovert

Pearson's  $r = .12557$   $p = .0072$

I

$p = .0345$

diff. Distrib. for ♂ & ♀ , but no overall diff.

♀ cluster lower.

L

$r = .12395$   $p = .0079$

♀ score higher.

O

$r = .11313$   $p = .0138$

♀ score higher.

Table 9.6 (cont'd)

Q<sub>1</sub>

r = .122      p = .0087

♀ score higher.

Q<sub>3</sub>

p = .0006

Diff. distrib.

♂ spread wider, but no overall diff.

Q<sub>4</sub>

r = .207      p < .0001

♀ score higher.

OSI

r = -.257      p < .0001

♂ score higher.

TABLE 9.7. Correlations between OSI and predictor variables.

NB For an explanation of the variable names, see Appendix 5a.

For female S with occupational choice

Age	.17760	Diffadmd	-.14605
Agem	-.12279	Acadabil	.11652
Agef	-.24319	Crrimp	.17055
Educum	.10793	Attemp	.08319
Educf	.10445	Attfed	.00095
Occupm	-.07560	Pattfed	.11730
Occupf	-.03520	Fattfed	.17251
Origin	.00118	Fattemp	.07440
Szorgn	.00332	Strgch	.04131
Tsch	.04531	Probent	.05254
Szsch	.04699	Diffent	.05755
Sxsch	.22201	Overall	.03901
Bros	.17381	Pattocc	.23678
Sis	-.05948	Pinfl	.15656
Disab	-.02870	Mfempl	-.34028
Univ	.17035	Acqempl	-.00709
Disc	-.35764	Attper	.10834
UCCA	Not computable	Fattocc	.01435
Choice	Not computable	Pinflch	-.00383
Pref	.31203	Media	.04047
Smdisc	.26789	Cash	-.07225
Reldisc	-.12409	Pgsexapp	.23185
Order	.21890	Psexapp	.13311
Ustatus	-.05168	Fsexapp	.16666
Dstatus	-.07117	Mainfact	.10284
Longch	.01946	Extro	.25940
Discrel	-.19885	Nut	-.15896
Diffadmu	-.20096	Lie	-.17170

Table 9.7 (cont'd)

A	.10239
B	-.09222
C	-.08249
E	.25928
F	.34574
G	-.18801
H	.23526
I	-.26793
L	.24967
M	-.09653
N	-.13437
O	-.03378
Q <sub>1</sub>	.18453
Q <sub>2</sub>	-.28726
Q <sub>3</sub>	-.07875
Q <sub>4</sub>	.05148
Prestm	.13478
Prestf	.08887

Table 9.7 (cont'd)

For male S with occupational choice

Age	-.03962	Fattfed	-.01579
Agem	.02769	Fattemp	-.06130
Agef	.05106	Strgch	.19964
Educum	-.03068	Probent	.12496
Educf	-.14807	Diffent	-.04610
Occupm	.04565	Overall	.03060
Occupf	.04888	Pattocc	.20675
Origin	-.25389	Pinf	-.02805
Szorgn	-.02192	Mfempl	.05944
Tsch	.06156	Acqempl	-.11159
Szsch	-.04365	Attper	.03076
Sxsch	-.07307	Fattocc	.06174
Bros	-.02704	Pinflch	.01616
Sis	-.01760	Media	.00272
Disab	.01341	Cash	-.09225
Univ	-.17551	Pgsexapp	.01696
Disc	-.20197	Psexapp	-.01525
Pref	-.01365	Fsexapp	-.00253
Smdisc	.02039	Mainfact	-.01042
Reldisc	-.20358	Extro	-.05669
Order	-.06358	Nut	-.04019
Ustatus	-.00786	Lie	.14324
Dstatus	.07246	A	-.19964
Longch	.27285	B	.03344
Discrel	-.31824	C	-.05764
Diffadmu	-.04092	E	-.09618
Diffadmd	.03203	F	-.04174
Acadabil	.05408	G	.12707
Crrimp	.02739	H	-.07787
Attemp	.02320	I	-.06343
Attfed	.01522	L	.07056
Pattfed	.01090	M	.04432

Table 9.7 (cont'd)

N	-.13028
O	.04352
Q <sub>1</sub>	-.05113
Q <sub>2</sub>	-.09493
Q <sub>3</sub>	-.05747
Q <sub>4</sub>	-.05465
Prestm	.01678
Prestf	-.02480



Table 9.7 (cont'd)

For all S with occupational choice

Sex		Crrimp	.10444
Age	-.08318	Attemp	.01044
Agem	-.04937	Attfed	-.00872
Agef	-.08431	Pattfed	.07305
EducM	.04380	Fattfed	.04233
Educf	-.00970	Fattemp	-.04676
OccupM	-.00286	Strgch	.06783
Occupf	.01076	Probent	.08707
Origin	-.09396	Diffent	.04055
Szorgn	.00978	Overall	-.00120
Tsch	.03141	Pattocc	.18271
Szsch	-.01679	Pinfl	.03753
Sxsch	.08529	Mfempl	-.13098
Bros	.08219	Acqempl	-.04455
Sis	.00261	Attper	.05872
Disab	-.04168	Fattocc	.00960
Univ	.01599	Pinflch	-.01390
Disc	-.36657	Media	-.00037
UCCA	Not computable	Cash	-.12424
Choice	Not computable	Pgsexapp	.09421
Pref	.15769	Psexapp	.06967
Smdisc	.15883	Fsexapp	.09405
Reldisc	-.15653	Mainfact	.07468
Order	.08036	Extro	.16515
Ustatus	-.01571	Nut	-.06721
Dstatus	.00882	Lie	-.06447
Occupch	Not computable	A	-.01330
Longch	.13369	B	-.03109
Discrel	-.24010	C	-.04924
Diffadmu	-.11583	E	.09460
Diffadmd	-.05453	F	.16823
Acadabil	.11664	G	-.06522

Table 9.7 (cont'd)

H	.09452
I	-.12928
L	.13180
M	-.01674
N	-.10627
O	-.04215
Q <sub>1</sub>	.03791
Q <sub>2</sub>	-.15038
Q <sub>3</sub>	-.09086
Q <sub>4</sub>	-.03170
Prestm	.06182
Prestf	.03496

Table 9.7 (cont'd)

For all Subjects combined

Sex	-.268.95	Crrimp	.13705
Age	-.04635	Attemp	.07017
Agem	-.07812	Attfed	.03622
Agef	-.05850	Pattfed	.09265
Educum	.00151	Fattfed	.04513
Educf	-.02693	Fattemp	-.02071
Occupm	.01957	Strgch	.30905
Occupf	.06247	Probent	.30212
Origin	-.08815	Diffent	.28946
Szorgn	.02451	Overall	.28861
Tsch	-.02100	Pattocc	.31987
Szsch	-.01507	Pinfl	.12470
Sxsch	-.02100	Mfempl	.19130
Bros	.10545	Acqempl	.15045
Sis	-.00876	Attper	.20570
Disab	.00336	Fattocc	.24985
Univ	.01788	Pinflch	.27530
Disc	-.33836	Media	.29013
UCCA	not computable	Cash	.22529
Choice	-.05956	Pgsexapp	.28673
Pref	.04896	Psexapp	.28814
Smdisc	.08124	Fsexapp	.08051
Reldics	-.11952	Mainfact	.23625
Order	.02656	Extro	.08782
Ustatus	-.02128	Nut	-.05083
Dstatus	.01035	Lie	.00785
Occupch	-.31189	A	.02232
Longch	.31578	B	.01653
Discrel	.15539	C	-.02269
Diffadmu	-.06966	E	.04418
Diffadmd	-.02856	F	.08059
Acadabil	.03808	G	.00956

Table 9.7 (cont'd)

H	.08608
I	-.07555
L	.00048
M	.02347
N	-.01848
O	-.03637
Q <sub>1</sub>	-.05012
Q <sub>2</sub>	-.08897
Q <sub>3</sub>	.00800
Q <sub>4</sub>	-.09204
Prestm	.00211
Prestf	-.02038

correlations were conducted. These may be found in Table 9.8.

The second approach was oriented toward prediction, and employed the technique of Multiple Regression in order to arrive at a set of equations to predict OSI for each of six sub-groups within the sample.

In the earlier analyses, the sample was divided into only four sub-groups, on the basis of two values of sex and two values of occupational choice, i.e. male vs. female and occupational choice made vs. not made.

However, it became apparent that this was inadequate, since some respondents denied having made an occupational choice, but nevertheless went on to answer questions concerning it, which were logically incompatible with a genuine absence of at least a tentative choice; for example, replying as to their attitudes towards their intended occupation, or having a parent in the intended occupation. Accordingly, these confused individuals were extracted to form an additional two groups by the construction of the variable NEWOCSEX (see Table 9.9).

TABLE 9.8. Partial Correlations (p < 0.05)

9.8.1 Occupch, controlling for sex

<u>Variable</u>	<u>Coefficient</u>	<u>Sign.</u>
Disc	.1057	p = .025
Dstatus	-.1428	p = .004
Longch	-.8052	p = .001
Discrel	-.8196	p = .001
Crrimp	-.1329	p = .007
Attemp	-.1793	p = .001
Attfed	-.0974	p = .035
Pattfed	-.1357	p = .006
Stragch	-.7599	p = .001
Probent	-.7436	p = .001
Diffent	-.7175	p = .001
Overall	-.7601	p = .001
Pattocc	-.7273	p = .001
Pinfl	-.3908	p = .001
Mfempl	-.6311	p = .001
Acqempl	-.5220	p = .001
Attper	-.4400	p = .001
Fattocc	-.6753	p = .001
Pinfl	-.7727	p = .001
Media	-.8035	p = .001
Cash	-.7967	p = .001
Pgsexapp	-.6955	p = .001
Psexapp	-.7088	p = .001
Fsexapp	-.6942	p = .001
Mainfact	-.6119	p = .001
Extro	.1004	p = .012
Lie	-.1366	p = .001

Table 9.8.1 (cont'd)

E	.0843	p = .028
F	.1135	p = .005
G	-.1780	p = .001
Q <sub>1</sub>	.1541	p = .001
Q <sub>3</sub>	-.1395	p = .001
Q <sub>4</sub>	.0892	p = .022
OSI	-.3271	p = .001

9.8.2 Occupch, controlling for OSI

Dstatus	-.1450	p = .003
Longch	-.7878	p = .001
Discrel	-.8225	p = .001
Crrimp	-.0965	p = .036
Attemp	-.1447	p = .003
Pattfed	-.1113	p = .019
Strgch	-.7315	p = .001
Probent	-.7214	"
Diffent	-.6957	"
Overall	-.7388	"
Pattocc	-.6998	"
Pinfl	-.3723	"
Mfempl	-.6219	"
Acqempl	-.5126	"
Attper	-.4052	"
Fattocc	-.6490	"
Pinfch	-.7539	"
Media	-.7857	"
Cash	-.7808	"
Pgsexapp	-.6566	"
Psexapp	-.6853	"
Fsexapp	-.6691	"
Mainfact	-.5943	"
Extro	.1056	p = .008
Lie	-.1342	p = .001
E	.0943	p = .017
F	.1358	p = .001
G	-.1544	p = .001
(L	.0719	p = .052)
Q <sub>1</sub>	.1576	p = .001
Q <sub>3</sub>	-.1142	p = .005
Q <sub>4</sub>	.0926	p = .018
Anx	.0739	p = .048



9.8.3 Occupch, controlling for sex & OSI

Dstatus	-.1441	p = .004
Longch	-.7868	p = .001
Discrel	-.8215	p = .001
Crrimp	-.0990	p = .033
Attemp	-.1580	p = .002
(Attfed	-.0848	p = .058)
Pattfed	-.1141	p = .017
Strgch	-.7356	p = .001
Probent	-.7202	p = .001
Diffent	-.6937	"
Overall	-.7387	"
Pattocc	-.7000	"
Pinfl	-.3721	"
Mfempl	-.6192	"
Acqempl	-.5094	"
Attper	-.4057	"
Fattocc	-.6503	"
Pinflch	-.7536	"
Media	-.7858	"
Cash	-.7835	"
Pgsexapp	-.6654	"
Psexapp	-.6838	"
Fsexapp	-.6677	"
Mainfact	-.5912	"
Extro	.1112	p = .006
Lie	-.1349	p = .001
E	.0909	p = .020
F	.1326	p = .001
G	-.1599	p = .001
Q <sub>1</sub>	.1488	p = .001
Q <sub>3</sub>	-.1193	p = .004
Q <sub>4</sub>	.0795	p = .036

9.8.4 OSI, controlling for sex

Disc	-.2918	p = .001
Reldisc	-.0912	p = .045
Occupch	-.2957	p = .001
Longch	.2922	p = .001
Discrel	.1461	p = .003
Crrimp	.1325	p = .007
Attemp	.0984	p = .034
Pattfed	.0921	p = .043
Strgch	.3120	p = .001
Probent	.2835	"
Diffent	.2660	"
Overall	.2784	"
Pattocc	.3086	"
Pinfl	.1297	p = .008
Mfempl	.1592	"
Acqempl	.1345	p = .006
Attper	.2055	"
Fattocc	.2492	"
Pinflch	.2670	"
Media	.2809	"
Cash	.2322	"
Pgsexapp	.3045	"
Psexapp	.2703	"
Fsexapp	.2720	"
Mainfact	.1964	"
G	.0839	P = .029
I	-.1191	p = .004
Q <sub>3</sub>	.0832	p = .030

9.8.5 OSI, controlling for occupch

Sex	-.2415	p = .001
Origin	-.0988	p = .033
Bros	.0958	p = .037
Disc	-.3257	p = .001
Reldisc	-.0990	p = .033
Longch	.1024	p = .028
Discrel	-.1764	p = .001
Crrimp	.0923	p = .043
Strgch	.1154	p = .016
Probent	.1063	p = .024
Diffent	.1000	p = .031
Overall	.0817	p = .064
Pattocc	.1385	p = .005
Pgsexapp	.1079	p = .022
Psexapp	.0987	p = .033
Fsexapp	.1032	p = .027
I	-.0744	p = .047
(F	.0707	p = .055)

9.8.6 OSI, controlling for sex & occupch

Origin	-.1042	p = .026
Disc	-.2743	p = .001
Longch	.0956	p = .038
Discrel	-.1758	p = .001
Crrimp	.0984	p = .034
Strgch	.1407	p = .004
Probent	.0997	p = .032
Pattocc	.1427	p = .004
Pgsexapp	.1440	p = .004
Psexapp	.0901	p = .047
Fsexapp	.0970	p = .036
F	.0779	p = .039
I	-.1172	p = .004

The procedure adopted was fairly straightforward; first, the total sample was treated as a whole, and a listwise deletion regression carried out using all variables. Those variables which failed to contribute a significant improvement to the value of F were excluded from further consideration, and the job re-run without them, since although they might have had little influence in themselves, their removal would affect the position of those remaining. This process was continued until all the variables failing to reach significance had been excluded using the default option of 0.05 for inclusion.

The procedure was repeated for:

- (a) All males
- (b) All females
- (c) All persons who had made firm occupational choices
- (d) All persons who had not made an occupational choice
- (e) All persons who were inconsistent, disclaiming a choice, but replying to other questions as though a choice had been made

- (f) Males with firm choices
- (g) Males without choices
- (h) Inconsistent males
- (i) Females with firm choices
- (j) Females without choices
- (k) Inconsistent females

It was found that the subdivision on the basis of both sex and choice status produced far larger values of F, and prediction equations were generated for each of these groups (i.e. f to k), by multiplying each remaining variable by its regression weight and summing the products.

The name given to the new variable NEWOSI, reflected its theoretic relationship to the original criterion, OSI.

The predictive power of each equation was tested by producing a correlational matrix of OSI against NEWOSI, since not only was it necessary that each equation should predict for the appropriate group, but also that it should predict better for

that group than did the inappropriate equations.  
(See Tables 9.9 and 9.10.)

The use throughout of a listwise mode of analysis, in which a person was excluded from the analysis if any data was missing unfortunately meant that in some cases samples were rather small, and this fact should be borne in mind in applying the equations to different samples.

Similarly, the products derive from the multiplication of each subject's score on the various scales within the instrument used, and thus any change in wording or format might well be expected to affect the equations' efficacy.

TABLE 9.9 "NEWOCSEX CATEGORIES".

Sex	Whether Occup. choice made		
	Yes	No (but inconsistent)	No (consistent)
♂	NEWOCSEX1	NEWOCSEX2	NEWOCSEX5
♀	NEWOCSEX3	NEWOCSEX4	NEWOCSEX6

NEWOSI is predicted value of OSI derived from regression for the appropriate subgroup; i.e. NEWOCSEX1 NEWOSI1 etc.

TABLE 9.10 "CORRELATIONS BETWEEN NEWOCSEX & NEWOSI".

	NEWOSI					
	1	2	3	4	5	6
NEWOCSEX1 N = 124	.6514 p = .001	.1896 p = .017	-.037 p = .341	.0777 p = .195	.0471 p = .302	-.0271 p = .383
2 N = 35	-.0889 p = .306	.9961 p = .001	-.1761 p = .156	-.1398 p = .212	.086 p = .312	.1346 p = .22
3 N = 81	.0371 p = .371	.2965 p = .004	.8526 p = .001	-.1430 p = .101	.0601 p = .297	.028 p = .402
4 N = 43	-.0619 p = .347	-.0278 p = .43	-.1478 p = .172	.3977 p = .004	.1195 p = .223	.2829 p = .033
5 N = 27	-.0069 p = .486	.8829 p = .001	.2363 p = .118	.1952 p = .165	1.000 p = .001	.0626 p = .378
6 N = 36	.0762 p = .329	-.0862 p = .309	.0073 p = .483	.3986 p = .008	-.3291 p = .025	.4175 p = .006

(See Appendix C)



9.4 RESULTS: Final Equations and a Discussion of Their Significance

See pull-out at back of volume.

Prediction equations obtained

**Males with firm occupational choices**

$$\begin{aligned} \text{NEWOSI1} = & ( \text{DISCREL} * -31.440481 ) + ( \text{LONGCH} * 11.524166 ) \\ & + ( \text{CASH} * -11.326033 ) + ( \text{RELDICS} * -11.931569 ) \\ & + ( \text{ANX} * 6.2646712 ) + ( \text{LIE} * 0.23841278 ) \\ & + ( \text{N} * -3.4261508 ) + ( \text{M} * 2.2944047 ) \\ & + ( \text{STRGCH} * 11.374793 ) + ( \text{EDUCF} * -6.4522622 ) \\ & + ( \text{ACADABIL} * 13.632506 ) + ( \text{ATTFED} * -8.701939 ) \\ & + ( \text{G} * 3.9591652 ) + ( \text{PRESTM} * 0.53743994 ) \\ & + ( \text{MFEMPL} * 10.93819 ) + ( \text{E} * -2.5013335 ) \\ & + ( \text{FATTEMP} * -6.0794637 ) + ( \text{PRESTF} * 0.39955852 ) \\ & + ( \text{PROBENT} * -5.2727338 ) + 170.56899 \end{aligned}$$

**Undecided males**

$$\begin{aligned} \text{NEWOSI2} = & ( \text{DIFFENT} * 70.743633 ) + ( \text{MAINFACT} * -80.751234 ) \\ & + ( \text{PINFLCH} * 188.44347 ) + ( \text{PROBENT} * -42.007941 ) \\ & + ( \text{RELDICS} * -13.700473 ) + ( \text{ATTEMP} * 4.6625573 ) \\ & + ( \text{G} * 3.7454248 ) + ( \text{FSEXAPP} * -54.717677 ) \\ & + ( \text{STRGCH} * -28.760906 ) + ( \text{DISCREL} * -295.49959 ) \\ & + ( \text{USTATUS} * -27.935986 ) + ( \text{ORDER} * -27.529937 ) \\ & + ( \text{NUT} * -0.57924904 ) + ( \text{ACQEMPL} * 48.872253 ) \\ & + ( \text{B} * -6.1827918 ) + ( \text{M} * 9.7599835 ) \end{aligned}$$

+ ( PREF \* 96.782691) + ( SMDISC \* -73.257994)  
 + ( F \* 6.3614886) + ( PSEXAPP \* -379.113)  
 + ( PGSEXAPP \* 628.01146) + ( CASH \* -114.23077)  
 + ( EDUCF \* 13.25734) + ( FATTFED \* 14.99944)  
 + ( FATTEMP \* -12.196317) + ( MFEMPL \* -67.647976)  
 + ( SZSCH \* 26.662598) + (DIFFADMD \* -12.804893)  
 + ( AGEM \* -12.119489) + ( H \* -7.2206408)  
 + ( PINFL \* -7.1997832) + ( PATTFED \* 6.4899196)  
 + ( SXSCH \* 10.221356) + ( MEDIA \* 45.391993)  
 + 168.91955

**Females with occupational choices**

NEWOSI3= ( F \* 15.978269) + ( MFEMPL \* -71.974127)  
 + ( PGSEXAPP \* 31.978958) + ( SXSCH \* 29.908915)  
 + ( BROS \* 34.140796) + ( G \* -11.99868)  
 + ( DIFFADMU \* -48.526307) + ( SMDISC \* -7.6178002)  
 + ( OVERALL \* 64.671035) + ( Q2 \* -19.815087)  
 + ( ATTFED \* -58.684785) + ( EDUCF \* -18.398664)  
 + ( PRESTF \* 2.7427637) + ( PINFLCH \* -49.814513)  
 + ( MEDIA \* 71.581529) + ( ACQEMPL \* 53.7622)  
 + ( C \* -15.79612) + ( TSCH \* 30.944266)  
 + ( STRGCH \* -59.020245) + ( FATTFED \* 34.31782)  
 + ( ATTEMP \* 31.158028) + ( A \* -11.107376)  
 + ( SZSCH \* -24.385984) + ( PREF \* 34.91409)  
 + ( FATTOCC \* -13.423046) + ( PATTFED \* -18.603909)

+ ( L \* -8.6661262) + ( N \* -7.4508647)  
 + ( USTATUS \* 17.402994) + ( PINFL \* -9.1992566)  
 + 407.20905

#### Undecided females

NEWOSI4= ( SXSCH \* -24.894173) + ( ANX \* 20.580411)  
 + ( MAINFACT \* 44.925347) + ( AGEM \* -24.779457)  
 + ( FATTOCC \* -21.56918) + ( STRGCH \* 26.36933)  
 + ( M \* 18.777022) + ( EXTROX \* 3.9018994)  
 + ( FATTEMP \* -19.477233) + ( ATTFED \* 52.877264)  
 + ( B \* -13.82225) + ( MEDIA \* 211.05903)  
 + ( PGSEXAPP \* -260.12266) + ( N \* -5.1814808)  
 + ( Q3 \* 11.547157) + ( Q4 \* -8.4243883)  
 + ( ATTPER \* -18.243173) + ( TSCH \* - 11.709035)  
 + ( FSEXAPP \* 186.49559) + ( USTATUS \* -30.572759)  
 + ( NUT \* 0.51544557) + ( CHOICE \* -63.077478)  
 + ( PINFLCH \* - 76.388905) + ( CASH \* -83.006668)  
 + ( DIFFADMU \* 15.364035) + ( MFEMPL \* 21.100247)  
 + ( ATTEMP \* -12.841762) + ( DIFFENT \* -30.783679)  
 + ( I \* -7.6822344) + ( DIFFADMD \* 19.036097)  
 + ( C \* 4.4188842) + ( OVERALL \* 13.05383)  
 + ( PINFL \* 3.8072097) + 65.510678

#### Males without occupational choices

NEWOSI5= ( ORDER \* -14.989621) + ( DIFFADMD \* -5.8352187)

+ ( Q2 \* -6.3083754 ) + ( USTATUS \* -26.927498 )  
 + ( AGEM \* -5.5083217 ) + ( SZSCH \* 16.765425 )  
 + ( ANX \* -2.5293831 ) + ( EDUCM \* 8.3269817 )  
 + ( B \* -3.3180726 ) + ( SXSCH \* -14.99725 )  
 + ( EDUCF \* -2.8430795 ) + ( I \* 2.5254055 )  
 + ( L \* 1.7872196 ) + ( AGEF \* -6.946714 )  
 + ( Q4 \* -2.5763889 ) + ( TSCH \* 2.7466032 )  
 + ( ATTEMP \* 2.4522406 ) + ( G \* -1.0651535 )  
 + ( EXTRO \* 0.027777108 ) + ( O \* -0.9419222 )  
 + ( PREF \* 1.3714294 ) + ( F \* 0.11425765 )  
 + ( CRRIMP \* -0.13542323 ) + ( N \* 0.024121286 )  
 + ( PRESTF \* 0.0010958651 ) + 390.05973

**Females without occupational choices**

NEWOSI6= ( DSTATUS \* -17.482487 ) + ( DISAB \* 51.506301 )  
 + ( CHOICE \* -1.708132 ) + ( ATTEMP \* -14.180069 )  
 + ( A \* 6.1950699 ) + ( ORDER \* 2.7538337 )  
 + ( USTATUS \* 1.1762233 ) + ( EDUCM \* 5.051506 )  
 + ( I \* -3.2296057 ) + ( EDUCF \* -14.561784 )  
 + ( BROS \* 24.296924 ) + ( FATTFED \* 2.0357287 )  
 + ( UNIV \* -4.5835714 ) + ( AGEM \* -16.184172 )  
 + ( LIE \* -0.25756589 ) + ( E \* -4.5257231 )  
 + ( G \* -1.0320314 ) + ( DIFFADMU \* -.2.566149 )  
 + ( L \* -2.7474659 ) + ( AGEF \* 7.5874022 )  
 ( ( SIS \* 3.0464427 ) + ( SZSCH \* -7.390645 )

+ ( M \* 2.4944336 ) + ( EXTRO \* 0.12477875 )  
+ ( C \* 0.329858806 ) + ( ORIGIN \* 3.7274547 )  
+ ( SZORGN \* -5.213669 ) + ( CRRIMP \* -0.1667172 )  
+ 224.36747

## 9.5 Discussion of Results

The six equations can be seen to vary considerably in the emphasis they accord to demographic, attitudes/beliefs, and personality factors. The weights given to the various factors must be viewed in the light of the fact that the direction of scoring means that in some cases a low score reflects a high level of the variable under consideration; for example, CASH is scored in such a manner, meaning that a negative weight means that financial factors were seen as important. A full list of the variables, with the direction of scoring may be found in the appendix 5a.

Thus, for NEWOSI1\*, the first nine predictors are a mixture of personality factors and attitude/beliefs, with no demographic factors entering as predictors until tenth place; for NEWOSI2, the first demographic factor enters at eighth place, following a preponderance of attitude/belief predictors; for NEWOSI3, the demographic factors assume a prominent place, accounting for four out of the five best predictors; for NEWOSI4, only four such factors are involved, occupying the first, fourth, fourteenth and nineteenth places, whereas

\*see Table 9.9

for NEWOSI5 and 6, eight and ten demographic predictors respectively are included in the equations.

That is to say, for the most decided groups, attitudes/beliefs and personality factors are the best predictors of their occupational plans, while for the undecided groups, demographic factors are of more apparent importance.

While it is inevitable that for the groups totally lacking a stated occupational choice, attitudes towards that occupation cannot exist to function as predictors, there is no obvious reason for the unimportance of personality factors as predictors of the level of occupational specificity, other than the possibility that for these groups, personality might be more closely associated with the specific discipline, so that disciplines close in level of specificity might contain discrete subgroups in terms of personality. However, the differences between the personalities in different disciplines would not be sufficient to account for the relative unimportance of any personality factors for these groups.

Nor does the insignificance of demographic factors as predictors for the more decided groups indicate that no part was played by these factors in bringing about the more obvious attitudinal factors which serve as better predictors. Yet, in a sense, these patterns provide a bridge between the determinism of sociological theories and the more person-centred personality and selfconcept theories, in that one might argue that in order to escape from demographic determinants as major constraints upon occupational entry, it is necessary for the person involved to exercise his or her critical capacities to form beliefs and attitudes concerning future possibilities, rather than remaining in a state of fatalism and indifference. Whether this is possible is a separate question.

The attitudes and beliefs, together with personality factors of the occupationally decided groups are not simply equivalent predictors to demographic factors, although it is impossible to say from these equations the extent to which the person's background may encourage the emergence of such; were this the case, the demographic factors would be equally good predictors of occupational specificity, and this is not the case.



If one looks at the particular demographic factors which are of predictive use for the various groups, these differ considerably.

For male subjects with firm occupational intentions, the demographic predictors are EDUCF, PRESTM, MFEMPL and PRESTF; that is, the educational level of the father, the prestige of the occupations of both parents and whether or not a parent is employed in the chosen occupation. Variables related to the school do not appear at all.

The first predictor, DISCREL, concerns the extent to which the discipline pursued is seen as related to the intended occupation, LONGCH refers to the length of time for which they have held that intention, CASH refers to the importance they accorded to financial factors in making their choice and RELDISC to the similarity between the discipline originally chosen and that entered, if different. The negative weighting given to DISCREL and RELDISC is due to the direction of scoring; in this case it means that the discipline IS related to the occupation, the discipline IS similar to that chosen and financial factors WERE admitted to have been of importance.

Taken together, these factors suggest a high level of planfulness; these young men appear to have made decisions and then taken appropriate action to implement their choices, rather than allowing themselves to be the victims of chance occurrences or demographic determinants.

These factors, which form a coherent whole, are followed by a cluster of personality variables; ANX, the second-order personality factor concerned with anxiety derived from the 16PF, LIE, from the EPI, N, the 16PF factor relating to "shrewdness", and M, "imaginative, impractical", which are counter-intuitive in that the negative weighting for shrewdness and positive weighting for impracticalness do not seem quite in keeping with the emerging picture of dynamic, decisive young men! However, due to the fact that in these equations, inter-correlations are partialled out, this may be more a function of the statistical procedure. Variables entered late in the equations will necessarily function in a very different way from the way in which they would operate, taken in isolation.

For undecided (NEWOSI2) males, the demographic predictors are ACQEMPL, EDUCF, MFEMPL, SZSCH, AGEM, and SXSCH.

DIFFENT indicates that they view their tentative career as being difficult to enter, MAINFACT suggests that the main factor in their choice was likely to have been a parent or other person of their acquaintance, particularly when supported by the presence of PINFLCH. Consistent with their lack of optimism as reflected by DIFFENT, PROBENT similarly indicates that they do not hold much faith in their ability to enter the occupation which they would wish to pursue. Possibly this could explain why they are undecided. However, they hold positive attitudes towards employment in general - work seen as good in itself, rather than a necessary evil.

For the females with firm choices, the demographic predictors are MFEMPL, SXSCH, BROS, EDUCF, PRESTF, ACQEMPL, TSCH, and SZSCH.

PGSEXAPP refers to people in general being likely to view the choice of occupation as sex-role inappropriate, and the higher the score on this, the higher OSI. The more occupationally specific disciplines are, on the whole such as would be regarded by many as unsuitable for girls, and the girls in question are clearly aware of this but have not allowed it to deter them from

their chosen discipline.

For the undecided females, the demographic predictors are SXSCH, AGEM, TSCH, and MFEMPL.

These factors are, of course, not surprising, given the wealth of literature on sex-role stereotyping, the influence of school environment and the importance of role-models. SXSCH (i.e. whether the school is single-sex or coeducational) is the best of this category of predictors for the undecided females, and second only to MFEMPL for the females with firm occupational choices. In MFEMPL, clearly one can infer the possibility of a role-model, and even if the parent in question should have been the father, the girl will have been able to base her choice upon accurate information rather than depending upon a stereotyped perception of that occupation.

Similarly, the presence of ACQEMPL as a further predictor indicates that additional, realistic information and further potential models were available to the girl at the time she was formulating her choice of career.

Again, there is ample support in the literature for the presence of male siblings being associated with achievement orientation in their sisters, and with a lesser degree of stereotyping (eg Farmer, 1980).

For the males without any occupational choice the predictors are AGEM, SZSCH, EDUCM, SXSCH, EDUCF, AGEF, TSCH, and PRESTF, and for the females without any choice DISAB, EDUCM, EDUCF, BROS, AGEM, AGEF, SIS, SZSCH, ORIGIN, and SZORGN.

The negative weighting of USTATUS and DSTATUS for the males and females without any occupational choice respectively indicates that they do not regard their universities and departments as being prestigious; whether this is objectively the case is a separate matter, but if so might well be a function of the selection process. Highly prestigious departments of occupationally specific disciplines are unlikely to be impressed by young people who have not decided upon their intended occupation.

It has been pointed out above that the nature of multiple regression is such that variables other than the first entered do not function in the way

in which they would if taken in isolation, and there is therefore no point in looking in great detail at the particular variables entered and attempting to relate them to the various research which HAS used them in isolation. For example, much has been written upon the topic of sex-role stereotyping and its relation to educational and occupational aspirations and achievement, but that is not to say that when sex-role appropriateness is a predictor it operates in a similar way. In essence, given any preceding variable it ceases to BE sex-role appropriateness and becomes, instead, a function of the interaction between sex-role appropriateness and the previously entered variables. That it is entered at all indicates that in some way, directly or indirectly, it is related to the occupational specificity of the discipline pursued, but the complexity of the interactions make it impossible to go further than that.

## 9.6 Conclusion

The purpose of generating the above equations was to provide a method of predicting the specificity of the discipline which young people enter, and by implication, the extent to which they are operationalizing a concrete occupational choice, in order that scarce vocational guidance resources could be most effectively utilized.

It has been shown that these equations do, in fact predict for this particular sample of young people; this is demonstrated by the magnitude of the correlations between NEWOSI and OSI, but it is not known to what extent they would predict for a different group. Similarly, the stability of the predictive power of the equations has not been tested, and indeed it is likely that significant changes in the educational and economic spheres would be reflected by a marked drop in such predictability.

While it might be possible to construct a new instrument on the basis of those used, saving time in administration by the inclusion of only those variables known to be good predictors, the

previously mentioned possibility of instability would seem to lower the value of doing so.

Similarly, one could derive second, third and so on level interaction variables from the data, but while this might be quite interesting to carry out it would be unlikely to yield conceptually meaningful results. The equations would seem to demonstrate the common-sense view that of course all the variables affecting a person interact; this however, has not always been given sufficient attention, and thus theories have flourished which attempt to concentrate on the environment at the expense of the individual, or conversely, on the individual in isolation from his societal and economic matrix. It is evident that such theories which ignore the existence of interactions are therein inadequate.

This thesis does not aspire to present a new theory of occupational choice, and it is felt that these conclusions are compatible with the model put forward by Ginzberg et al. and also with those of Super. No attempt has been made to inquire into individual decision-making by the subject of this investigation, as this was felt to be



inappropriate for group testing and prediction.  
Furthermore, we are not concerned with the choice  
of the person in isolation, since occupational  
choices imply a corresponding choice OF the person  
by an institution, in preference to other applicants  
for scarce opportunities.

## CHAPTER 10

### CONCLUSIONS

This thesis attempts to cast light on the topic of Occupational Specificity; in particular, it attempts to disentangle the ways in which personal/demographic, interpersonal and extra-personal factors are inter-related as predictors of the degree of specificity of occupational choices made by undergraduate students.

The concept of Occupational Specificity may be summarized as being the extent to which a given academic discipline is related to a subsequent notional occupation, and was advanced for the purpose of this thesis as having several advantages as a criterion. Being a novel construct, no literature on it exists as such.

The advantages of using the notion of Occupational Specificity are:-

- It does not carry the evaluative connotations associated with such terms as "Career Maturity" or "Career Decidedness", terms which have been used by such theorists as Super, Tiedemann and O'Hara and Crites and which therefore cannot be used in a neutral manner.

- It distinguishes the construct under consideration from the construct of Occupational Crystallization, a term which has a rather different meaning within the setting of, for example, Ginzberg's theoretical framework.
- It allows disciplines which differ in their Arts/ Science orientation to be ordered along a single dimension.
- It is a function of discipline rather than of persons.

The first study (Chapter 2) investigated the possibility of using a three-level approach to Specificity, High, Medium and Low, but found that this did not discriminate with sufficient delicacy between disciplines in the middle range. The construction of the Occupational Specificity Index provided a more refined ordering of disciplines.

The second study (Chapter 3) looked at the perceptions of Specificity held by sixth-form school pupils and undergraduate students, and found strong empirical support for the use of the construct as reflecting the perceptions of undergraduates themselves, and also those of the sixth-formers from whom potential undergraduates

would be drawn. It was also established that the perceptions held by the sixth-formers were not specific to a certain geographic region of the country, but were shared (Chapter 5) by sixth-formers from a different part of the country. Despite differing in their backgrounds and educational/occupational aspirations the two groups showed a remarkable degree of homogeneity in their ratings of Specificity, and a significant agreement with the perceptions held by the undergraduates. It was further established empirically that the construct of Specificity was distinct from, although closely related to Occupational Utility, the extent to which a discipline was perceived as being linked with employment, as distinct from employment in a particular occupation. The extent of association between the two would seem to be inherently dependent upon the disciplines under consideration.

Perceptions of Occupational Utility were related (Chapter 6) to the objective probabilities of graduates from the disciplines under consideration obtaining employment within six months of graduation, using published data on the first destinations of graduates, and were found to be quite accurate; the strength of the relationship was increased when ratings were examined separately by sex, and when the time lag between

the time at which the ratings were made and the data on graduates obtained was reduced. The strength of the relationship was quite surprising, given the fact that many of the sixth-formers were not planning any further education, and were thus unlikely to have investigated the graduate employment opportunity situation in any formal manner.

The Arts/Science orientation of the disciplines being considered was examined in relation to both Specificity and to Utility, in order to eliminate a potential source of confusion. Students rated the disciplines along a continuum, rather than simply consigning them to categories, and it was found that while a significant relationship existed in both cases, with the more scientific disciplines being higher in terms of both Specificity and Utility, the relationships were such as to indicate that a distinction could be made between these constructs. The construct of Utility was more closely related to the Science-orientation of a discipline than was that of Specificity.

A further factor which was considered was that of the "Desirability" of the various disciplines; it was felt necessary to establish that in any comparisons made between students of different disciplines it was

not simply the academic ability of the groups which could account for any observed differences. The "Desirability" (see Chapter 7) of disciplines was calculated in terms of the proportion of students of that discipline for whom it was the discipline originally chosen, and the mean A-Level examination grades obtained by students accepted by each discipline were also obtained from published sources. This made it possible to conclude that while the more academically successful students were likely to be found in the most "Desirable" disciplines, a non-significant relationship existed between both A-Level grades and Specificity, and "Desirability" and Specificity.

The conclusion to be drawn from the studies discussed above is that although Occupational Specificity is related to Utility, the Science orientation of a discipline and the "Desirability" of a discipline, it stands as a separate and distinct construct.

The homogeneity of the ratings of Specificity made by the sixth-form pupils allows the conclusion that an individual applying to a given discipline does so in the knowledge of its association with specific subsequent occupations, and with an awareness of the relative probability of his or her subsequent employment

prospects. It may therefore be concluded that when an individual possessing such awareness elects to enter upon a degree course in a high Specificity discipline, he or she either wishes to enter upon, or is prepared to risk the probability of entering upon the occupation to which it is related, and to the extent that the discipline is related is in effect operationalizing an occupational choice, whether or not that choice has been explicitly considered.

The main study (Chapter 9) attempted to examine the way in which personal/demographic, interpersonal and extra-personal factors were related to the Occupational Specificity of the discipline being studied at University, using the techniques of multiple regression.

A set of six prediction equations were obtained for six sub-groups within the total sample, the groups being the result of a two-way classification on the basis of sex and choice status; these equations were found to predict with accuracies ranging from 0.39 to 1.00 the Occupational Specificity of the discipline studied.

Each prediction equation was most effective as

a predictor for the group from which it had been derived.

The variables which proved to be of value as predictors differed between the six groups.

Given the extensive literature on sex differences which was discussed in Chapter 1 it is hardly surprising to find that the variables which function as predictors differ between males and females; while the meaning of these variables will not be the same in combination as in isolation, it is of interest to observe that the sex of school attended (i.e. single-sex versus co-educational) is a predictor for females with either a firm occupational choice or ambivalence as to whether they have made a choice - perhaps best seen as having made tentative choices - whereas it appears as a predictor for males only where no choice has been made. A comparison of the raw correlations between this variable and OSI (Table 9.7) shows that the direction of the correlation is different for those students who have made firm choices according to sex; for females, high OSI is associated with attendance at a coeducational school, whereas for males it is associated with having attended a single sex school.



Indeed, for those females with no occupational choice, this is the most important predictor of the Specificity of discipline entered.

This is consistent with the view taken by Jackson (1968) that the "Hidden Curriculum" conveys the message to girls that they should be non-competitive, and the greater likelihood of girls attending co-educational schools to be channelled into the traditionally "feminine" subjects such as languages, domestic science and biology (Bryne, 1975; Davies and Meighan (1975)).

Similarly, the preponderance of male heads in coeducational schools may provide a disincentive to their female pupils; this is a complex issue, since it is unclear whether the effect is due to the presence of a male in the position of authority, or to the absence of a female head who might be a potential role model to her female pupils. The presence of the male head has been thought (Plowden, 1967; Bryne, 1975) to convey the impression that power is appropriate only for males, and peer pressures to conform to sex-role stereotypes would be greater in a coeducational environment.

The young female who elects to enter a discipline of high OSI is entering one which is likely to be male-

dominated (see Table 9.5), scientific (see Table 4.1) high in "desirability" (Table 7.3) and for which reasonably good A-Level performance is a prerequisite (Table 7.4). She is therefore extremely unlikely to find herself in a high OSI discipline unless that discipline is consistent with an articulated occupational choice.

For the male student on the other hand, the environmental pressures are in the opposite direction, and this accounts, at least in part, for the different predictors which are operational for the two sexes at each level of choice status.

Career importance is more strongly correlated with OSI for females than for males, reflecting the need for greater determination on the part of a female who enters a discipline which is male-dominated (Table 9.5).

Similarly, when one considers the educational level of the mother, the correlation, although low is again in the opposite direction, with an educated mother being associated with high OSI for females, for whom she might serve as a role model, but not for males.

The importance of the role-model for young women

has been amply demonstrated; see, for example, Medvene, 1969; Piotrkowski and Katz, 1982; Sorensen and Winters, 1975; and the present results are consistent with the existing findings on the subject.

The sex differences in occupational aspirations which feature in the literature (see, for example, Prediger, Roth and Noeth, 1974), and the perceived sex-role appropriateness of an occupation (Schlossberg and Goodman, 1972) are factors which are likely to deter all but the most determined females from entering high OSI disciplines which would lead to entry into male-dominated, and socially inappropriate occupations. The tendency for females to become increasingly concentrated in "feminine" disciplines towards the higher levels of the educational structure (UGC, 1984/5) means that if females are to enter high OSI fields, a greater motivation is needed on their part, and a greater awareness of such possibilities on the part of their advisors.

In considering the unimportance of personality factors for some groups as predictors, it must be remembered that unimportance of this kind does not preclude the possibility that these factors underlie those which proved to be of greater power in predicting

OSI; given the literature on personality reviewed above (Chapter 1), it seems implausible that they are not of relevance.

In particular, if one considers the raw correlations presented in Table 9.7 between 16PF factor scores and OSI one can observe that factors E, F, H, I, L and Q2 are quite strongly related for females who have made occupational choices, but not for males. Similarly, Eysenck's EPI showed that for the females, extroversion was related to OSI, whereas for males the correlation was slight.

For both males and females, parental attitudes towards the chosen occupation were correlated with OSI, but parental attitudes toward education were more strongly related for females than for males. The attitudes held by the friends of the decided females were more positive than those held by the friends of decided males.

Taken together, this suggests that the females within the present sample who had made occupational choices and selected high OSI disciplines had a background which supported their choices of what might be regarded by many people as gender-inappropriate occupations.

The importance of this support may be related to the work of Sewell and Orenstein, 1964, and of Oliver, 1975.

The advantages of having a reasonably simple method for predicting the specificity of discipline is related to its utility for obtaining employment, the identification of those young people who are reducing their occupational opportunities would allow guidance resources to be concentrated upon those most in need of them at the various stages of the educational decision-making process. The implications of a young person's decisions could be extrapolated on their behalf, allowing them to assess the relative attractions of a discipline in the light of the probable employment outcome. The disutility of the selection of a low specificity discipline could be made clearer to those young people who are likely to make such a choice, so that, should they persevere, it would be a more positive choice on their part, rather than a failure to make a choice of a high specificity discipline.

In utilizing the equations, it would be easy to allocate any given pupil to the appropriate sub-group, and to obtain the necessary data for the prediction of OSI.

### Further Research Suggestions

In the light of the differences in the predictive power of the equations (see Table 9.10) a pressing need would seem to be to improve prediction for the latter three groups; i.e. for females with inconsistent choices and for those young people with no choice, both male and female.

Although the prediction for inconsistent males is perfect ( $p = 1.0$ ) it must be borne in mind that this was computed upon a small ( $N = 27$ ) group, and may be unreliable.

The correlations between NEWOSI and NEWOCSEX for inconsistent females and females with no choice are only 0.397 and 0.417 respectively, yet these are groups who would be likely to benefit from more accurate prediction.

It might be the case that factors not utilized in the present thesis might provide effective prediction for these groups; in particular, the size of the residual for the two no choice groups would make this seem appropriate.

While the lack of a choice precludes the possibility of asking the questions used to elicit certain predictors for the other groups, different measures might be employed specifically with these undecided young people.

A further possibility in the future might be to relate Occupational Specificity to Super's notion of Career Maturity; at the time at which this project was carried out this was an impossibility, owing to the absence of a British form of any appropriate instrument. Should one become available, this might provide interesting results.

Similarly, other tools might be employed with the young people in an attempt to increase their awareness of the implications of educational choices.

The Occupational Specificity of disciplines other than those considered in the present thesis could be ascertained, and students from a wider range of institutions could be used in an effort to establish the stability of Specificity over time, and the stability of the predictions generated.

In the present research, the focus was specifically upon university students, but clearly this could be

extended to other institutions of post-school education.

In particular, it would be of interest to examine the factors associated with entry onto vocationally oriented courses at differing levels of academic difficulty and social desirability, and with differing proportions of male and female students in order to see to what extent similarities exist between the young people choosing vocational courses of this kind and those choosing occupationally specific courses at University and Polytechnics.

Indeed, this might well be seen as a priority, given that on the whole university graduates have better employment prospects than do the population in general. It might be the case that the equations produced would require modification in order to meet the needs of school pupils who differ in their educational aspirations.

To conclude; the present research has been successful in investigating the construct of Occupational Specificity, and in generating a set of equations for its prediction.



Further directions for research are suggested, which centre upon improving the predictive power of the equations and extending the research to a wider range of young people.

These pages should occur between pages 349 and 350. on pages 365 - 376 have been incorrectly paginated;

## REFERENCES

Abernathy T and Davis W

Canadian Counsellor 1978, 12 (3), 162-6

"Student Perceptions of influences on career and educational decision-making"

Ace ME, Graen GB and Dawis RV

Journal of Vocational Behavior 1972, 191-9

"Biographic correlates of work attitudes"

Adelstein DM and Webster DW

Journal of Vocational Behavior 1979, 14, 102-11

"Cross-sectional, longitudinal and composite longitudinal data on the Career Maturity Scale"

Aitken M

Journal of the Royal Statistical Society A, 1978, 141  
pt2, 195-223

"The analysis of unbalanced cross-classifications"

Ajzen I and Fishbein M

Psych Bull, 1972, 84 (5), 888-918

"Attitude-Behaviour relations: A Theoretical analysis and Review of Empirical Research"

Ajzen I and Fishbein M

J Expt Soc Psych 1970, 6, 466-87

"The prediction of behaviour from attitudinal and normative variables"

Ajzen I and Fishbein M

Understanding attitudes and predicting Social Behavior

Prentice-Hall Inc, New Jersey. 1980

Alban-Metcalfe B

MRC/SSRC unpublished Memo

"Socialization experiences which inhibit women's career development"

Albrecht SL

Journal of Vocational Behavior 1976, 9, 321-8

"Social class and stereotyping of occupations"

Alexander KL, Cook M and McGill EL

Am Sociol Rev 1978, 43, 47-66

"Curriculum tracking and Educational stratification: some further evidence"

Alley WE and Matthews MD

Journal of Psychology 1982, 112, 169-93

"The Vocational interest career examination: a description of the instrument and possible applications"

Almquist EM, Angrist SS and Mickelsen R

Sociology of work and occupations 1980, 7 (3), 367-84

"Women's career aspirations and achievements - college and seven years after"

Althen G and Stott FW

Personnel and Guidance Journal 1983, 61 (10), 608-11

"Advising and Counselling students who have unrealistic academic objectives"

Alvi SA and Khan SB

J Voc Beh 1983, 22, 174-81

"An investigation into the construct validity of Crites' Career Maturity Model"

Alvi SA and Khan SB

Educ and Psych Meas 1982, 42, 1285-8

"A study of the criterion-related validity of Crites' career maturity inventory"

Andersen SM and Bem SL

Journal of Personality and Social Psychology 1981, 41 (1) 74-86

"Sex-typing and androgeny in dyadic interaction: individual differences in responsiveness to physical attractiveness"

Anderson KL

Youth and Society 1980, 12 (2), 173-88

"Educational goals of male and female adolescents; the effects of parental characteristics and attitudes"

Armstrong D, Bazelgette J and Reed B

British Journal of Guidance and Counselling 1981,  
9 (1), 46-55

"The place of values in the transition to working life"

Arroba TY

BJGC 1977, 5 (2), 149-58

"Styles of decision-making and their use: an empirical study"

Arroba TY

Journal of Occupational Psychology 1978, 51, 219-26

"Decision-making style as a function of occupational group, decision content and perceived importance"

Ashton DN and Maguire MJ

BJGC 1980, 8 (2), 146-57

"The function of academic and non-academic criteria in employers' selection strategies"

Astin HS

Journal of Counselling Psychology 1968, 15 (6), 536-40  
"Career development of girls during the high-school  
years"

Atkinson JW, Bastian JR, Earl RW and Litwin GH  
Journal of Abnormal and Social Psychology 1960,  
60 (1), 27-36  
"The achievement motive goal setting and probability  
preferences"

Atkinson JW and Raynor JO  
Personality, motivation and achievement  
Hemisphere Publications Corporation, John Wiley & Sons,  
Halstead Press

Aubrey RF  
"A House divided: Guidance & Counselling in 20th-Century America"  
P&GJ 1982, 61 (4), 198-204

Auster CJ and Auster D  
Vocational Guidance Quarterly 1981, 253-63  
"Women's choice of non-traditional careers: the role  
of family, peers and counsellors"

Avent C, Sisterson D, Fawcett B, Watts A and Newsome A  
P&GJ 1983, 476-8  
"Careers Guidance and counselling in England"

Baaggaley AR

American Personnel & Guidance Association 1981

"Multivariate analysis"

Bagozzi RP

Multivariate Behavioral Research 1981, 16, 323-59

"An examination of the validity of two models of attitude"

Bagozzi RP

Journal of Personality and Social Psychology 1981,

41, 607-27

"Attitudes and social cognition: Attitudes, intentions and behaviour; a test of some key hypotheses"

Banks MH

SAPU Memo. no. 402

"UK systems of classification used in occupational studies"

Banks MH et al.

Journal of Occupational Psychology 1980, 53, 187-94

"The use of the General Health Questionnaire as an indicator of mental health in occupational studies"

Banks MH and Jackson PR

Psychological Medicine 1982, 12, 789-98

"Unemployment and risk of minor psychiatric disorder"

in young people: cross-sectional and longitudinal evidence"

Banks M, Jackson P and Stafford E

MRC/SSRC unpub memo

"Work, unemployment and well-being in young people"

Banks MH, Jackson PR, Stafford E and Warr PB

Interim report to the Special Programs Division of the MSC, 1980

"Young people starting work"

Barak A, Carney CG and Archibald RD

Journal of Vocational Behavior, 1975, 7 149-59

"The relationship between vocational information seeking and educational and vocational decidedness"

Barak A and Rabbi BZ

Journal of Vocational Behavior, 1982, 20, 235-43

"Predicting persistence, stability and achievement in college by major choice consistency: a test of Holland's consistency hypothesis"

Barrett TC and Tinsley HEA

Journal of Counselling Psychology 1977, 24 (4), 301-7

"Vocational self-concept crystallization and vocational indecision"



Barrett TC and Tinsley HE

Journal Voc Beh 1977, 11, 305-13 (b)

"Measuring vocational self-concept crystallization"

Barron F and Harrington DM

Ann Rev Psychol 1981, 32, 439-76

"Creativity, intelligence and personality"

de Barros Santos O

IAAP conference paper, Edinburgh 1982

"Psychological counselling and psychotherapy: Self-assertion as a basic determinant of human behaviour"

Bartlett WE

J Voc Beh 1971, 1, 217-29

"Vocational maturity: its past, present and future development"

Bar-Hillel M and Fischhoff B

J Pers and Soc Psych 1981, 41 (4), 671-80

"When do base rates affect predictions?"

Bartol KM

J Voc Beh 1979, 15, 44-67

"Individual versus organizational predictors of job satisfaction and turnover among professionals"

Bartol KM

J Voc Beh 1981, 19, 123-62

"Vocational behavior and career development 1980: a review"

Baruch R, Segal S and Handrick FA

J Couns Psych 1968, 15 (4), 308-16

"Constructs of career and family: a statistical analysis of thematic material"

Baumgardner SR

J Couns Psych 1976, 23, 40-5

"The impact of college experiences on conventional career logic"

Baumgardner SR

P&GJ 1982, 61 (4), 213-17

"Coping with disillusionment, abstract images and uncertainty in Career decision-making"

Bearden WO and Woodside AG

J App Psych 1977, 62 (3), 352-7

"Testing variations of Fishbein's behavioral intention model within a consumer behavior context"

Beardslee D and O'Dowd D

"Students and the occupational world" in "The American

College: a Psychological and Sociological interpretation  
of the Higher Learning"

ed. Sanford N. John Wiley & Sons Inc. 1982

Becket GM and McClintock CG

Ann Rev Psych 1967, 18, 239-86

"Value: Behavioural decision theory"

Belec BE and Rowe PM

Canadian Journal of Behavioral Science 1983, 15 (2), 106-20

"Temporal placement of information, expectancy, causal  
attributions and overall final judgements in employment  
decision-making"

Bell N and Perret-Clermont A

Int Rev App Psych 1985, 34 (1) 149-60

"The socio-psychological impact of school selection  
and failure"

Bem SL

J Consult and Clin Psych 1974, 42, 155-62

"The measurement of psychological androgyny"

Bem SL

J Pers Soc Psych 1975, 31, 634-43

"Sex role adaptability: one consequence of psychological  
androgyny"

Bem SL

Signs: Journal of Women in Culture and Society 1983,  
8 (4), 598-616

"Gender schema theory and its implications for child  
development: raising gender-aschematic children in a  
gender-schematic society"

Bem SL

J Pers and Soc Psych 1982, 43 (6), 1192-4

"Gender Schema Theory and Self-schema Theory Compared:  
A Comment on Markus, Crane, Bernstein and Sicladi's  
'Self-Schemas and Gender'"

Benninger WB and Walsh WB

J Voc Beh 1980, 17, 81-8

"Holland's theory and non-college-degreed working men  
and women"

Bereiter C and Freedman MB

"Fields of study and the people in them" in "The American  
College: a Psychological and sociological interpretation  
of the higher learning" ed. Sanford N.

John Wiley & Sons Inc. 1962

Berger-Gross V

J Voc Beh 1983, 22 (3), 312-23

"The role of anxiety in the career decision-making of liberal arts students"

Berl J. Lewis G and Morrison RS

"Applying models of choice to the problem of college selection" in Cognition and Social Behavior ed Carroll JS and Payne JW

Lawrence Erlbaum Associates Publishers. 1976

Berson JS

"Perceived costs of combining career and family roles: the influence of early family history on adult role decisions"

in Women: Sex-Role Stereotyping ed Hartnett O, Boden G and Fuller M

Tavistock Publications, London, 1979

Betz, EL

J Voc Beh 1977, 11, 129-52

Vocational Behaviour and Career Development 1976: a Review

Betz NE and Hackett G

J Couns Psych 1981, 28 (5), 399-410

"The relationship of career related self-efficacy expectations to perceived career options in college women"

Blau PM and Duncan OD

The American Occupational Structure

John Wiley & Sons Inc. New York. 1967

Blau PM, Gustad JW, Jessor R, Parnes HS and Wilcock RC

Industrial and Labor Relations Review 1955/6, 9, 531-43

"Occupational choice: a conceptual framework"

Blocher DH

"Social change and the future of vocational guidance"

in Career Guidance for a new age. H Borrow (ed). 1973

Blood MR

J App Psych 1971, 55 (5), 487-8

"The validity of Importance"

Borgen WA and Young RA

J Voc Beh 1982, 21, 37-49

"Career perceptions of children and adolescents"

Borrow H

P&GJ 1961, 40 (1), 22-47

"Vocational development research: Some problems of  
logical and experimental form"

Boudon R (1974)

Education, Opportunity and Social Inequality: Prospects  
in Western Society

New York: J Wiley & Sons

Bradley J and Hutchings D

School Science Review 1973, 55

"Concepts of science and scientists as factors affecting  
subject choice in secondary schools"

Bradley RW

Personnel and Guidance Journal 1982, 61 (1)

"Using birth order and sibling dynamics in career  
counselling"

Brandel IW

P&GJ 1982, 61 (4), 225-8

"Puzzling your career: A Self-responsibility, self-  
acceptance approach to career planning"

Brannen P (ed)

"Entering the world of work: some sociological perspectives"

DES: HMSO 1975

Brehony KA and Geller ES

Psych of Women Quart 1981, 6 (2), 204-17

"Relationships between psychological androgeny, social

conformity and perceived locus of control"

Brenner SO and Bartell R

Journal of Occupational Psychology 1983, 56, 129-36

"The psychological impact of unemployment: a structural analysis of cross-sectional Data"

Broedling LA

J App Psych 1975, 60 (1), 65-70

"The relationship of Internal-External control to work motivation and performance in an expectancy model"

Brooks L

J Voc Beh 1983, 23, 227-32

"Sexist language in occupational information: does it make a difference?"

Bruch MA and Krieshok

J Voc Beh 1981, 18, 162-73

"Investigative versus Realistic Holland types and adjustment in theoretical engineering majors"

Burghes DN and Wood AD

Mathematical models in the social, management and life sciences

Ellis Horwood Ltd, John Wiley and Sons 1980



Burlin FD

J Couns Psych 1976a, 23, 126-9

"Locus of control and female occupational aspiration"

Burlin FD

J Voc Beh 1976b, 9, 99-104

"The relationship of parental education and maternal work and occupational status to occupational aspirations in adolescent females"

Butcher E

Voc Guid Quart 1982, 200-9

"Changing by choice: A process model for group career counselling"

Cairo PC

J Voc Beh 1982, 20, 343-53

"Measured interests versus expressed interests as predictors of long-term occupational membership"

Cann A and Haight JM

Sex Roles 1983, 9 (7), 767-73

"Children's perceptions of relative competence in sex-typed occupations"

Carew PF

Diss Abs 1977, 37 (12A pt1), 7540

"An exploratory study of adolescents' career decision-making process and content"

Carkhuff RR, Alexik M and Anderson S

P&GJ 1967, 46, 335-45

"Do we have a theory of Vocational Choice?"

Carney RE

Educational and Psychological Measurement 1966, 26, 675-90

"The effect of situational variables on the measurement of achievement motivation"

Carter M

Into Work

Penguin Books, 1966

Carter DB and Patterson CJ

Developmental Psychology 1982, 18 (6), 812-24

Sex-roles as social conventions: the development of childrens' conceptions of sex-role stereotypes"

Carver CS and Scheier MF

J of Experimental Social Psychology 1982, 18, 184-200

"Outcome expectancy, locus of attribution for expectancy and self-directed attention as determinants of evaluations and performance"

Case SL and Hall DJ  
A Social and Economic History of Britain 1700 - 1976  
Arnold, 1976

Casserly MC

IAAP Conference paper, Edinburgh 1982

"Support for the concepts of commitment and participation  
as factors in determining the importance of work and  
other life-career roles"

Cassie JRB and Robinson FG

Int J Adv Couns, 1982, 5, 165-82

"A decision-schema approach to career decision making"

Cattell RB

J Res and Dev in Educ, 1979, 12 (2), 3-13

"Are culture-fair intelligence tests possible and necessary?"

Cattell RB

Brit J Educ Psych, 1980, 50, 253-65

"The hereditability of Fluid, gf, and Crystallized, gc, Intel-  
ligence, estimated by a least-squares use of the Mava method"

Cattell RB

The Scientific Analysis of Personality

Penguin Books, Harmondsworth, England. 1965

Cattell RB, Day M and Meeland T

Occupational Psychology, 1956, 30, 10-19

"Occupational profiles on the 16 PF questionnaire"

Cattell RB and Kline P

The scientific analysis of personality and motivation

Academic Press, New York. 1977

Chamberlain J

P&GJ, 1983, 479-82

"Guidance and counselling in the republic of Ireland"

Chand IP, Crider DM and Willits FK

P&GJ, 1983, 61 (9), 547-53

"Ascribed and achieved antecedents of occupational attainment: a panel study"

Chapman DW

Journal of Higher Education, 1981, 52 (5)

"A model of student college choice"

Cellini JV and Kantorowski LA

Psychological Reports, 1982, 51, 231-5

"Internal-External locus of control: new normative data"

Chenoweth LC and Moret E

Sociol of work and occupations, 1980, 7 (2), 222-51

"The career patterns of mature American women"

Cherry N

Higher Education, 1975, 4, 357-68

"Occupational values and employments: a follow-up study  
of graduate men and women"

Chetwynd J and Hartnett O (eds)

The Sex-Role System: Psychological and Sociological  
Perspectives

Routledge and Kegan Paul, London. 1978

Chown SM

Occupational Psychology, 1958, 32, 171-82

"The formation of occupational choice among grammar  
school pupils"

Christensen-Szalanski JJ and Beach LR

Org Beh and Human Perf, 1982, 29, 270-8

"Experience and the base-rate fallacy"

Church AG

Psychology, 1983, 20 (1), 21-30

"Academic achievement, level of occupational plans,  
delay of gratification, personal control and self-concepts  
for males and females in introductory anthropology"

Chusmir LH

P&GJ, 1983, 62 (3), 43-7

"Characteristics and predictive dimensions of women who make non-traditional vocational choices"

Cicourel AV

Am Sociologist, 1982, 17, 11-20

"Interviews, surveys and the problems of ecological validity"

Clarke L

The practice of vocational guidance: a critical review of research in the UK

DES Careers Service Branch. HMSO. 1980

Clarke L

The transition from school to work: a critical review of research in the UK

DES Careers Service Branch. HMSO. 1980

Clarke L

Occupational choice: a critical review of research in the UK

DES Careers Service Branch. HMSO. 1980

Clough CH (ed)

"Profession, Vocation and Culture in Later Medieval England"

Liverpool University Press. 1982

Closs SJ

Computer Assisted Career Guidance

JIG-CAL Release 2. Information booklet

Cochran L

J Couns Psych, 1983, 30 (2), 188-93

"Implicit versus explicit importance of career values  
in making a career decision"

Cochran DJ, Hoffman SD, Strand KH and Warren PM

J Couns Psych, 1977, 24 (4), 308-12

"Effects of client/computer interaction on career  
decision-making processes"

Cochrane R and Stopes-Roe M

British Journal of Psychiatry, 1981, 139, 373-81

"Women, marriage, employment and mental health"

Cohen J

Behaviour in Uncertainty and its social implications

London. George, Allen and Unwin Ltd. 1964

Cohen L

Journal of Curriculum Studies, 1970, 2 (1), 67-72

"Sixth-form pupils and their views of higher education"

Cole CG

Voc Guid Quart, 1982, 30 (4), 308-14

"Career guidance for middle-junior high school students"

Cole NS and Hanson GR

"Impact of interest inventories on career choice"

in Diamond EE (ed) Issues of sex bias and sex fairness  
in career interest measurement. 1975

Collins J, Reardon M and Waters LK

Psychological Reports, 1980, 47, 1155-9

"Occupational interest and perceived personal success:  
effects of gender, sex-role orientation and the sexual  
composition of the occupation"

Corbin RM

"Decisions that might not get made"

in Cognitive processes in choice and decision behaviour.

Wallsten TS (ed)

Lawrence Erlbaum Assocs Pub. Hillsdale, New Jersey. 1980

Cotgrove SF and Weinreich-Hase HE

"Career choice: with special reference to engineering"

SSRC end of grant report 1982/3



Cramer SH and Herr EL

Vocational Guidance Quarterly, 1981, 157-65

"A half-century of similarities and differences in vocational guidance"

Crino MD, White MC and de Sanctis GL

J Voc Beh, 1983, 22, 243-55

"Female participation rates and the occupational prestige of the professions: are they inversely related?"

Crites JO

J Voc Beh, 1976, 9, 105-18

"A comprehensive model of career development in early adulthood"

Crites JO

Psych Monographs: Gen and App, 1965, 79 (2)

"The measurement of vocational maturity in adolescence:  
1. Attitude test of the vocational development inventory"

Crites JO

Vocational Psychology

New York: McGraw-Hill. 1969

Crites JO

Career Maturity Inventory: Theory and Research Handbook

CTB/McGraw-Hill, California. 1973

Crawley AD

British J of Guidance and Counselling, 1979, 7(1), 57-63

"Work environment preference and self-concepts: and investigation of Holland's theory"

Crowley AD

J Occ Psych, 1981, 54, 135-40

"The content of interest inventories: job titles or job activities?"

Crowley T

Careers Quarterly, 1976, 28, 5-12

"An analysis of occupational roles portrayed on television"

Crowther RH and Strong SR

BJGC, 1979, 7 (1), 17-30

"A systems approach to decision-making on student service"

Cummings LL

Ann Rev Psychol, 1982, 33, 541-79

"Organizational Behaviour"

"Davis DL

Hum Systems Mgt, 1982, 3, 165-72

"Are some cognitive types better decision-makers than others? An empirical investigation"

Davis DA, Hagan N and Strouf J

P&GJ, 1962, 40 (7), 628-9

"Occupational choice of twelve-year olds"

Daws PP

BJGC, 1977, 5 (1), 11-19

"Are Careers education programmes in secondary schools a waste of time?"

- A reply to Roberts"

DeFiore RM, Kramer TJ and Munz DC

Perceptual and Motor Skills, 1981, 52, 967-73

"predictors of motivation for job-changing: maintenance versus motivation seekers"

DeFranzo J

Psych Reports, 1981, 49, 171-7

"Class identification among working wives: educational attainment and union membership but not occupational prestige"

DeFronzo J

Sex Roles, 1981, 7 (4)

"Differences in the determinants of husbands' and working wives class and political party identification"

DES

Girls and Science. HMSO 1980

Deaux K and Taynor J

Psych Reports, 1973, 32, 261-2

"Evaluation of male and female ability: Bias works two ways"

Diamond EE

IAAP Conference paper, Edinburgh, 1982

"Using interest inventories as interventions in women's career development"

Diggins D and Huber J

The Human Personality

Little, Brown & Co, Buffton, Toronto. 1976

Dixon DN and Claiborn CD

J Couns Psych, 1981, 28 (5), 411-15

"Effects of need and commitment on career exploration behaviors"

Donahue TJ and Costar JW

J Couns Psych, 1977, 24 (6), 481-6

"Counsellor discrimination against young women in career selection"

Douglas JWB

The home and the school

Panther Books Ltd. St. Albans, Herts. 1967

Dowling P and O'Brian GE

Australian J of Psychology, 1981, 33 (2), 185-95

"The effects of employment, unemployment and further education upon the work values of school leavers"

Droege RC and Boesse R

Voc Guid Quart, 1982, 219-29

"Development of a new Occupational Aptitude Pattern structure with Comprehensive Occupational Coverage"

Durkin K

Int Rev App Psych, 1985, 34 (2), 191-201

"Sex roles and television roles: can a woman be seen to tell the weather as well as a man?"

Dyer L and Parker DF

J App Psych, 1975, 60 (4), 455-8

"Classifying outcomes in work motivation research: an examination of the intrinsic-extrinsic dichotomy"

Eberhardt BJ and Muchinsky PM

J App Psych, 1982, 67 (6), 714-27

"Biodata determinants of vocational typology: an interpretation of two paradigms"

Edwards AL (1979)

Multiple Regression and the Analysis of Variance and covariance

San Francisco: WH Freeman and Co.

Edwards W

Psych Bull, 1954, 51, 380-418

The theory of decision making

Edwards W

Ann Rev Psych, 1961, 12, 473-99

"Behavioural Decision Theory"

Edwards W and Tversky A (eds)

Decision-making: selected readings

Penguin. 1967

Edleson JL

J Behav Assess, 1980, 2 (4), 249-54

"The effect of sex-differences on sociometric data generated by a Roster-Rating scale instrument"

Einhorn HJ and Hogarth RM

Ann Rev Psych, 1981, 32, 53-88

"Behavioural decision theory: Processes of judgement and choice"

Ekehammar B

J Voc Beh, 1978, 12, 279-89

"Psychological cost-benefit as an intervening construct in career choice models"

Erez M

"Women's choice of Innovative-technical fields of studies"

Faculty of Industrial Engineering and Management

Technion - Israel Institute of Technology. Haifa. Israel

IAAP Conference paper, Edinburgh, 1982

Erikson EH

Identity: Youth and Crisis

Faber and Faber. London. 1968

Erlanger HS

Social Forces, 1980, 58, 882-903

"The allocation of status within occupations: the case of the legal profession"

Erwin TD

Journal of Vocational Behavior, 1982, 20, 180-92

"The predictive validity of Holland's construct of consistency"

Etaugh C and Spandikow DB

Psychology of Women Quarterly, 1981, 5 (4)

"Changing attitudes towards women: a longitudinal study of women students"

Falbo T

J Pers and Soc Psych, 1981, 41 (1), 121-31

"Relationships between birth category, achievement and interpersonal orientation"

Falkowski CK and Falk WW

J Voc Beh, 1985, 22, 227-42

"Homemaking as an occupational plan: Evidence from a national longitudinal study"

Farmer HS

J Voc Beh, 1980, 17, 58-70

"Environmental, background and psychological variables



related to optimizing achievement and career motivation  
for high school girls"

Farmer HS

J Couns Psych, 1983, 30 (1), 40-5

"Career and Homemaking plans for high school youths"

Feather NT

Australian J Psych, 1982, 34 (3), 309-23

"Unemployment and its Psychological correlates: A study  
of depressive symptoms, self-esteem, Protestant ethic  
values, attributional style and apathy"

Feather NT (ed)

"Expectations and actions: expectancy-value models in  
psychology"

Lawrence Erlbaum Associates, Hillsdale, New Jersey. 1982

Feather NT

J Ab and Soc Psych, 1963, 66 (3), 231-8

"The relationship of expectation of success to reported  
probability, task structure and achievement related  
motivation"

Feather NT and Davenport PR

J Pers and Soc Psych, 1981, 41 (3), 422-36

"Unemployment and depressive affect: a motivational and attributional analysis"

Feather NT and Said JA

British Journal of Soc Psych, 1983, 22, 113-27

"Preference for occupations in relation to masculinity, femininity and gender"

Feder Pi

Technometrics, 1974, 16 (2), 287-99

"Graphical Techniques in statistical data analysis: tools for extracting information from data"

Feijoo NR

Acta Psiquit Psicol Amer Lat, 1981, 27, 219-26

"Normas Argentinas del test 16PF para sujetos de 17 y 20 anos"

Feinberg RA and Workman JE

Psych Reports, 1981, 49, 246

"Sex-role orientation and cognitive complexity"

Ferguson M

ESRC Newsletter, 1985, 55, 14-16

"The family and new technologies"

Fields AB

Adolescence Vol XVI, Np. 63, 1981

"Some influences upon the occupational aspirations of  
three white-collar ethnic groups"

Fishbein M and Ajzen I (1975)

Belief, Attitude, Intention and Behavior: An introduction  
to Theory and Research

Reading, Mass.: Addison-Wesley

Fishbein M and Coombes FS

J App Soc Psych, 1974, 4, 95-124

Basis for Decision: an attitudinal analysis of voting  
behaviour

Fischhoff B

J Experimental Psych: Hum Perc and Perf, 1977, 3 (2),  
349-58

"Perceived informativeness of facts"

Fishbein M

Human Relations, 1963, 16 223-39

"An investigation of the relationships between beliefs  
about an object and the attitude towards that object"

Fishbein M and Ajzen I

"Belief, attitude, intention and behaviour: an introduction to theory and research"

Addison-Wesley Publishing Co. Inc. 1975

Fisher GW

Org Beh Hum Perf, 1976, 17, 127-46

"Multidimensional utility models for risky and riskless choice"

Fisher GW

Org Beh & Hum Perf, 1977, 18, 295-315

"Convergent validation of decomposed multi-attribute utility assessment procedures for risky and riskless decisions"

Fischhoff B

"Attribution Theory and Judgement under Uncertainty"

in New Directions in Attribution Research, Vol 1

ed. Harvey, Ickes and Kidd. Lawrence Erlbaum Assoc. 1976

Fischhoff B

J Experimental Psych: Hum Perc and Perf, 1977, 3 (2)

349-58

"Perceived informativeness of facts"

Fischhoff B, Slovic P and Lichtenstein S

J Experimental Psych: Hum Perc and Perf, 1977, 3 (4),  
552-64

"Knowing with certainty: the appropriateness of extreme  
confidence"

Fischhoff B, Slovic P and Lichtenstein S

"Knowing what you want: Measuring Labile values"  
in Cognitive processes in choice and deicision behaviour  
Ed Wallsten TS. Lawrence Erlbaum Assocs Pub. 1980

Fiske ST, Kenny DA and Taylor SE

J Exptl Soc Psych, 1982, 18, 105-27

"Structural models for the mediation of salience effects  
on attribution"

Fitzgerald LF

J Couns Psych, 1980, 27 (3), 252-9

"Non-traditional occupations: not for women only"

Fitzgerald LF and Crites JO

J Couns Psych, 1980, 27 (1), 44-62

"Towards a career psychology of women: Wnat do we know?  
What do we need to know?"

Fiume TJ

Diss Abs, 1976, 36 (8A), 5041

"A longitudinal study of selected personality dimensions associated with college students who make early and late decisions regarding majors or vocational choice"

Ford J

Social class and the comprehensive school

London. Routledge and Kegan Paul. 1969

Fossum JA and Moore ML

J Voc Beh, 1975, 7, 305-11

The stability of longitudinal and cross-sectional occupational prestige rankings"

Fottler MD and Bain T

Academy of Management Journal, 1980, 23 (1), 144-9

"Sex differences in occupational aspirations"

Freeman RB

The market for college-trained manpower: a study in the economics of career choice

Harvard University Press. Cambridge. Massachusetts. 1971

Frenk J and Bashshur R

Soc Sci Med, 1983, 17 (11), 693-704

"Career preferences and perceptions of the medical labour market among Mexican interns"

Fretz BR and Leong FTL

J Voc Beh, 1982, 21, 123-63

"Vocational behavior and career development 1981: a review"

Fretz BR and Leong FTL

J Couns Psych, 1982, 29 (4), 388-93

"Career development status as a predictor of career intention outcomes"

Friedlander F

Org Beh Hum Perf, 1971, 6, 169-83

"Performance and orientation structures of research scientists"

Fromm E

Man for Himself - an enquiry into the psychology of ethics

Routledge and Kegan Paul, London. 1949

Fromm E

To Have or to Be

Abacus. Jonathan Cape Ltd. 1978

Fryer D and Payne RL

Library Review, 1983, 32, 196-206

"Book borrowing and unemployment"

Fulmer RH, Medalie J and Lord DA

J Adolescence, 1982, 5, 195-217

"Life Cycles in transition: a family systems perspective  
on counselling the college student"

Furnham A and Henderson M

J Clin Psych, 1982, 38 (4)

"A content analysis of four personality inventories"

Furnham A and Henderson M

Person Individ Diff, 1982, 3, 311-20

"The good, the bad and the mad; response bias in self-  
report measures"

Furnham A, Pendleton D and Manicom C

Soc Sci & Med, 1981, Vol 15E, 289-300

"The perception of different occupations within the  
medical profession"

Gable RK, Thompson DL and Glanstein PJ

J Voc Beh, 1976, 8, 259-67

"Perceptions of personal control and conformity of  
vocational choice as correlates of vocational develop-  
ment"



Gaddy CD, Glass CR and Arnkoff DB

J Couns Psych, 1983, 30 (3), 388-94

"Career Involvement of Women in Dual-career families:  
the influence of sex-role identity"

Galbraith J and Cummings LL

Org Beh Hum Perf, 1967, 2, 237-57

"An empirical investigation of the motivational  
determinants of task performance: interactive effects  
between instrumentality-valence and motivation ability"

Galinsky MD and Fast I

J Couns Psych, 1966, 13 (1)

"Vocational choice as a focus of the identity search"

Ganster DC and Lovell JE

J Voc Beh, 1978, 13, 172-80

"An evaluation of a career development seminar using  
Crites' Career Maturity Inventory"

Garbin AP and Stover RG

J Voc Beh, 1980, 17, 125-70

"Vocational Behavior and career development 1979; a  
review"

Gardner DC, Beatty GJ and Bigelow EA

Adolescence, 1981, Vol XVI, 63

"Locus of control and career maturity: a pilot evaluation of a Life-planning and career development program for high school students"

Garland H and Berwick-Smith G

Psych of Women Quarterly, 1981, 5 (4), 568-85

"Occupational achievement motivation as a function of biological sex, sex-linked personality and occupation stereotype"

Garner J

A guide to university entrance 1981

Ward Lock Educational, London 1980

Gati I

J Voc Beh, 1979, 15, 90-106

"A Hierarchical model for the structure of vocational interests"

Gati I and Meir EI

J Voc Beh, 1982, 20, 354-65

"Congruence and consistency derived from the circular and hierarchical models as predictors of occupational choice satisfaction"

Gellatt HB

Information and decision theories applied to college  
choice and planning

In: Preparing school counsellors in education guidance  
New York College Entrance Examination Board

Gellatt HB and Clarke RB

J Couns Psych, 1967, 14 (4), 332-41

"Role of subjective probabilities in the decision process"

Gershuny JI and Pahl RE

New Society, 1980, Jan 7-9

"Britain in the Decade of the three economies"

Gerson B and Lee S

P&GJ, 1982, 61 (4), 236-8

"Women and Career competence: A theoretical and Experi-  
mental Model"

Gerstein M

Voc Guid Quart, 1982, 30 (4), 315-22

"Vocational guidance for adults in varied settings:  
a comprehensive view"

Gettys LD and Cann A

Sex Roles, 1981, 7 (3), 301-8

"Children's perceptions of occupational sex stereotypes"

Gill R

Paper given at the 1980 BPS Conference

"Intelligence and trainability in managerial prioritizing and decision making: an empirical investigation"

Gilroy FD, Taliero TM and Steinbacher R

Psych Reports, 1981, 49, 963-8

"Impact of maternal employment on daughters' sex role orientation and fear of success"

Ginzberg E

Voc Guid Quart, 1972, 20 (3), 169-76

"Toward a theory of occupational choice: a restatement"

Ginzberg E, Gizburg SW, Axelrad S and Herma JL

Occupational choice: an approach to a general theory

New York: Columbia University Press. 1951

Goldberg AS and Shiflett S

Sex Roles, 1981, 7 (12)

"Goals of male and female college students: do traditional sex-roles still exist?"

Goldman G

BJGC, 1976, 4 (2), 195-201

"Career decision making and interview frequency"

Goldman RD and Hewitt BN

J Couns Psych, 1976, 23, 50-54

"The scholastic aptitude test "explains" why college men major in science more often than college women"

Goldthorpe JH and Hope K

The social grading of occupations; a new approach and scale

(Oxford Studies in Social Mobility.) Clarendon Press.

Oxford. 1974

Goldsmith EB and Goldsmith RE

Psych Reports 1980, 47, 1068-70

"Dogmatism and confidence as related factors in evaluation of new products"

Goldsmith RE and Goldsmith EB

Psych Reports, 1982, 51, 289-90

"Dogmatism and self-esteem: further evidence"

Golub S and Canty EM

J Soc Psych, 1982, 116, 83-90

"Sex-role expectations and the assumption of leadership by college women"

Gonzalez CT and Williams KE

Psych Reports, 1981, 49, 70

"Relationship between locus of control and sex-role stereotyping"

Goodale JG and Hall DT

J Voc Beh, 1976, 8, 19-30

"Inheriting a career: the influence of sex, values and parents"

Goodson WD

Voc Guid Quart, 1978, 27, 150-5

"Which do college students choose first - their major or their occupation?"

Goodson WD

"Career Education at Brigham Youth University"

IRTAC International Consultation. 1981

Goodson WD

Voc Guid Quart, 1982, 230-5

"Status of Career programs on College and University Campuses"

Gordon VN

Voc Guid Quart, 1982, 265-71

"Are undecided students changing?"

Gordon VN

Diss Abs, 1977, 38 (5-A), 2556

"Differentiated levels of undecidedness and choice satisfaction among educationally and vocationally uncommitted university freshmen"

Gordon VN

P&GJ, 1981, 59 (7), 433-8

"The undecided student: a developmental perspective"

Gottfredson GD

J Voc Beh, 1982, 21, 71-98

"An Assessment of a mobility-based occupational classification for placement and counselling"

Gottfredson LS

J Couns Psych Monograph. 1091

"Circumscription and compromise: a developmental theory of occupational aspirations"

Gottfredson LS

J Voc Beh, 1978, 13, 210-21

"An analytic description of employment according to race, sex, prestige and Holland type of work"

Gottfredson LS

J App Psych, 1980, 65 (6), 697-714

"Construct validity of Holland's occupational typology in terms of prestige, census, dept of labor and other classification systems"

Gottfredson LS

Voc Guid Quart, 1982, 31 (2), 128-32

"The sex fairness of unnormed interest inventories"

Gottfredson LS

Couns Psych, 1981, 10 (2), 69-84

"Vocational Research Priorities"

Gottfredson LS and Becker HJ

J Voc Beh, 1981, 18, 121-37

"A challenge to Vocational psychology: How important are aspirations in determining career development?"

Gottfredson LS and Brown VC

J Voc Beh, 1981, 19, 251-89

"Occupational differentiation among white men in the first decade after high school"

Gottfredson LS

Voc Guid Quart, 1982

"Magic with sex differences: Now you see them, now you



don't. A comment on "A note on self-directed search validity for females"

Gottfredson LS and Brown VC

JSAS catalog of selected documents in psychology 1978,  
8 (22) MS 1660

"Holland codes for the 1960 and 1970 censuses: detailed occupational titles"

Grebow H

The J of Educ Research, 1973, 66 (5)

"The relationship of some parental variables to achievement and values in college women"

Greenfield S, Greiner L and Wood M

J Voc Beh, 1980, 17, 291-309

"The 'Feminine Mystique' in male-dominated jobs: a comparison of attitudes and background factors of women in male-dominated versus female-dominated jobs"

Greenhaus JH

J Voc Beh, 1971, 1, 75-83

"Self-esteem as an influence on occupational choice and occupational satisfaction"

Greenhaus JH

J Voc Beh, 1971, 1, 209-16

"An investigation of the role of career salience in vocational behavior"

Greenhaus JH and Simon WE

J Voc Beh, 1977, 10, 104-10

"Career salience, work values and vocational indecision"

Greenhaus JH and Simon WE

J Voc Beh, 1976, 8, 51-8

"Self-esteem, career salience and the choice of an ideal occupation"

Griffiths D and Saraga E

"Sex differences and cognitive abilities: a sterile field of enquiry?"

in Women: Sex-Role Stereotyping, ed Hartnett O, Boden G and Fuller M

Tavistock Publications, London, 1979

Grotevant HD and Durrett ME

J Voc Beh, 1980, 17, 171-82

"Occupational knowledge and career development in adolescence"

Grotevant HD and Thorbecke WL

Dev Psych, 1982, 18 (3), 396-405

"Sex differences in styles of occupational identity  
formation in late adolescence"

Grunes WF

P&GJ, 1956, 34, 276-9

"On perception of occupations"

Guardian survey, 1982

People at work

Guion RM (1965)

Personnel Testing

New York: McGraw-Hill Inc

Gunnison H, Shapiro J and Bradley RW

P&GJ, 1982

"Inside the creative process of counselling: Vocational  
decision making takes place"

Gutek BA

IAAP Conference paper, Edinburgh, 1982

"Sexuality at work: Results of a program of research"

Gutek BA, Morasch B and Cohen GA

J Voc Beh, 1983, 22, 30-48

"Interpreting social-sexual behaviour in a work setting"

Gutek BA, Nakamura CY, Gahart M, Handschumaker I and  
Russell D

Basic and App Soc Psych, 1980, 1 (3), 255-65

"Sexuality and the workplace"

Guthrie WR and Herman A

J Voc Beh, 1982, 21, 196-205

"Vocational maturity and its relationship to Holland's  
theory of occupational choice"

Hackett G and Betz NE

J Voc Beh, 1981, 18 (3), 326-39

"A self-efficacy approach to the career development  
of women"

Hackman JR and Anderson LR

J Soc Psych, 1968, 76, 55-67

"The strength, relevance and source of beliefs about  
an object in Fishbein's attitude theory"

Hall DT

Org Beh Hum Perf, 1971, 6, 50-76

"A theoretical model of career sub-identity development  
in organizational settings"

Hall DT and Mansfield R

J App Psych, 1975, 60 (2), 201-10

"Relationships of age and seniority with career variables  
of engineers and scientists"

Hall CS and Nordby VJ

A Primer of Jungian Psychology

The New English Library Ltd, London. 1973

Hamner WC and Foster LW

Org Beh Hum Perf, 1975, 14, 398-415

"Are intrinsic and extrinsic rewards additive: a test  
of Deci's cognitive evaluation theory of task motivation"

Harmon LW

J Couns Psych, 1981, 28 (5), 416-27

"The life and career plans of young adult college women:  
a follow-up study"

Hargreaves DJ

"Sex roles and creativity"

in Women: Sex-Role Stereotyping, ed Hartnett O, Boden

G and Fuller M

Tavistock Publications, London, 1979

Harren VA, Kass RA, Tinsley HEA and Moreland JR

J Couns Psych, 1979, 26 (3), 227-34

"Influence of gender, sex-role attitudes and cognitive complexity on gender-dominant career choices"

Hartman BW and Fuqua DR

Voc Guid Quart

"The construct validity of the career decision scale adapted for graduate students"

Hartman BW and Hartman PT

J Voc Beh, 1982, 20, 244-52

"The concurrent and predictive validity of the career decision scale adapted for high-school students"

Hartman BW, Utz PW and Farnum SO

J Voc Beh, 1979, 15, 224-30

"Examining the reliability and validity of educational-vocational undecidedness in a sample of graduate students"

Hartnett O, Boden G and Fuller M (eds)

Sex-role Stereotyping

Tavistock Publications, London, 1979

Hawkins JG

J Couns Psych, 1977, 24 (5), 398-403

"Anxiety and the process of deciding about a major and vocation"

Hawley P and Even B

Voc Guid Quart, 1981, 31 (2), 101-8

"Work and sex-role attitudes in relation to education and other characteristics"

Hays DG and Rothney JWM

P&GJ, 1961, 40 (1), 26-30

"Educational decision-making by superior secondary school pupils and their parents"

Hearn J

BJGC, 1981 9 (1), 12-23

"Crisis, taboos and careers guidance"

Hedges N and Beynon H

"Born to work"

Pluto Press, London, 1982

Heilman ME

Org Beh Hum Perf, 1980, 26, 386-95

"The impact of situational factors on personnel decisions concerning women: varying the sex composition of the applicant pool"

Helphingstine SR, Head TC and Sorensen PF

Psych Rep, 1981, 49, 381-2

"Job characteristics, job satisfaction, motivation and satisfaction with growth: a study of industrial engineers"

Heneman HG and Schwab DP

Psych Bull, 1972, 78 (1), 1-9

"Evaluation of research on expectancy theory predictions of employee performance"

Heppner PP

J Couns Psych, 1978, 25 (5), 366-75

"A review of the problem-solving literature and its relationship to the counselling process"

Herr EL

Voc Guid Quart, 1982, 30 (4), 367-77

"Comprehensive career guidance: A look to the future"

Herr EL, Good RH, McCloskey G and Weitz AD

J Voc Beh, 1982, 21, 243-53

"Secondary school curriculum and career behavior in young adults"

Herr LE and Watts AG

Voc Guid Quart, 1978, 27 (2), 101-13



"British and American models of career education: an overview"

Herriot P and Ecab R

J Occ Psych, 1979, 52, 311-24

"Occupational choice and expectancy-value theory: testing some modifications"

Herriot P and Rothwell C

J Occ Psych, 1981, 54, 17-31

"Organizational choice and decision theory: effects of employers' literature and selection interview"

Herriot P, Ecob R and Hutchinson M

J Occ Psych, 1980, 53 (3), 223-36

"Decision-theory and occupational choice: some longitudinal data"

Hesketh B

J Voc Beh, 1982, 20, 223-34

"Decision-making style and CDM behaviors among school leavers"

Hesketh B

New Zealand J Educ Studies, 1982, 17 (1), 68-77

"Work values of a group of potential school leavers"

in two New Zealand high schools"

Hey JD

Unpublished paper

"Are optimal search rules reasonable? And vice versa?  
(And does it matter anyway?)"

Hills JR

P&GJ, 1964, 43, 17-22

"Decision-theory and college choice"

Hilton TL

J Couns Psych, 1962, 19, 291-8

"Career decision making"

HMSO

Dept of Employment Gazette, 1980 LXXXVIII

"Career attitudes of final year undergraduates"

Hodge RW, Siegal PM and Rossi PH

Am J Sociol, 1964, 70 (3), 286-302

"Occupational prestige in the United States, 1925-63"

Holcomb WR and Anderson WP

J Voc Beh, 1977, 10, 341-6

"Vocational guidance research: a five-year overview"

Holden GS

P&GJ, 1961, 40 (1), 36-41

"Scholastic aptitude and the relative persistence of vocational choice"

Holdsworth R (1982)

Psychology for Careers Counselling

The British Psychological Society and The Macmillan Press, London

Holland JL

"Making Vocational Choices: a theory of careers"

Prentice-Hall Inc., Englewood Cliffs, New Jersey. 1973

Holland JL

Voc Guid Quart, 1982 (30), 195-7

"The SDS helps both females and males: a comment"

Holland JL

J Voc Beh, 1976, 8, 349-58

"The virtues of the SDS and its associated typology: a second response to Prediger and Hanson"

Holland JL

The Couns Psych, , 10 (2), 7-13

"Planning for alternative futures"

Holland JL

"The Use and evaluation of Interest Inventories and Simulations"

in EE Diamond (ed) "Issues of sex bias and sex fairness in career interest measurement" (1975)

Holland JL and Holland JE

J Couns Psych, 1977, 404-14

"Vocational indecision: more evidence and speculation"

Holland M

J Voc Beh, 1981, 18, 228-36

"Relationship between vocational development and self-concept in sixth-grade students"

Holland JL, Magoon TM and Spokane AR

Ann Rev Psychol, 1981, 32, 279-305

"Counselling Psychology: Career interventions research and Theory"

Hollinger CL

J Voc Beh, 1983, 22, 49-62

"Self-perception and the career aspirations of mathematically talented female adolescents"

Hooper JO

The Family Coordinator, 1979, 459-63

"My wife, the student"

Hooper JP

J of College Student Personnel, 1979, 145-51

"Returning women students and their families: support and conflict"

Hopson B and Hayes J (1968)

The theory and practice of vocational guidance

Pergamon Press Ltd. Oxford

Horan JJ

"Counselling for effective decision-making"

Duxbury Press, North Scituate, Mass. 1979

Hoult PP and Smith MC

J Occ Psych, 1978, 51, 119-25

"Age and sex differences in the number and variety of vocational choices, preferences and aspirations"

Howard TC

American J Psychol, 1963, 76 (2), 335

"The relationship between psychological and mathematical probability"

Howell FM

Sociol of Work and Occup, 1980, 5 (3), 315-39

"Occupational knowledge - its impact on career plans  
and early status attainment"

Huber GP, Daneshgar R and Ford DL

Org Beh Hum Perf, 1971, 6, 267-82

"An empirical comparison of 5 utility models for  
predicting job preferences"

Humphrys P

Australian J of Psych, 1981, 33 (2), 121-33

"The effect of importance upon the relation between  
perceived job attribution and job satisfaction"

Hutchins D and Clowsley J

Further Education, 1970, II (1), 6-7

"Why do women settle for less?"

Ickes W and Turner M

J Pers and Soc Psych, 1983, 45 (1), 210-22

"On the social advantages of having an older, opposite-  
sex sibling: birth order influences in mixed-sex dyads"

Ikenbury SO

J Couns Psych, 1961, 8 (4), 322-9

"Factors in college persistence"

Illfelder JK

J Voc Beh, 1980, 16, 7-17

"Fear of success, sex-role attitudes and career salience and anxiety levels of college women"

Institute of Electrical Engineers (IEE)

"Survey of Women members 1983"

Isaacs MB

Psych of Women Quart, 1981, 6 (2), 187-95

"Sex-role stereotyping and the Evaluation of the performance of women: Changing Trends"

Ivancevich JM

J Voc Beh, 1976, 8, 59-75

"Expectancy theory predictors and behaviorally anchored scales of motivation: an empirical test of engineers"

Jackson LA

J App Soc Psych, 1983, 13 (1), 31-44

"The influence of Sex, Physical attractiveness, Sex role and Occupational Sex-linkage on perceptions of Occupational suitability"

Jahoda M (1938)

"Unemployed men at work"

Unpublished manuscript, cited 1982

Jahoda M

American Psychologist, 1981, 36 (2), 184-91

"Work, employment and unemployment: Values, theories and approaches in social research"

Jahoda M (1982)

"Employment and Unemployment"

Cambridge University Press

Jahoda M, Lazarsfeld PF and Zeisel H (1933)

"Marienthal: The sociography of an unemployed community"

(English translation 1972). London: Tavistock Publications

James A and Harrison E

J Occ Psych, 1982, 55, 35-42

"Prediction of performance in initial officer training using reference reports"

James LR

J App Psych, 1980, 65, 415-21

"The unmeasured variables problem in path analysis"



Janis IL and Mann L

"Decision making: a psychological analysis of conflict,  
choice and commitment"

The Free Press, Macmillan Publishing Co. Inc., New York 1977

Jepsen DA

Measurement and Evaluation in Guidance, 1982, 15 (2)

"Test usage in the 1970s: a summary and interpretation"

Jepsen DA

J Voc Beh, 1975, 7

"Occupational decision development over the high school  
years"

Jepsen DA and Dilley JS

Rev of Educ Research, 1974, 44 (3), 331-49

"Vocational decision-making models: a review and  
comparative analysis"

Jepsen DA, Dustin R and Miars R

P&GJ, 1982, 61 (3), 149-53

"The effects of problem-solving training on adolescents'  
career exploration and career decision-making"

Jepsen DA and Groves WM

J Voc Beh, 1981, 18, 237-51

"Stage order and dominance in adolescent vocational decision-making processes: an empirical test of the Tiedeman-O'Hara paradigm"

Jepsen DA and Prediger DJ

J Voc Beh, 1981, 19, 350-68

"Dimensions of Adolescent career development: a multi-instrument analysis"

Joiner LM, Erickson EL and Brookover WB

P&GJ, 1969, 47, 655-9

"Socio-economic status and perceived expectations as measures of family influence"

Jones B

"What you always knew about statistics but didn't know you knew - Percentiles and Standard deviations"

Part I of "What you always wanted to know about Psychological testing but were afraid to ask" ed Pryor R

Research Section, Div of Voc Guid Services, Dept of Labor and Industry, NSW, Australia

Jones B

"What you always did but weren't aware you were doing - the hypothesis testing approach to testing in counselling"

Part II of "What you always wanted to know about

psychological testing but were afraid to ask" ed Pryor R

Jones OM, Hansen JC and Putnam BA

J Voc Beh, 1976, 8, 31-40

"Relationship of self-concept and vocational maturity  
to vocational preferences in adolescents"

Jorsaan JP and Super DE

"The prediction of early adult vocational behavior"

in Ricks D, Thomas A and Roff M (eds)

"Life History Research in Psychopathology", Vol. 3

The univ of Minnesota Press, Minneapolis, 1974

Kaldor DR and Zytowski DG

P&GJ, 1969, 47, 781-8

"A Maximizing model of occupational decision-making"

Kantner JE and Ellerbusch RC

Psych Reports, 1980, 47, 1289-1290

"Androgeny and occupational choice"

Kaplan KJ and Fishbein M

J Soc Psych, 1969, 78, 63-74

"The source of beliefs, their saliency and prediction  
of attitude"

Karpickle S

J Couns Psych, 1980, 27 (3), 240-5

"Perceived and real sex differences in college students' career planning"

Katz MR

Proceedings of the 1973 International Conference on Testing Problems

"Career decision making: A Computer-based System of Interactive Guidance and Information (SIGI)"

Katz FE and Martin HW

Social Forces, 1962, 41, 149-54

"Career choice processes"

Kaufman D and Feters ML

J Voc Beh, 1980, 17, 251-62

"Work motivation and job values among professional men and women: a new accounting"

Keeney RL and Raiffa H

"Decisions with multiple objectives: Preferences and value trade-offs"

John Wiley and Sons. New York. 1976

Keller KE, Biggs DA and Gysbers NC

"Cognitive career counselling"

Kelly EF, Holloway R and Chapman DW

J Educ Research, 1981, 75 (1), 5-15

"Prediction of achievement for high school students  
in college courses"

Kelsall RK, Poole and Kuhn A

"Graduates: the sociology of an elite"

Methuen and Co Ltd. 1972

Kelso GI

J Voc Beh, 1975, 7, 29-39

"The influences of stage of leaving school on vocational  
maturity and realism of vocational choice"

Kelvin P

BJGC, 1981, 9 (1), 2-11

"Work as a source of identity: the implications of  
unemployment"

Kenkel WF and Gage BA

Sociol Spectrum, 1982, 2, 307-14

"Life's predictable unpredictables and the career plans  
of youth"

Kerin RA and Slocum JW

Psych Reports, 1981, 49, 132-4

"Decision-making style and acquisition of information:  
further exploration of the Myers-Briggs type indicator"

Kerlinger FN

"Behavioral research: a conceptual approach"

Holt Rinehart and Winston. New York. 1979

Khan SB and Alvi SA

J Voc Beh, 1983, 22 (3), 357-64

"Educational, Social and Psychological Correlates of  
Vocational Maturity"

Kleinberg JL

J Voc Beh, 1976, 9, 219-32

"Adolescent correlates of occupational stability and  
change"

Knight GP

Child Dev, 1982, 53, 664-7

"Cooperative-Competitive Social Orientation: Interactions  
of Birth order with Sex and Economic Class"

Knoop R

J of Psychol, 1981, 108, 103-6

"Age and correlates of locus of control"

McMillan JH

J Soc Psych, 1980, 112, 31-9

"Children's causal attributions in achievement situations"

Medvene AM

J Couns Psych, 1969, 16 (5), 385-9

"Occupational choice of graduate students in psychology as a function of early parent-child interactions"

Meece JL, Parsons JE, Kaczala CM, Goff SB and Futterman R

Psych Bull, 1982, 91 (2), 324-48

"Sex differences in math achievement: toward a model of academic choice"

Meir EI and Hassan R

J Voc Beh, 1982, 21, 309-17

"Congruence Between Personality Type and Environment Type as a predictor of Stay in an Environment"

Mendonca JD and Siess TF

J Couns Psych, 1976, 23, 339-47

"Counselling for indecisiveness: problem solving and anxiety management training"

Meredith C and Bradley J

Educ Studies, 1976, 2, 1

"A consideration of art-science personality differences  
with particular reference to the thing-person dimension"

Messner SF

Sociol of work and occup, 1980, 7 (4), 395-424

"Blau's theory of occupational differentiation"

Miller AW

P&GJ, 1966, 44, 18-23

"Learning theory and vocational decisions"

Miller CH

Historical and recent perspectives on work and vocational  
guidance

in Borow (ed) Career guidance for a new age. 1973

Miller GA

Psych Rev, 1956, 63, 81-97

"The magic number seven plus or minus two: some limits  
on our capacity for processing information"

Miller J

Sociol of work and occup, 1980, 7 (3), 337-66

"Individual and occupational determinants of job  
satisfaction"



Miller JV

Voc Guid Quart, 1982, 30 (4), 359-66

"Life-long Career Development for Disadvantaged Youth  
and Adults"

Miller JR

Psych Reports, 1980, 47, 79-86

"Relationship of fear of success to perceived parental  
attitudes toward success and autonomy in men and women"

Mitchack JA

J Couns Psych, 1978, 25 (1), 172-5

"Occupational sex-role stereotypes and social desirability  
among counsellor trainees"

Mitchell TR and Beach LR

J Occ Psych, 1976, 49, 231-48

"A review of occupational preference and choice research  
using expectancy theory"

Mitchell AM, Jones GB and Krumboltz JD (eds)

Social learning and career decision making

Carroll Press, Rhode Island, 1979

Mitchell TR

Psych Bull, 1974, 81 (12), 1053-77

"Expectancy models of job satisfaction, occupational preference and effort: a theoretical, methodological and empirical appraisal"

Mitchell TR and Biglan A

Psych Bull, 1971, 76 (6), 432-54

"Instrumentality theories: current uses in Psychology"

Mitchell TR and Linden RC

Org Beh Hum Perf, 1982, 29, 241-56

"The effects of the social context on performance evaluation"

Mitchell TR and Nebeker DM

J App Psych, 1973, 57 (1), 61-7

"Expectancy theory predictors of academic effort and performance"

Mitchell TR and Pollard WE

J Soc Psych, 1973, 89, 35-45

"Instrumentality predictors of academic behaviour"

Moreland JR, Harren VA, Krinsky-Montague E and Tinsley HEA

J Couns Psych, 1979, 26 (4), 329-36

"Sex-role self concept and career decision making"

Morris LW and Carden RL

Psych REports, 1981, 48, 799-806

"Relationship between locus of control and extraversion-introversion in predicting academic behavior"

Mowday RT, Stone EF and Porter LW

J Voc Beh, 1979, 15, 78-89

"The interaction of personality and job scope in predicting turnover"

Muchinsky Pm and Fitch MK

Org Beh Hum Perf, 1975, 14, 217-26

"Subjective expected utility and academic preferences"

Muchinsky PM and Taylor MS

J Voc Beh, 1976, 8, 185-95

"Intrasubject predictions of occupational preference: the effect of manipulating components of the valence model"

Muller KE

Psychometrika, 1981, 46 (2), 139-42

"Relationships between redundancy analysis, canonical correlation and multivariate regression"

Mumford MD and Owens WA

J Voc Beh, 1982, 21, 330-48

"Life history and vocational interests"

Murphy RJL

"Sex differences in examination performance: do these reflect differences in ability or sex-role stereotypes?"

in Women: Sex-Role Stereotypes ed Hartnett O, Boden G and Fuller M

Tavistock Publications, London, 1979

Myers AM and Gonda G

J Pers and Soc Psych, 1982, 43 (2), 304-18

"Empirical Validation of the Bem Sex-Role Inventory"

Myers AR and Clough CH

"Profession, vocation and culture in later medieval England" (1982)

Nicolson N

MRC/SSRC SAPU Memo no. 487 (1983)

"A Theory of work role transitions"

Nichous JG, Licht BG and Pearl RA

Psych Bull, 1982, 92 (3), 572-80

"Some Dangers of Using Personality Questionnaires to Study Personality"

Nickerson ET

IAAP Conference Paper, Edinburgh, 1982

"Issues in the Training of Therapists for Women"

Nickerson ET, Espiri O and Gawelek MA

IAAP Conference Paper 1982

"Counselling Women: A Graduate Masters' Degree Specialization for Training Mental Health Professionals to work with Women"

Nisbett R and Ross L (1980)

Human inference: strategies and shortcomings of social judgement.

Prentice-Hall Inc., Englewood Cliffs, New Jersey

Noeth RJ

J Voc Beh, 1983, 22, 365-75

"The Effects of Enhancing Expressed Vocational Choice with Career Development Measures to Predict Occupational Field"

Nordholm LA and Westbrook MT

Australian Psychologist, 1981, 16 (1)

"Career selection, satisfaction and aspirations among female students in five health professions"

Norton JL

"General motives and influences in vocational development"  
J Genetic Psychology, Vol. 82, 1953

O'Hara RP and Tiedeman DV

J Couns Psych, 1959, 6, 292-301

"The vocational self-concept in adolescence"

O'Keefe ESC and Hyde JS

Sex Roles, 1983, 9 (4), 481-92

"The Development of Occupational Sex-role Stereotypes:  
The Effects of Gender Stability and Age"

Oliver LW

J Voc Beh, 1975, 7, 1-12

"The relationship of parental attitudes and parent  
identification to career and homemaking orientation  
in college women"

Omvig CP, Tulloch RW and Thomas EG

J Voc Beh, 1975, 7, 265-73

"The effect of career education on career maturity"

O'Neil JM, Ohlde C, Tollefson N, Barke C, Piggott T  
and Watts G

J Couns Psych, 1980, 27 (6), 571-80

"Factors, correlates and problem areas affecting career  
decision making of a cross-sectional sample of students"

O'Neil JM, Ohlde C, Barke C, Gelwick BP and Garfield N

J Couns Psych, 1980, 27 (4), 355-63

"Research on a workshop to reduce the effects of sexism and sex-role socialization on women's career planning"

Oppenheimer EA

J Couns Psych, 1966, 13, 191-7

"The relationship between certain self-constructs and occupational preferences"

O'Reilly CA and Caldwell DF

J App Psych, 1980, 65 (5), 559-65

"Job choice: the impact of intrinsic and extrinsic factors on subsequent satisfaction and commitment"

Orlofsky JL and Stake JE

Psych of Women Quarterly, 1981, 6 (2)

"Psychological masculinity and femininity: their relationship to striving and self-concept in the achievement and interpersonal domains"

Osgood CE, Suci GJ and Tannenbaum PH (1957)

The measurement of meaning

Urbana: University of Illinois Press

Osipow SH

J Couns Psych, 1962, 9, 106-9

"Perceptions of occupations as a function of titles and descriptions"

Osipow SH

The Couns Psych, 1980, 10 (4), 27-38

"Research in Career Counselling: An Analysis of Issues and Problems"

Osipow SH (1973)

Theories of Career development

Prentice-Hall Inc., Englewood Cliffs, New Jersey

Osipow SH (ed)

Emerging woman: career analysis and outlooks

Charles E Merrill Pub. Co., Ohio. 1975

Osipow SH, Carney CG and Barack A

J Voc Beh, 1976, 9, 233-43

"A scale of educational-vocational undecidedness: a typological approach"

Oucharchyn CA, Johnson HH and Petzel TP

J Personal, 1981, 49 (3)

"Type A behaviour, academic aspirations and academic success"

Padgett KL

Diss Abs 1978, 39 (2-A), 785

"Factors affecting career decisions of liberal arts college students"



Pallone NJ, Rickard FS and Hurley RB

J Couns Psych, 1970, 17 (6), 498-501

"Key influencers of occupational preference among black youth"

Paris J and Frank H

Canadian J Psychiat, 1983, 28, 354-7

"Psychological determinants of a medical career"

Parker DF and Dyer L

Org Beh Hum Perf, 1976, 17, 97-117

"Expectancy theory as a within-person behavioral choice model: an empirical test of some conceptual and methodological refinements"

Parker DF and Dyer L

J App Psych, 1975, 60 (6), 761-4

"A note on the measurement of valence perceptions in expectancy theory research"

Parsons F

Choosing a Vocation

Houghton-Mifflin. 1909

Pascarella ET, Walberg HJ, Haertel GD and Junker LK

J Educ Research, 1981, 75 (1)

"Individual and school level correlates of the educational

aspirations of older adolescents"

Payne SL

J of Psychol, 1982, 111, 51-5

"Job-orientation stereotyping: is it changing?"

Pecotich A and Churchill GA

Org Beh Hum Perf, 1981, 27, 213-26

"An examination of the anticipated-satisfaction importance-valence controversy"

Pelham JP and Pretz BR

Voc Guid Quart, 1982, 31 (1), 36-42

"Racial Differences and Attributes of Career Choice Unrealism"

Pedro JD

Voc Guid Quart, 1982

"Career maturity in high school age females"

Peraino JM and Willerman L

J Voc Beh, 1983, 22, 268-77

"Personality Correlates of Occupational Status According to Holland Types"

Perun PJ and del Vento Bielby D

Psych of Women Quart, 1981, 6 (2), 234-52

"Towards a Model of Female Occupational Behaviour: A Human Development Approach"

Peters LH

Org Beh Hum Perf, 1977, 20, 129-48

"Cognitive models of motivation, expectancy theory and effort: an analysis and empirical test"

Peterson DR

Psych Rev, 1965, 72 (1), 48-59

"Scope and generality of verbally defined personality factors"

Phillips SD

J Voc Beh, 1982, 20, 129-40

"Career exploration in adulthood"

Philips SD

J Voc Beh, 1982, 20, 141-52

"The development of career choices: the relationship between patterns of commitment and career outcomes in adulthood"

Phillips SD and Strohmer DC

J Voc Beh, 1982, 20, 215-22

"Decision-making style and vocational maturity"

Phillips SD and Strohmer DC

"Vocationally mature coping strategies and progress  
in the decision-making process: a canonical analysis"

Piachaud D

Higher Education, 1975, 4, 201-12

"The economics of educational opportunity"

Picou JS and Campbell RE

Career behavior of special groups

Charles E Merrill Pub. Co., Columbus, Ohio. 1075

Piotrkowski CS and Katz MH

Child Dev, 1982, 53, 1520-9

"Indirect Socialization of Children: The Effects of  
Mothers' Jobs on Academic Behaviours"

Pitz GF

J App Psych, 1980, 65 (2), 164-71

"Sensitivity of direct and derived judgements to  
probabalistic information"

Pitz GF and Harren VA

J Voc Beh, 1980, 16, 320-46

"An analysis of CDM from the point of view of information processing and decision theory"

Pitz GF, Heerboth J and Sachs NJ

Org Beh Hum Perf, 1980, 26, 65-80

"Assessing the utility of multiattribute utility assessments"

Plas JM and Wallsten BS

J Couns Psych, 1983, 30 (1), 46-54

"Women Oriented Toward Male-dominated Careers: Is the Reference Group Male or Female?"

Plata M

Voc Guid Quart, 1981

"Occupational aspirations of normal and emotionally disturbed adolescents: a comparative study"

Prediger DJ

Voc Guid Quart, 1981, 30 (2), 117-29

"A note on SDS validity for females"

Prediger DJ

Voc Guid Quart, 1982, 30, 198-9

"Do SDS scores really help females? A reply to Holland"

Prediger DJ

Komarovsky M

Sex Roles, 1982, 8 (3)

"Female freshmen view their future: career salience and its correlates"

Komorita SS

J Exptl Psych, 1959, 58 (5), 386-9

"Factors which influence subjective probability"

Komorita SS, Lapworth W and Tumonis TM

J Exptl Soc Psych, 1981, 17, 525-44

"The effects of certain versus risky alternatives in bargaining"

Kopelman RE

J Voc Beh, 1977, 10, 270-286

"Psychological stages of careers in engineering: an expectancy-theory taxonomy"

Korman AK

J App Psych, 1966, 50 (6), 479-86

"Self-esteem variable in vocational choice"

Korman AK

J App Psych, 1970, 54, 31-41

"Towards an hypothesis of work behavior"

Korman AK

J App Psych, 1967, 51 (1), 65-7

"Self-esteem as a moderator of the relationship between self-perceived abilities and vocational choice"

Kratzing MI and Nystul MS

BJGC, 1979, 7 (2), 220-4

"Effects of three methods of career counselling on vocational maturity and vocational preference"

Krausz M

Voc Guid Quart, 1982, 31 (1), 60-8

"Policies of organizational choice at different vocational life stages"

Krausz M and Izraeli DN

J Occ Psych, 1980, 53, 177-80

"Differences in stage of occupational field and subfield choice among students of three engineering subfields"

Krefting LA and Berger PK

J Voc Beh, 1979, 15, 164-74

"Masculinity-femininity perceptions of job requirements and their relationship to co-sex stereotypes"

Krefting LA, Berger PK and Wallace MJ

J Voc Beh, 1978, 13, 181-91

"The contribution of sex distribution, Job content and occupational classification to sextyping: two studies"

Krumboltz JD, Rude SS, Mitchell LK, Hamel DA and Kinnier RT

J Voc Beh, 1982, 21, 349-58

"Behaviours associated with 'Good' and 'Poor' outcomes in a Simulated Career decision"

Lamb RR and Prediger DJ

J Voc Beh, 1979, 15, 231-46

"Criterion-related validity of sex-restrictive and uni-sex interest scales: a comparison"

Lamke LK

J Youth and Adolescence, 1982, 11 (3), 247-59

"Adjustment and Sex-role Orientation in Adolescence"

Lamke LK

Child Dev, 1982, 53, 1530-5

"The impact of Sex-role Orientation on Self-esteem in early Adolescence"

Lange RV and Tiggemann M

J Personal Assess 1981, 45 (4), 398-406

"Dimensions and reliability of the Rotter I-E locus of control scale"



Lange R and Tiggemann M

Australian Psychologist, 1980, 15, 495-7

"Changes within the Australian population to more external control beliefs"

Larson JR

Org Beh Hum Perf, 1980, 26, 293-304

"Exploring the external validity of a subjectively weighed utility model of decision-making"

Lavine LO

Child Dev, 1982, 53, 658-63

"Parental power as a potential influence on girls' career choice"

Lawlor EE, Kuleck WJ, Rhode JG and Sorensen JE

Org Beh Hum Perf, 1975, 13, 133-45

"Job choice and post-decision dissonance"

Lawrence W and Brown D

J Voc Beh, 1976, 9 43-52

"An investigation of intelligence, self-concept, status, race and sex as predictors of career maturity"

Leaf AG and Fraser BJ

BJGC, 1978, 6 (2), 191-7

"The dimensionality of Vocational Commitment: an empirical assessment of Ramsey's three factor model with student nurses"

Lee SM

Personnel J, 1970, 49 (5), 392-5

"Job selection by college graduates"

Lee W

Decision theory and human behaviour

John Wiley and Sons Inc., New York. 1971

Lewis RA and Gilhousen MP

P&GJ, 1981, 59 (5), 291-9

"Myths of career development"

Lied TR and Pritchard RD

J App Psych, 1976, 61 (4), 436-67

"Relationships between personality variables and components of the expectancy-value model"

Lindbloom G and Faw TT

J Pers Assess, 1982, 46 (1), 70-1

"Three measures of Locus of control: What do they Measure?"

Lipsett L

P&GJ, 1962, 40, 432-7

"Social factors in vocational development"

Liversidge W

Sociol Rev, 1962, 10 (1)

"Life chances"

Loesch LC, Shub PA and Rucker BB

J College Student Personnel, 1979, 20 (2), 140-4

"Vocational maturity among community college students"

Lofquist LH and Dawis RV

Adjustment to work: a psychological view of man's problems  
in a work-oriented society

Appleton-Century-Crofts, Meredith Corporation,

New York. 1969

Loken JL and Biggs JB

J Voc Beh, 1982, 21, 1-16

"Student Characteristics and Motivational and Process  
Factors in Relation to Styles of Career Development"

Lokan JL, Boss MW and Patsula PJ

J Voc Beh, 1982, 20, 331-42

"A Study of Vocational Maturity during Adolescence,  
and Locus of Control"

Loken B and Fishbein M

J App Soc Psych, 1980, 10 (3), 202-23

"An analysis of the effects of occupational variables on childbearing intentions"

Looft WR

Dev Psych, 1971, 5 (2), 366

"Sex differences in the expression of vocational aspirations by elementary school children"

Lopez FG

P&GJ, 1983, 410-12

"A Paradoxical Approach to Vocational Indecision"

Lowe B

J Voc Beh, 1981, 19, 346-9

"The relationship between vocational interest differentiation and career undecidedness"

Ludwig DA

Psych Reports, 1981, 49, 81-2

"Notes on internal consistency of Canadian self-esteem inventory for adults"

Lunneborg PW

J Voc Beh, 1982, 20, 276-81

"Role model influencers of nontraditional professional women"

Lunneborg PW

J Couns Psych, 1976, 23, 402-4

"Vocational indecision in college graduates"

Lunneborg PW

J Couns Psych, 1978, 25 (4), 299-305

"Sex and career decision making styles"

Lyon D and Slovic P

Acta Psychologica, 1976, 40, 287-98

"Dominance of accuracy information and neglect of base rates in probability estimation"

Lyson TA and Brown SS

J Voc Beh, 1982, 20, 366-75

"Sex role attitudes, curriculum choice and career ambition: a comparison between women in typical and atypical college majors"

Maccoby E and Jacklin C

The Psychology of Sex Differences

Stanford University Press, Stanford. 1974

MacKay WR and Miller CA

J Voc Beh, 1982, 20, 31-9

"Relationships between SES and sex variables to the complexity of worker functions in the occupational choices of elementary school children"

MacLean D

New Zealand J of Educ Studies, 1982, 17 (1), 74

"Super's Work Values Inventory: some comments"

Mansfield R

J Voc Beh, 1973, 3, 433-41

"Self-esteem, self-perceived abilities and vocational choice"

Maqsud M

Psych Reports, 1980, 46, 766

"Relationship of locus of control to age and level of aspiration"

Marini MM and Greenberger E

Sociol of work and Occup, 1978, 5 (2), 147-78

"Sex differences in occupational aspirations and expectations"

Marjoribanks K

J Psychol, 1981, 109, 155-64

"Family environments and children's academic achievement:  
sex and social group differences"

Majoribanks K

J Psychol, 1981, 107, 29-40

"Sibling correlates of family environment dimensions:  
ethnic group differences"

Majoribanks K

Psych Rep, 1981, 49, 915-19

"Birth order and family learning environments"

Marshall SJ and Wijting JP

J Voc Beh, 1980, 16, 299-311

"Relationships of achievement motivation and sex-role  
identity to college women's career orientation"

Masih LK

P&GJ, 1969, 47, 773-5

"Career saliency for teachers and other occupational  
groups"

Masih LK

P&GJ, 1967, 45, 653, 658

"Career saliency and its relation to certain needs,

interests and job values"

Matsui T and Ikeda H

Org Beh Hum Perf, 1976, 17, 289-98

"Effectiveness of self-generated outcomes for improving prediction in expectancy theory research

Matsui T and Terai T

J App Psych, 1975, 60 (2), 263-5

"A cross-cultural study of the validity of the expectancy-theory of work-motivation"

Mawardi BH

"Career Satisfactions and dissatisfactions"  
in The Practice of Medicine

McBroom WH

Sex Roles, 1981, 7 (10)

"Parental relationships, socioeconomic status and sex-role expectations"

McClendon MJ

Am Sociol Rev, 1976, 41, 52-64

"The Occupational Status Attainment Processes of Males and Females"



McDaniels C

Voc Guid Quart, 1982, 30 (4), 344-51

"Comprehensive Career Information Systems for the 1980s"

McDonough JE

BPS Bull, 1983, 36, 98

"Factors associated with occupational choice"

McDonough JE and Wagstaff GF

J Voc Beh, 1983, 23, 251-6

"Occupational Perceptions of academic disciplines"

McGowan AS

J Voc Beh, 1977, 10, 196-204

"Vocational maturity and anxiety among vocationally undecided and indecisive students"

McGowan AS

J Voc Beh, 1982, 20, 294-303

"The Predictive Validity of Holland's SDS Summary codes in terms of Career choice: A Four-Year Follow-Up"

McLaughlin SD

Sociol of Work and Occup, 1978, 5 (1), 5-32

"Sex differences in the determinants of occupational status"

Voc Guid Quart, 1982, 31 (2)

"Are Raw Interest Scores Valid and Sex Fair? A Reply  
to Gottfredson"

Prediger DJ

J Voc Beh, 1982, 21, 259-87

"Dimensions Underlying Holland's Hexagon: Missing Link  
Between Interests and Occupations?"

Prediger DJ

J Couns Psych, 1971, 12, 306-13

"Data-information conversion in test interpretation"

Prediger DJ

J Voc Beh, 1980, 16, 33-42

"The determination of Holland Types characterizing  
occupational groups"

Prediger DJ and Hanson GR

J Voc Beh, 1976, 8 167-84

"Holland's theory of careers applied to men and women:  
analysis of implicit assumptions"

Prediger DJ and Hanson GR

J Voc Beh, 1976, 359-66

"A theory of careers encounters sex: reply to Holland (1976)"

Pryor R

J Voc Beh, 1982, 20, 40-52

"Values, preferences, needs, work ethics and orientations to work: towards a conceptual and empirical integration"

Pryor R

J Voc Beh, 1983, 23, 233-41

"Sex differences in the levels of generality of values/ preferences related to work"

Pryor R

"Against the Counsellor as God and Psychological Tests as Papal Bulls. Reflections on Test Use"

Part IV of "What you always wanted to know about Psychological testing but were afraid to ask" ed Pryor R

Raffe D

Scottish Educational Review, 1983, 15 (1)

"Some recent trends in Youth Unemployment in Scotland"

Rahin A

Psych Reports, 1981, 49, 496-8

"Job satisfaction as a function of personality-job congruence: a study with Jungian psychological types"

Ramagge FA

BJGC, 1975, 3 (1), 66-81

"Career choice processes of graduates entering three manufacturing companies"

Rapoport A and Wallsten TS

Ann Rev Psych, 1972, 23, 131-76

"Individual decision behavior"

Reeves DJ and Booth RF

J Voc Beh, 1979, 15, 155-63

"Expressed versus inventoried interests as predictors of paramedical effectiveness"

Reich B and Adcock C (1976)

Values, Attitudes and Behaviour Change

London: Methuen (Essential Psychology B3)

Remenyi AG and Fraser BJ

J Voc Beh, 1977, 10, 53-68

"Effects of occupational information on occupational perceptions"

Reno R

J of Research in Personality, 1981, 15, 81-92

"Sex differences in attribution for occupational success"

Richards MA

Vocational Aspects of Education, 1977, 29, 113-19

"Predicting sixth formers' choice of higher education"

Richardson MS

Couns Psychologist, 1980, 9 (4)

"Occupational and family roles: a neglected intersection"

Riley PJ

J Voc Beh, 1981, 19, 244-50

"The influence of gender on occupational aspirations  
of kindergarten children"

Roberts K

From school to work: a study of the youth employment  
service

David and Charles, Newton Abbott. 1971

Robert K

BJGC, 1977, 5 (1), 1-9

"The social conditions, consequences and limitations  
of careers guidance"

Roberts RJ

BJGC, 1980, 8 (2), 158-74

"An alternative justification for careers education:

a radical response to Roberts and Daws"

Robertson SE and Paterson JG

P&GJ, 1983, 490-3

"Characteristics of Guidance and Counselling Services  
in Canada"

Roe A

J Couns Psych, 1957, 4, 212-17

"Early determinants of vocational choice"

Roe A

The Psychology of Occupations

New York: Wiley. 1956

Roe A and Siegleman M

Child Dev, 1963, 34, 355-69

"A parent-child relations questionnaire"

Rollins J and White PN

Sex Roles, 1982, 8 (11), 1141-55

"The Relationship between Mothers' and Daughters' Sex-  
role Attitudes and Self-concepts in Three types of Family  
Environment"

Romine PG and Crowell OC

Psych Reports, 1981, 48, 787-92

"Personality correlates of under- and over-achievement  
at the University Level"

Rooney GS

J Voc Beh, 1983, 22 (3), 324-41

"Distinguishing Characteristics of the Life Roles of  
Worker, Student and Homemaker for Young Adults"

Rose HA and Elton CF

J Voc Beh, 1982, 20, 162-74

"The relationship of congruence, differentiation and  
consistency to interest and aptitude scores in women  
with stable and unstable vocational choices"

Rose HA and Elton CF

J Couns Psych, 1971, 18 (5), 456-61

"Sex and Occupational choice"

Rosenberg HG

Diss Abs, 1977, 38 (5-A), 2565-6

"The effects of economic outlook information on the  
career decision-making of college students"

Rosenberg M

Occupations and Values

The Free Press, Glencoe, Illinois. 1957

Rosenberg M

Society and the adolescent self-image

Princeton University Press. Princeton, New Jersey. 1965

Rosenberg MJ

J Ab and Soc Psych, 1956, 53, 367-72

Cognitive structure and attitudinal affect

Ross BM and De Groot JF

J Psych 1982, 110, 75-90

"How adolescents combine probabilities"

Rotter NG

J Voc Beh, 1982, 20, 193-202

"Images of Engineering and liberal arts majors"

Rounds JB, Dawis RV and Lofquist LH

J Couns Psych, 1979, 26 (6), 487-96

"Life history correlates of vocational needs for a female adult sample"

Rubinton N

J Couns Psych, 1980, 27 (6), 581-8



"Instruction in career decision making and decision making styles"

Rule WR

P&GJ, 1982, 61 (4), 195-7

"Pursuing the Horizon: Striving for Elusive Goals"

Rush JC and Peacock AC

J Voc Beh, 1980, 16, 347-59

"Career stages: a partial test of Levinson's model of life-career stages"

Ryrie AC, Furst A and Lauder M

Choices and chances: a study of pupils' subject choices and future career intentions

The Scottish Council for Research in Education Publication 71

Hodder and Stoughton. London. 1979

Saha LJ

Australian J Educ, 1982, 26 (3), 247-65

"Gender, School Attainment and Occupational Plans: Determinants of Aspirations and Expectations among Australian School Leavers"

Saha LJ

"National Development and the Revolution of Rising

Expectations: Determinants of Career Orientations among  
School Students in Comparative Perspective"

in The Sociology of Educational Expansion ed MS Archer  
Sage Publications, London, 1983

Salomone PR and Mc Kenna  
P&GJ, 1982, 60 (1), 283-6

"Difficult career counselling cases: I. Unrealistic  
vocational aspirations"

Savin-Williams RC and Jaquish GA  
J Personality, 1981, 49 (3)

"The assessment of adolescent self-esteem: a comparison  
of method"

Schlossberg NK and Goodman J  
Voc Guid Quart, 1972, 20, 166-70

"A woman's place: children's sex stereotyping of occupations"

Schmitt N and Son L  
Org Beh Hum Perf, 1981, 27, 135-50

"An evaluation of valence models of motivation to pursue  
various post high school alternatives"

Schneider FW and Coutts LM  
J Educ Psych, 1982, 74 (6), 898-906

"The High School Environment: A comparison of Coeducational and Single Sex Schools"

Schneider FW, Coutts LM and Starr MW

Conference paper, Canadian Psychological Association, Quebec City, 1979

"Students in Coeducational and Single Sex Schools: Do Their Educational Attitudes Differ?"

Schneider J

Org Beh Hum Perf, 1976, 16, 308-33

"The 'Greener Grass' Phenomenon: differential effects of a work context alternative on organizational participation and withdrawal intentions"

Schneider J and Locke EA

Org Beh Hum Perf, 1971, 6, 441-57

"A critique of Herzberg's incident classification systems and a suggested revision"

Schoon CG

J Voc Beh, 1976, 9, 169-78

"Differences among medical, business and engineering students in the intensity and direction of their affective responses to occupational concepts"

Schuerger JM, Tait E and Tavernelli M

J Pers Soc Psych, 1982, 43 (1), 176-82

"Temporal stability of personality by questionnaire"

Schuler H and Stehle W

IAAP Conference Paper, Edinburgh, 1982

"The Social Validity of Aptitude Testing Procedures:  
Recent Developments in the Assessment Centre Approach"

Sears S

Voc Guid Quart, 1982, 31 (2), 137-42

"A Definition of Career Guidance Terms: A National  
Vocational Guidance Association Perspective"

Sekaran U

J Occ Psych, 1985, 58 (2), 129-38

"The paths to mental health: An exploratory study of  
husbands and wives in dual-career families"

Seo F

Beh Sci, 1980, 25, 387-96

"An integrating approach for improving decision making  
processes"

Sewell WH and Orenstein AM

Am J Sociol, 1964, 70 (3), 551-63

"Community of Residence and Occupational Choice"

Sewell WH, Haller AO and Straus MA

Am Sociol Rev, 1957, 22, 67-73

"Social status and educational and occupational aspiration"

Sewell WH and Shah VP

Am J Sociol, 1967, 73, 559-72

"Social class, parental encouragement and educational aspirations"

Shann MH

J Voc Beh, 1983, 22 (3), 343-56

"Career plans of men and women in gender dominant professions"

Sheridan JE

J App Psych, 1976, 60 (3), 361-8

"Comparative analysis of expectancy and heuristic models of decision behavior"

Sheth JN and Park CW (1973)

Equivalence of Fishbein and Rosenberg Theories of Attitude  
Faculty Working Paper No. 108, College of Commerce and  
Business Administration, University of Illinois

Shinar EH

J Voc Beh, 1975, 7

"Sexual stereotypes of occupations"

Shuval JT

Hum Rels, 1963, 16, 171-81

"Occupational interests and sex-role congruence"

Siegal CLF

J Voc Beh, 1973, 3, 15-19

"Sex differences in the occupational choices of second graders"

Skovholt TM and Morgan JI

P&GJ, 1981, 60, 231-7

"Career development: an outline of issues for men"

Slaney, RB

J Couns Psych 1983, 30 (1), 55-63

"Influence of Career Indecision on Treatments exploring the Vocational Interests of College Women"

Slaney RB and Slaney FM

J Couns Psych, 1981, 28 (6), 515-18

"A comparison of measures of expressed and inventoried vocational interests among counselling centre clients"

Slaney RB, Stafford MJ and Russell JEA

J Voc Beh, 1981, 19, 335-45

"Career indecision in adult women: a comparative and descriptive study"

Slaney WB

J Couns Psych, 1980, 27 (2), 122-9

"Expressed vocational choice and vocational indecision"

Slovic P and Fischhoff B

J Expt Psych: Hum Perc and Perf, 1977, 3 (4), 544-51

"On the psychology of experimental surprises"

Slovic P, Fischhoff B and Lichtenstein S

Ann Rev Psychol, 1977, 28, 1-39

"Behavioral decision theory"

Slovic P, Fischhoff B and Lichtenstein S

"Cognitive processes and societal risk-taking"

in Carroll JS and Payne JW (eds)

Cognition and Social Behavior

Lawrence Erlbaum Associates Pub. 1976

Snodgrass G and Healy CC

J Couns Psych, 1979, 26 (3), 210-16

"Developing a replicable career decision making counselling procedure"

Snyder M and Gangestad S

"Hypothesis Testing Procedures"

in "New Directions in Attribution Research" Vol 3

ed JH Harvey, W Ickes and RF Kidd. Lawrence Erlbaum

Assoc Pub. Hillsdale, New Jersey. 1981

Snyder RA

Voc Guid Quart, 1979, 28 (2), 160-5

"Improving interest measurement through the use of  
expectancy theory"

Snyder RA, Howard A and Hammer TH

J Voc Beh, 1978, 13, 229-41

"Mid-career change in academia: the decision to become  
an administrator"

Snyder RA, Howard A and Hammer TH

J of Psych, 1978, 100, 285-92

"The predictive power of within - versus across - subjects  
scores in expectancy research"

Snyder M and Skrypnek BJ

J Personality, 1981, 49 (2)

"Testing hypotheses about the self: assessment of job  
suitability"



Somers MJ and Lefkowitz J

J Voc Beh, 1983, 22 (3), 303-11

"Self-esteem, need gratification and work satisfaction:  
a test of competing explanations from consistency theory  
and self-enhancement theory"

Sorensen J and Winters CJ

"Parental influences on women's career development"  
in SH Osipow (ed) Emerging women: career analysis and  
outlooks.

Charles E Merrill., Columbus, Ohio. 1975

Splete HH

Voc Guid Quart, 1982, 30 (4), 300-7

"Planning for a Comprehensive Career Guidance Program  
in the Elementary School"

Spokane AR

J of College Student Personnel, 1979

"The Validity of the Holland Categories for college  
women and men"

Spokane AR and Derby DP

J Voc Beh, 1979, 15, 36-42

"Congruence, personality pattern and satisfaction in  
college women"

Spanger E  
"Types of Men". Translated from the German by Paul JW Pigors.  
Halle: Max Niemeyer Verlag, 1928

Srinivas KM

IAAP Conference Paper, Edinburgh, 1982

"A Cross-cultural study of Youth Work Values"

Stafford EM, Jackson PR and Banks MH

J Occ Psych, 1980, 291-304

"Employment, work involvement and mental health in less  
qualified young people"

Stafford EM and Jackson PR

SAPU Memo no. 361, 1980

"Work involvement in school leavers in an area of high  
unemployment"

Stafford EM and Jackson PR

Int Rev App Psych, 1983, 32, 207-32

"Work aspirations and job seeking in an area of high  
unemployment"

Stahl MJ and Harrell AM

Org Beh Hum Perf, 1981, 27, 393-25

"Modelling effort decisions with behavioral decision  
theory: toward an individual differences model of  
expectancy theory"

Steel L, Abeles RP and Card JF

Sex Roles, 1982, 8 (9), 1009-24

"Sex differences in the patterning of adult roles as a determinant of sex differences in occupational achievement"

Steers RM and Braunstein DN

J Voc Beh, 1976, 9, 251-66

"A behaviorally-based measure of manifest needs in work settings"

Steitz JA

Int J of Beh Dev, 1982, 5, 299-316

"Locus of control as a life-span developmental process: revision of the construct"

Stephan CW and Holahan CH

Sex Roles, 1982, 8 (8), 823-33

"The Influence of Status and Sex-typing on Assessment of Occupational Outcome"

Stewart AJ, Lykes MB and La France M

J Soc Issues, 1982, 38 (1), 97-117

"Educated Women's Career Patterns: Separating Social and Developmental Changes"

Stewart LH

J Genetic Psych, 1959, 95, 111-36

"Relationship of socio-economic status to children's occupational attitudes and interests"

Stewart LH

P&GJ, 1983, 507-10

"On Borrowing Guidance Theory and Practice: Some Observations of an American Participant in the British Guidance Movement"

Stirling A

Bull BPS, 1982, 35, 421-2

"Preparing School Leavers for Unemployment"

Stocks JC

BJGC, 1976, 4 (1), 38-48

"The construction of a test of occupational information"

Stockton N, Berry J, Shepson J and Utz P

J Voc Beh, 1980, 16, 360-7

"Sex-role and innovative major choice among college students"

Strange CC and Rea JS

J Voc Beh, 1983, 23, 219-26

"Career choice considerations and sex-role self-concept of male and female undergraduates in non-traditional majors"

Stumpf SA

J Voc, Beh, 1981, 19, 98-112

"Career Roles, Psychological Success and Job Attitudes"

Stumpf SA and Colarelli SM

Psych Reports, 1980, 47, 979-88

"Career Exploration: Development of Dimensions and Some Preliminary Findings"

Stumpf SA, Colarelli SM and Hartman K

Psych Reports, 1981, 51, 117-18

"The Career Exploration Survey: A Summary of its Dimensionality, Reliability and Validity"

Stumpf SA, Colarelli SM and Hartman K

J Voc Beh, 1983, 22, 191-226

"Development of the Career Exploration Survey (CES)"

Stumpf SA and Rabinowitz S

J Voc Beh, 1981, 18, 202-18

"Career stage as a moderator of performance: relationships with facets of job satisfactions and role perceptions"

Super DE

American Psychologist, 1953, 8 185-90

"A Theory of Vocational Development"

Super DE

J Couns Psych, 1954, 1 (1), 12-20

"Career patterns as a basis for vocational counselling"

Super DE

Teachers' College Record, 1955, 57 (3), 151-63

"Dimensions and measurement of vocational maturity"

Super DE

The Psychology of Careers

Harper and Row, Publishers. New York and Evanston. 1957

Super DE

"Self-concept and vocational-development theories applied  
to college choice and planning"

from: Preparing school counsellors in education guidance

New York College Entrance Examination Board. 1967

Super DE

Bull of the Int Assoc for Educ and Voc Guid, 1975, 29, 16-23

"Vocational guidance: Emergent decision-making in a  
changing society"

Super DE

Arquivos Brasileiros de Psicologia Aplicada, 1975,  
27 (2), 3-17

"Psychological determinants of vocational choice"

Super DE

Couns Psychologist, 1980, 8 (4), 22-4

"The year 2000 and all that"

Super DE

J Voc Beh, 1980, 16, 282-98

"A Life-span, life-space approach to career development"

Super DE

P&GJ, 1983, 61 (9), 555-62

"Assessment in career guidance: toward truly developmental  
counselling"

Super DE

P&GJ, 1961, 40 (1), 11-14

"Some Unresolved Issues in Vocational Development Research"

Super DE and Bohn MJ

Occupational Psychology

Tavistock Publications. 1971

Super DE and Kidd JM

J Voc Beh, 1979, 14, 255-70

"Vocational maturity in adulthood: toward turning a model into a measure"

Super DE and Thopson AS

Voc Guid Quart, 1979, 28, 6-15

"A six-scale, two-factor measure of adolescent career or vocational maturity"

Swatko MK

J Voc Beh, 1981, 18, 174-83

"What's in a title? Personality, job aspirations and the non-traditional woman"

Sweney AB and Sweney VA

Conference Paper, Society of Multivariate Experimental Psychology, Vancouver, Canada, 1981

"Exploring an Explicit Role Model for Leadership Research"

Swinth RL

J App Psych, 1976, 61 (2), 242-5

"A decision process model for predicting job preferences"

Taylor KM

J Voc Beh, 1982, 21, 313-29



"An Investigation of Vocational Indecision in College students: Correlates and Moderators"

Taylor KM and Betz NE

J Voc Beh, 1983, 22, 63-81

"Applications of Self-efficacy Theory to the Understanding and Treatment of Career Indecision"

Taylor R

J Occ Psych, 1979, 52, 41-52

"Career orientations and intra-occupational choice: a survey of engineering students"

Teas RK

J Occ Psych, 1981, 54, 109-24

"A within-subjects analysis of valence models of job preference and anticipated satisfaction"

Teglasi H

J Voc Beh, 1981, 18, 184-95

"Children's choices of and value judgements about sex-typed toys and occupations"

Times Higher Education Supplement (500); 4:6:82

"Job market favours Universities"

Thomas K, Swaton E, Fishbein M and Otway HJ

Beh Sci, 1980, 25, 332-44

"Nuclear energy: the accuracy of policy-makers' perceptions of public beliefs"

Thomas MJ

J Couns Psych, 1976, 23 (1), 46-9

"Realism and Socioeconomic status of occupational plans of low SES black and white male adolescents"

Thomas ML and Kuh GD

P&GJ, 1982, 61 (1), 14-17

"Understanding Development During the Early Adult Years: A Composite Framework"

Thoreson CE and Mehrens WA

P&GJ, 1967, 46, 165-72

"Decision Theory and Vocational Counselling: Important Concepts and Questions"

Tiedeman DV

P&GJ, 1961, 40 (1), 15-21

"Decision and vocational development: a paradigm and its implications"

Tiedeman DV and O'Hara RP (1963)

Career development: choice and adjustment -  
Differentiation and Integration in Career Development  
New York College Entrance Examination Board.  
Research Monograph no. 3

Tinsley HEA and Heesacker M  
J Voc Beh, 1984, 25, 139-190  
"Vocational Behavior and Career Development, 1983: A Review"

Tittle CK  
J Voc Beh, 1983, 22, 148-58  
"Studies of the effects of career interest inventories:  
expanding outcome criteria to include women's experiences"

Tittle CK  
P&GJ, 1982, 61 (3), 154-8  
"Career, marriage and family: values in adult roles  
and guidance"

Tittle CK  
Meas and Eval in Guidance, 1982, 15 (1)  
"Career guidance: program evaluation and validity"

Tittle CK  
Careers and Family: Sex roles and adolescent life plans.  
Vol 121, Sage Library of Social Research, Sage  
Publications Inc., Beverly Hills, 1981

Tolman EC (1932)

Purposive behavior in Animals and Men  
New York: Appleton-Century-Crofts

Treiman DJ and Terrell K

Am Sociol Rev, 1975, 40, 174-200

"Sex and the Process of Status Attainment: A Comparison  
of Working Women and Men"

Tseng MS and Carter AR

J Couns Psych, 1970, 17 (2), 150-6

"Achievement Motivation and Fear of Failure as Determinants  
of Vocational Choice, Vocational Aspiration and Perception  
of Vocational Prestige"

Tseng MS and Carter AR

J Couns Psych, 1970, 17 (2), 150-6

"Achievement motivation and fear of failure as determinants  
of vocational choice, vocational aspiration and  
perception of vocational prestige"

Tuck BF and Keeling B

J Voc Beh, 1980, 16, 105-14

"Sex and cultural differences in the factorial structure  
of the Self-Directed Search"

Tuck M

How do we choose? A study in consumer behaviour

Methuen Essential Psychology Series, Methuen and Co  
ltd, London. 1976

Tuckman HP

Am J of Econ and Sociol, 1973, 32, 257-68

"Local colleges and the demand for higher education"

Turney JR and Cohen SL

Org Beh Hum Perf, 1976, 17, 311-27

"Influence of work content on extrinsic outcome expectancy  
and intrinsic pleasure predictions of work effort"

Tversky A and Kahneman D

"Causal Schemas in Judgement under Uncertainty"

in Progress in Social Psychology, Vol 1, ed M Fishbein

Lawrence Erlbaum Assocs Pub. Hillsdale, New Jersey. 1980

Universities Central Council on Admissions (UCCA)

17th report and statistical supplement

Universities Central Council on Admissions (UCCA)

18th report and statistical supplement

University Grants Committee

University Statistics 1980 vol 2: First destinations  
of university graduates 1978-79

Universities Statistical Record. 1980

University Grants Committee

University Statistics 1980 vol 2: First destinations  
of university graduates 1980-81

Universities Statistical Record. 1982

Upton AL

Voc Guid Quart, 1982, 293-9

"The Development of a Comprehensive Guidance and  
Counselling Plan for the State of California"

Vandenberg SG and Stafford RE

J App Psych, 1967, 51 (1), 17-19

"Hereditary influences on vocational preferences as  
shown by twins on the Minnesota Vocational Interest  
Inventory"

Vander Well AR

"Influence of financial need on the vocational development  
of college students"

ACT Research Report no. 36, American College Testing  
Program. Iowa City, 1970

Varca PE and Shaffer GS

J Voc Beh, 1982, 21, 288-98

"Holland's Theory: Stability of Vocational Interests"

Vaughan ND

Paper presented to the Welsh Branch BPS PG conference 1981

"The use of a cluster analysis technique to differentiate female undergraduates into their respective career orientation groups"

Vilensky LD and Fraser BJ

The Vocational Aspects of Education, 1977, 29, 103-7

"The evaluation of a vocational continuum: an application of congruency and discrepancy concepts"

Viney LL

Youth and Society, 1983, 14 (4), 457-74

"Psychological reactions of young people to unemployment"

Vriend J

J Couns Psych, 1969, 16 (5), 377-84

"Vocational maturity ratings of inner-city high school seniors"

Vroom VH

Work and Motivation

John Wiley and Sons Inc., New York. 1964

Vroom VH

Org Beh Hum Perf, 1966, 1 (2), 212-25

"Organizational choice: a study of pre- and post-decision processes"

Vroom VH and Deci El

Org Beh Hum Perf, 1971, 6, 36-49

"The stability of post-decision dissonance: a follow-up study of the job attitudes of business school graduates"

Walker JE, Tausky C and Oliver D

J Voc Beh, 1982, 21, 17-36

"Men and women at work: similarities and differences in work values within occupational groupings"

Walkey FH and Green DE

Multivariate Behavioral Research, 1981, 16, 361-72

"The structure of the EPI: a comparison between simple and more complex analyses of a multiple scale questionnaire"

Wallsten TS

"Processes and Models to describe Choice and Inference Behaviour" in Cognitive Processes in Choice and Decision  
ed TS Wallsten

Wallsten TS and Rapoport A



Ann Rev Psych, 1972, 23, 131-76

"Individual decision Behaviour"

Walsh WB

J Voc Beh, 1979, 15, 119-54

"Vocational behavior and career development 1978: a review"

Walsh WB and Hanle NA

J Voc Beh, 1975, 7, 89-97

"Consistent occupational preferences, vocational maturity and academic achievement"

Walsh WB, Hildebrand JO, Ward CH and Matthews DF

J Voc Beh, 1983, 22, 182-90

"Holland's Theory and Non-College-Degreed Working Black and White Women"

Wanous JP, Keon TL and Latack JC

Org Beh Hum Perf, 1983, 32, 66-86

"Expectancy theory and occupational/organizational choices: a review and test"

Ware ME

J Voc Beh, 1980, 16, 312-19

"Antecedents of educational/career preferences and choices"

Ware ME

Teaching of Psychology, 1981, 8 (2), 67-71

"Evaluating a career development course: a two-year study"

Ware ME and Apprich RU

Meas and Eval in Guidance, 1980, 13, 179-84

"Variations in career cognition measures among groups of college women"

Ware ME and Beischel ML

Teaching of Psychology, 1979, 6 (4), 210-13

"Career development: evaluating a new frontier for teaching and research"

Ware ME and Pagge DL

Voc Guid Quart, 1980, 28 (4), 322-7

"Concomitants of certainty in career-related choices"

Warnath CF

P&GJ, 1975, 53, 422-8

"Vocational theories: direction to nowhere"

Warner SG and Jepsen DA

J Couns Psych, 1979, 26 (6), 497-503

"Differential effects of conceptual level and group

counselling on adolescent decision-making processes"

Warr P

J Occ Psych, 1983, 4, 91-104

"Affective outcomes of paid employment in a random sample of British workers"

Warr P

"Occupational Psychology"

in Foss BM (ed) Psychology survey no. 1

George Allen and Unwin, London. 1978

Warr PB

Bull BPS, 1983, 36, 305-11

"Work, jobs and unemployment"

Warr PB

Work attitudes

in R Harre and R Lamb (eds)

The Encyclopedic Dictionary of Psychology. Oxford:

Blackwell. 1983

Warr PB

"Job Loss, unemployment and psychological well-being"

In V Allen and E van de Vliert (eds)

Role Transitions. New York: Plenum Press. 1984

Warr PB

"Work and Unemployment"

In PJD Drenth, H Thierry, PJ Willems and CJ de Wolff (eds)  
Handbook of Work and Organization Psychology. London:  
Wiley. 1984

Warr PB and Jackson PR

Le Travail Humain, 1983, 46, 355-66

"Self-esteem and unemployment among young workers"

Warr PB and Jackson PR

J Occup Psych, 1984, 57, 77-85

"Men without jobs: Some correlates of age and length of  
unemployment"

Warr PB, Jackson PR and Banks M

Current Psych Research, 1983, 2, 207-14

"Duration of unemployment and psychological well-being in  
young men and women"

Warr P and Parry G

"Paid employment and women's psychological well-being"

MRC/SSRC SAPU Memo no. 435

Warr P and Parry G

Social Psychiat, 1982, 17, 161-5

"Depressed mood in Working-class Mothers with and without Paid Employment"

Warr P and Parry G

Psych Bull, 1982, 91 (3), 498-516

"Paid employment and Women's Psychological Well-being"

Waterman AS and Whitbourne SK

J Personality, 1982, 50 (2), 121-33

"Androgeny and Psychological Development among College Students and Adults"

Watkins D

Int Rev App Psch, 1982, 31 (4), 475-91

"Antecedents of Self-esteem, Locus of Control, and Academic Achievement: a Path Analytic Investigation of Filipino Children"

Watts AG

BJGC, 1980, 8 (1), 11-22

"Educational and careers guidance services for adults: I: A rationale and conceptual framework"

Watts AG

BJGC, 1980, 8 (12), 188-202

"Educational and careers guidance services for adults:

II: A review of current provision"

Watts AG

"Diversity and choice in higher education"

CRAC, Cambridge. Routledge and Kegan Paul. 1972

Watts AG

BJGC, 1977, 5 (1), 55-64

"A rationale for guidance on higher education choices"

Watts AG

J Adv Couns, 1981, 4, 187-207

"Careers guidance in Sweden: a British perspective"

Watts AG

BJGC, 1977, 5 (2), 167-84

"Careers Education in Higher Education: Principles and Practice"

Watts AG, Super DE and Kidd JM (eds)

Career Development in Britain

NICEC; CRAC. Hobsons Press. 1981

Watts AG

"Education, unemployment and the future of work"

Open Univ. Press, Milton Keynes, England. 1973

Webb SC, Hhultgen DD and Craddick RA

J Couns Psych, 1977, 24 (2), 98-110

"Predicting occupational choice by clinical and statistical methods"

Weckworth M

PhD Dissertation 1981

"Cognitive Complexity and Flexibility in Career Decision Making"

Wehrly B

Int J Adv Couns, 1982, 5, 131-40

"Cultural and Social Influences on Career Guidance: an Overview"

Weiner AI and Hunt SL

P&GJ, 1982 (May)

"Work and leisure orientation among University students: implications for college and University counsellors"

Weiner B, Russell D and Lerman D

"Affective Consequences of Causal Ascriptions"  
in New Directions in Attribution Research, Vol 2,  
ed Ickes W and Kidd RF

Lawrence Erlbaum Assoc (Pub), Hillsdale, New Jersey. 1978

Weinrach SG

Voc Guid Quart, 1982, 31 (1), 78-85

"Careers Guidance in Britain: Four Profiles"

Weinreich-Haste H

"What sex is Science?"

in "Women: Sex-role stereotyping"

Hartnett O, Boden G and Fuller M (eds)

Tavistock Publications, London, 1979

Welfel ER

P&GJ, 1982, 61 (1)

"The development of reflective judgement: implications  
for career counselling of college students"

Werts CE

J Couns Psych, 1968, 15 (1), 48-52

"Paternal influence on career choice"

Westbrook BW

J Voc Beh, 1976a, 8, 1-12

"Inter-relationship of Career choice competencies and  
career choice attitudes: testing hypotheses derived  
from Crites' model of career maturity"

Westbrook BW

Cognitive vocational maturity test

Raleigh, North Carolina: North Carolina State University, 1970



Westbrook BW

J Voc Beh, 1976b, 9, 119-25

"The relationship between career choice attitudes and career choice competencies of ninth grade pupils"

Westbrook BW, Cutts CC, Madison SS and Arcia MA

J Voc Beh, 1980, 16, 249-81

"The validity of the Crites model of career maturity"

Wheeler KG

J Voc Beh, 1980, 17, 71-80

"Valence and instrumentality contributions to understanding occupational preference"

Wheeler KG

J Occ Psych, 1981, 54, 141-8

"Sex differences in perceptions of desired rewards, availability of rewards, and abilities in relation to occupational selection"

Wheeler KG

J Voc Beh, 1983, 22, 1-11

"Perceptions of labor market variables by college students in Business, Education and Psychology"

Whitburn J, Mealing M and Cox C

People in Polytechnics - a survey of polytechnic staff  
and students 1972-3

Society for Research into Higher Education

Research into Higher Education Monograph. 1976

White MS

Science, 1970, 170, 413-16

"Psychological and social barriers to women in science"

Wicker A

J Pers and Soc Psych, 1971, 19 (1), 18-30

"An examination of the "other variables" explanation  
of attitude-behavior inconsistency"

Willis PE

Learning to Labour: How working class kids get working  
class jobs

Gower Publishing Co Ltd, Teakfield. 1977

Wilson J, Weikel WJ and Rose H

Voc Guid Quart, 1982, 31 (2), 110-17

"A Comparison of Nontraditional and Traditional Career  
Women"

Winer JL, Cesari J and Haase RF

J Voc Beh, 1979, 15, 186-92

"Cognitive complexity and career maturity among college students"

Winters CJ and Sorensen J

"Individual factors related to career orientation in women"

in Osipow SH (ed) "Emerging woman: career analysis and outlooks"

Charles E Merrill Publishing, Columbus, Ohio. 1975

Wise PS and Stone JS

Sex Roles, 1982, 8 (7), 785-9

"Working Mothers, Sex Differences and Self-Esteem in College Students' Self-Descriptions"

Witkin HA

Proceedings of the International Conference on Testing Problems 1973, Princeton WJ

"A Cognitive-Style Perspective on Evaluation and Guidance"

Work CE, Wheeler JH and Williams JV

P&GJ, 1982, 553-6

"Guidance for Non-Traditional Careers"

Wrenn CC

The Educational Record, 1935, Vol 16, 217-19

"Intelligence and the Vocational choices of college students"

Yanico BJ

Psych Reports, 1982, 50, 875-8

"Androgeny and occupational sex-typing of college students"

Yanico BJ

J Voc Beh, 1981, 19, 290-301

"Sex-role self-concept and attitudes relating to occupational daydreams and future fantasies of college women"

Yanico BJ and Hardin SI

J Voc Beh, 1981, 18, 219-27

"Sex-role self-concept and persistence in a traditional versus non-traditional college major for women"

Yanico BJ and Mihlbauer TC

J Voc Beh, 1983, 22, 278-87

"Students' self-estimated and actual knowledge of gender traditional and non-traditional occupations"

Yonge GD and Regan MC

J Voc Beh, 1975, 7, 41-66

"A longitudinal study of personality and choice of major"

Young E

A Course in World Geography: Two People Round the World  
Arnold, 1961

Young RA

Int J Adv Couns, 1982, 5, 115-20

"Accompanying the Adolescent on the Career Journey:  
A Cognitive Development Approach"

Yuchtman E and Samuel Y

Am Sociol Rev, 1975, 40, 521-31

"Determinants of Career Plans: Institutional versus  
Interpersonal Effects"

Zaccaria J

Theories of Occupational Choice

Houghton Mifflin Pub. Co. Boston. 1970

Zarb JM

Adolescence, 1981, 16 (64)

"Non-academic predictors of successful academic achieve-  
ment in a normal adolescent sample"

Zuckerman DM

J Voc Beh, 1980, 17, 310-319

"Self-esteem, personal traits and college women's life  
goals"

Zuckerman DM

Sex Roles, 1981, 7 (11)

"Family background, sex-role attitudes and life goals  
of Technical College and University students"

Zytowski DG

J Voc Beh, 1978, 13, 141-62

"Vocational behavior and career development 1977:  
a review"

Zytowski DG

P&GJ, 1969, 47, 660-4

"Towards a theory of career development for women"

Zytowski DG and Warman RE

Meas and Eval in Guid, 1982, 15 (2), 147-52

"The Changing Use of Tests in Counselling"

## APPENDIX 1

### OCCUPATIONAL SPECIFICITY QUESTIONNAIRE

Below is a list of disciplines, all of which can be studied at University. Please rate the extent to which YOU FEEL that each leads to a specific occupation after graduation, by circling 1 if you feel that a course almost always leads to a specific occupation, 2 if you feel that a course is loosely related to the subsequent occupation, and 3 if you feel that a course leads to no particular (or a very wide range of) occupations.

e.g. if you feel that studying architecture ALMOST ALWAYS leads to a person becoming an architect, or entering a closely related occupation, please circle 1.

	1	2	3
--	---	---	---

Now go through the list, circling a number for each subject.

ARCHITECTURE	1	2	3
BIOLOGY	1	2	3
CHEMISTRY	1	2	3
COMMERCE	1	2	3
COMPUTATIONAL SCIENCE	1	2	3
ENGINEERING	1	2	3
ENGLISH	1	2	3
GEOGRAPHY	1	2	3
HISTORY	1	2	3
HISTORY & POLITICS	1	2	3
LAW	1	2	3
MEDICINE	1	2	3
PHARMACY	1	2	3
PHILOSOPHY	1	2	3
PHYSICS	1	2	3
PSYCHOLOGY	1	2	3
SOCIOLOGY	1	2	3

## OCCUPATIONAL SPECIFICITY QUESTIONNAIRE (PART 2)

Now please rate the extent to which YOU FEEL that studying each subject will help you in obtaining a job after graduating, circling 1 if you feel that it would be easy to get a job after studying a subject, 2 if you feel that it would be moderately difficult, and 3 if you feel that it would be very difficult to get a job after studying a particular subject.

ARCHITECTURE	1	2	3
BIOLOGY	1	2	3
CHEMISTRY	1	2	3
COMMERCE	1	2	3
COMPUTATIONAL SCIENCE	1	2	3
ENGINEERING	1	2	3
ENGLISH	1	2	3
GEOGRAPHY	1	2	3
HISTORY	1	2	3
HISTORY & POLITICS	1	2	3
LAW	1	2	3
MEDICINE	1	2	3
PHARMACY	1	2	3
PHILOSOPHY	1	2	3
PHYSICS	1	2	3
PSYCHOLOGY	1	2	3
SOCIOLOGY	1	2	3







APPENDIX 2

ARTS/SCIENCE QUESTIONNAIRE

SEX:    M        F        (circle one)

Below is a list of disciplines. Please rate each in terms of the Arts/Science continuum, circling '0' if you feel a discipline is definitely and unambiguously "Arts", and circling "10" if "Science". If a discipline seems to fall between those two categories, please assign it a value which you feel reflects its relative position.

Architecture	0	1	2	3	4	5	6	7	8	9	10
Biology	0	1	2	3	4	5	6	7	8	9	10
Chemistry	0	1	2	3	4	5	6	7	8	9	10
Commerce	0	1	2	3	4	5	6	7	8	9	10
Computational Science	0	1	2	3	4	5	6	7	8	9	10
Engineering	0	1	2	3	4	5	6	7	8	9	10
English	0	1	2	3	4	5	6	7	8	9	10
Geography	0	1	2	3	4	5	6	7	8	9	10
History	0	1	2	3	4	5	6	7	8	9	10
History and Politics	0	1	2	3	4	5	6	7	8	9	10
Law	0	1	2	3	4	5	6	7	8	9	10
Medicine	0	1	2	3	4	5	6	7	8	9	10
Pharmacy	0	1	2	3	4	5	6	7	8	9	10
Philosophy	0	1	2	3	4	5	6	7	8	9	10
Physics	0	1	2	3	4	5	6	7	8	9	10
Psychology	0	1	2	3	4	5	6	7	8	9	10
Sociology	0	1	2	3	4	5	6	7	8	9	10

APPENDIX 3

OCCUPATIONAL DECISION-MAKING QUESTIONNAIRE

Please leave  
this column  
blank.

1. SEX: M  
F (please circle the letter which applies)
2. AGE: a)  $\leq$  19 years  
b) 20 to 23 years  
c)  $>$  23 years
3. AGE OF MOTHER:  
a)  $\leq$  45 years  
b) 46-56 years  
c)  $>$  56 years  
d) Don't know, or not applicable.
4. Age of father:  
a)  $\leq$  45 years  
b) 46-56 years  
c)  $>$  56 years  
d) Don't know, or not applicable.
5. Mother's education:  
a) until minimum leaving age  
b) beyond minimum leaving age, but no post-school education  
c) further (but not higher) education  
d) higher education  
e) don't know
6. Father's education:  
a) until minimum leaving age  
b) beyond minimum leaving age, but no post-school education  
c) further (but not higher) education  
d) higher education  
e) don't know.
7. Mother's occupation, or last occupation; please be as specific as possible.

8. Father's occupation, or last occupation held; please be as specific as possible.

9. Place of origin, where you consider yourself as coming, from:

- a) N.E.
- b) N.W.
- c) Midlands
- d) S.E.
- e) S.W.

Please specify county and/or town.

10. Size of place of origin:

- a) small town or village
- b) large town.

11. Type of school attended:

- a) public/private
- b) grammar
- c) comprehensive
- d) other (please specify)

12. Size of school:

- a) small (800 pupils or less)
- b) medium (800-1,800)
- c) large (more than 1,800)

13. Was your school:

- a) single-sex
- b) coeducational
- c) other (please give details)

14. Do you have any older brothers?                      Yes                      No

15. Do you have any older sisters?                      Yes                      No



Some of the following questions ask you to RATE various factors; please place a tick in the space which most closely reflects your views. The centre space implies neutrality, or averageness, the spaces furthest from the centre imply strong views.

25. In your opinion, what is the status of your University relative to others?

very low  very high

26. In your opinion, what is the status of your Department, relative to other departments of the same discipline at other Universities? (e.g. is it a "good" place to study your discipline?)


very low  very high

27. Have you a clear idea as to what occupation you hope to enter?

Yes No

If "Yes", please give details.

28. If you responded "Yes" to question 27, how long have you wanted to enter that occupation?

- a)  2 years  
b) between 2 and 4 years  
c) more than 4 years

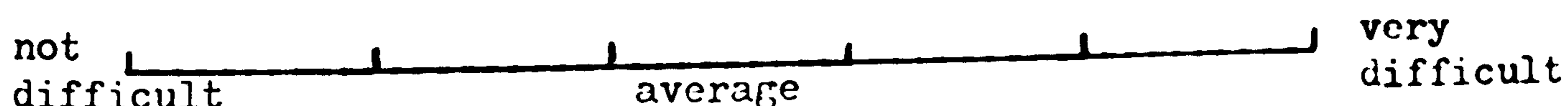
The following questions apply only to those answering "Yes" to question 27.



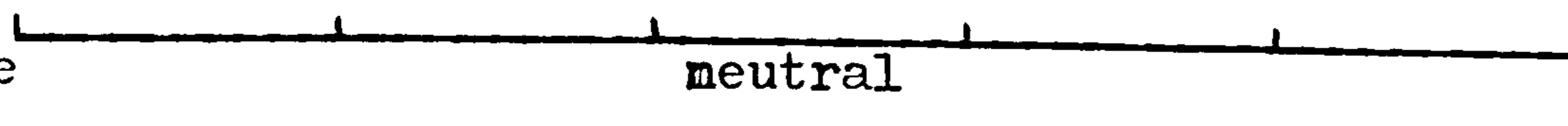
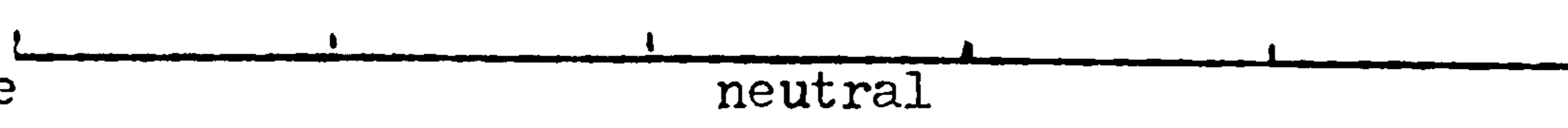




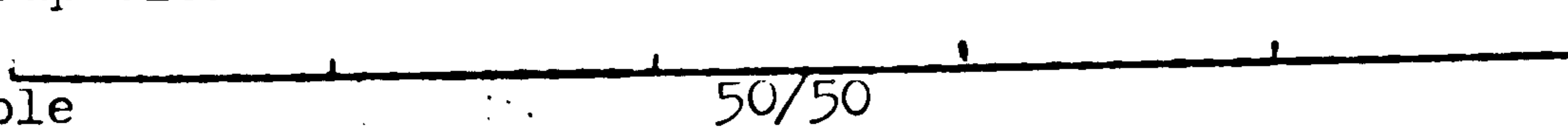

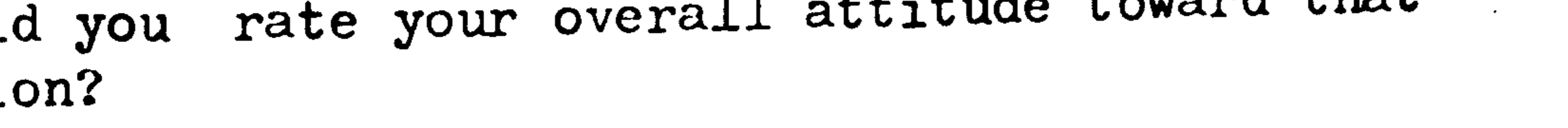
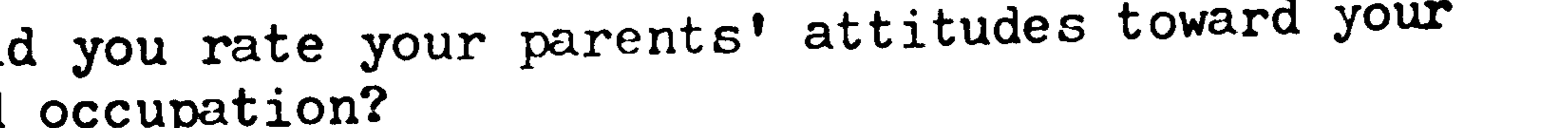
29. If you responded "Yes" to question 27:  
Do you see your course at University as:  
a) closely connected with your intended occupation  
b) loosely connected  
c) unconnected (including graduate entry)

30. In your opinion, is it difficult to gain admission to your University to study any subject? (Relative to other Universities).

not difficult  very difficult


31. In your opinion, is it difficult to gain admission to your University to study your main discipline? (Relative to other Universities).

not difficult  very difficult

32. Relative to your school friends, how would you rate your academic ability?  
 below average  above average
33. How important is a good career to you?  
 not at all  very important
34. How would you rate your attitude toward employment in general (e.g. as a necessary evil or a means of self-fulfilment)?  
 very negative  very positive
35. How would you rate your overall attitude toward further education?  
 very negative  very positive
36. How would you rate your parents' attitude towards further education?  
 very negative  very positive
37. How would you rate your friends' attitudes toward further education?  
 very negative  very positive
38. How would you rate your friends' attitudes toward employment in general?  
 very negative  very positive
39. How strongly do you want to enter that occupation?  
 not at all  very much
40. How probable do you feel it is that you will in fact enter that occupation?  
 very improbable  very probable
41. How difficult an occupation would you say it is to enter at present?  
 very easy  very difficult
42. Taking all the factors you consider relevant into consideration, how would you rate your overall attitude toward that occupation?  
 very negative  very positive
43. How would you rate your parents' attitudes toward your intended occupation?  
 very negative  very positive



44. To what extent do you feel that you may have been influenced by your parents' attitudes towards further education and your intended occupation?

not at all  very much  
a bit


45. Has a member of your family been employed in this, or a closely related, occupation?

Yes No


46. Do you know anyone who is, or has been, employed in this, or a closely related occupation, other than members of your family?

Yes No

47. If you have answered "Yes" to question 45 or 46, how would you rate your overall attitude toward that person?

very negative  very positive  
neutral

48. How would you rate your friends' attitudes toward the occupation you intend to enter?

very negative  very positive  
neutral

The following questions are only applicable if you have decided on an occupation.

49. Can you think of any person who influenced your choice of occupation?

Yes No

If "Yes", please give details.

50. Do you feel that your choice of occupation was in any way influenced by the media?

Yes No

51. Did financial considerations play a part in your decision?

Yes No

## APPENDIX 4

### INTERPRETATION OF PREDICTION EQUATIONS

N.B. OSI (derived from DISC) is such that a high OSI is equivalent to a very specific discipline (e.g. medicine). Since all variables produce positive scores, this means that a positive weighting in one of the equations means that that variable is positively associated with OSI, and a negative weighting a negative association. The exception to the above occurs only in respect of dichotomous variables, where since a "YES" response was scored as 1, and "NO" as 2, a negative weighting means that the presence of the condition (i.e. a "YES" response) is positively associated with OSI.

The following table lists the variables measured by the Occupational Decision-Making Questionnaire, together with a brief description of what a high score means.

Not all the variables listed appear in one or more equations, but the additional variables are included in order that the raw correlations can be interpreted, should this be required.

<u>Variable name</u>	<u>High score</u>
Age	Older S
Agem (age of mother)	Older mother
Agef (age of father)	Older father
Educmm (educational level of S's mother)	More education
Educf (educational level of S's father)	" "

Occupm Occupf	N/A; these were scored using CODOT , & transformed in to prestige ratings PRESTM & PRESTF.
Origin	See note
Scorgn (size of place of origin)	Large town
Tsch (type of school attended)	Comprehensive
Szsch (size of school)	Large school
Sxsch	Coeducational
Bros) dichotomous, SIS ) see above	No brothers No sisters
Disab (whether S has physical disability)	No disability
Univ (University attended)	N/A; nominal category
Disc (Discipline studied)	W/A; converted to OSI
UCCA	Application to univ. not via UCCA system
Choice	Univ. attended not one of 5 UCCA choices
Pref	Univ. attended not one of two preferences on UCCA application
Smdisc	Not studying same discipline for which S applied
Reldisc	Discipline studied unrelated to that chosen
Order	UCCA application "strategic"
Ustatus	Prestigious univ.
Dstatus	Prestigious dept.
Occupch	No occupation chosen
Longch	Occupational choice held for a long time

Discrel	Discipline studied unrelated to intended occupation
Diffadmu	Difficult to gain admission to univ. attended
Diffadmd	Difficult to gain admission to dept.
Acadabil	Self-rated academic ability above average
Crrimp	Career felt to be very important
Attempl	Positive attitudes towards employment
Attfed	Positive attitudes towards FE
Pattfed	Perceived parental attitudes towards FE very positive
Fattfed	Perceived attitudes of friends towards FE very positive
Fattemp	Perceived attitudes of friends towards employment very positive
Strgch	Strong desire to enter chosen occupation
Probent	Perceived probability of entry into chosen occupation
Diffent	Perceived difficulty of entering chosen occupation
Overall	Positive overall attitude towards chosen occupation
Pattocc	Perceived parental attitudes towards chosen occupation very positive

Pinfl	Very influenced by parents' attitudes
Mfempl	No member of family employed in chosen occupation
Acqempl	No acquaintances employed in chosen occupation
Attper	Positive attitude towards acquaintance or family member in chosen occupation
Fattocc	Perceived attitudes of friends towards chosen occupation very positive
Pinflch	No person considered to have influenced choice of occupation
Media	Media not considered to have influenced choice of occupation
Cash	Financial factors not considered to have influenced choice of occupation
Pgsexapp	People in general regard chosen occupation as sex-role inappropriate
Psexapp	Parents consider chosen occupation as sex-role inappropriate
Fsexapp	Friends consider chosen occupation to be sex-role inappropriate
Mainfact	Main factor in choice societal rather than personal

Prestm)  
Prestf)

Occupations of  
parents prestigious

OSI (from disc)

Occupationally  
specific

---

Variable from EPI:-

Extro

More extroverted

Nut

More neurotic

Lie

High lie score

---

Variables from 16PF

A

Outgoing

B

Intelligent

C

Emotionally stable

E

Assertive

F

Impulsive

G

Conscientious

H

Uninhibited

I

Tender-minded

L

Suspicious

M

Imaginative,  
impractical

N

Shrewd

O

Apprehensive

Q<sub>1</sub>

Radical

Q<sub>2</sub>

Self-sufficient

Q <sub>3</sub>		Socially precise
Q <sub>4</sub>		Tense
Extrox)	2nd order	Extroverted
Anx	) factors	Anxious

However, it must be borne in mind that since interactions between two or more variables in an equation are possible, variables entered in second or subsequent place may not have quite the same meaning psychologically as they would in isolation.

This would not seem to be important while the equations are used purely for predictive purposes, but such possible interactions might become relevant in future attempts to examine causal relationships or in intervention programs.

APPENDIX 5a

SCORING OF THE OCCUPATIONAL DECISION-MAKING  
QUESTIONNAIRE

		Please leave this column blank.
1.	SEX: M F (please circle the letter which applies)	= 1 = 2
2.	AGE: a) < 19 years b) 20 to 23 years c) > 23 years	a = 1 b = 2 c = 3
3.	Age of mother: AGEM a) < 45 years b) 46-56 years c) > 56 years d) Don't know, or not applicable	a = 1 b = 2 c = 2 d = 4
4.	Age of father: AGEF a) < 45 years b) 46-56 years c) > 56 years d) Don't know, or not applicable	
5.	Mother's education: EDUCM a) until minimum leaving age b) beyond minimum leaving age, but no post- school education c) further (but not higher) education d) higher education e) don't know	a = 1 b = 2 c = 3 d = 4 e = 5
6.	Father's education: EDUCF a) until minimum leaving age b) beyond minimum leaving age, but no post- school education c) further (but not higher) education d) higher education e) don't know	
7.	Mother's occupation, or last occupation; please be as specific as possible. OCCUPM (DOT)	
NB.	During anal., AGEM & AGEF d = 4 was recorded to $\emptyset$ , and EDUCM & EDUCF e = 5 $\emptyset$	



- |     |  |           |       |
|-----|--|-----------|-------|
| 8.  | Father's occupation, or last occupation held;<br>please be as specific as possible. OCCUPF |           |       |
| 9.  | Place of origin, where you consider yourself as<br>coming from:                            |           |       |
|     | a) N.E.  |           | a = 1 |
|     | b) N.W.  |           | b = 2 |
|     | c) Midlands  |           | c = 3 |
|     | d) S.E.  |           | d = 4 |
|     | e) S.W.  |           | e = 5 |
|     | Please specify county and/or town.   | foreign = | 6     |
| 10. | Size of place of origin:   |           |       |
|     | a) small town or village   |           | a = 1 |
|     | b) large town  |           | b = 2 |
| 11. | Type of school attended:   |           |       |
|     | a) public/private  |           | a = 1 |
|     | b) grammar   |           | b = 2 |
|     | c) comprehensive   |           | c = 3 |
|     | d) other (please specify)  |           | d = 4 |
| 12. | Size of school:  |           |       |
|     | a) small (800 pupils or less)  |           | a = 1 |
|     | b) medium (800-1,800)  |           | b = 2 |
|     | c) large (more than 1,800)   |           | c = 3 |
| 13. | Was your school:   |           |       |
|     | a) single-sex  |           | a = 1 |
|     | b) coeducational   |           | b = 2 |
|     | c) other (please give details)   |           | c = 3 |
| 14. | Do you have any older brothers?  | Yes    No | Y = 1 |
| 15. | Do you have any older sisters?   | Yes    No | N = 2 |

16. Do you have any physical disabilities which could restrict your career choice? DISAB

Yes No

17. University attended (please specify college if applicable): UNIV

18. Main subject studied: DISC

19. Was your application to University made through the UCCA system? UCCA

Yes No

20. If you responded "Yes" to question 19, was this University among your choice? CHOICE

Yes No

Y = 1

21. If you responded "Yes" to question 20, was this University one of your first two preferences? PREF

Yes No

N = 2

22. If you responded "No" to question 20, are you enrolled to study the same discipline for which you applied? SMDISC

Yes No

23. If you responded "No" to question 22, please specify the discipline for which you applied.

In your opinion, is the discipline you are studying:

RELDISC

a) closely related to your choice

a = 1

b) somewhat related

b = 2

c) totally unrelated

c = 3

24. If you applied through UCCA, was your ordering of Universities based primarily: ORDER

a) on your personal preference

a = 1

b) "Strategic" (e.g. on a belief that certain Universities only consider applicants who put them in first place)

b = 2

c) some mixture of (a) and (b)

c = 3

d) other (please specify)

d = 4



31. In your opinion, is it difficult to gain admission to your University to study your main discipline? (Relative to other Universities.) DIFFADMD

not 1                      2                      3                      4                      5                      very  
 difficult                      average                      difficult

32. Relative to your school friends, how would you rate your academic ability? ACADABIL

below \_\_\_\_\_ above  
 average                      average                      average

33. How important is a good career to you? CRRIMP

all \_\_\_\_\_ very  
 important                      important

34. How would you rate your attitude toward employment in general (e.g. as a necessary evil or a means of self-fulfilment)? ATTEMPL

very \_\_\_\_\_ very  
 negative                      neutral                      positive

35. How would you rate your overall attitude toward further education? ATTFED

very \_\_\_\_\_ very  
 negative                      neutral                      positive

36. How would you rate your parents' attitude towards further education? PATTFED

very \_\_\_\_\_ very  
 negative                      neutral                      positive

37. How would you rate your friends' attitudes towards further education? FATTFED

very \_\_\_\_\_ very  
 negative                      neutral                      positive

38. How would you rate your friends' attitudes toward employment in general? FATTEMP

very \_\_\_\_\_ very  
 negative                      neutral                      positive

39. How strongly do you want to enter that occupation?  
STRGCH  
not \_\_\_\_\_ very  
at all \_\_\_\_\_ much
40. How probable do you feel it is that you will in fact enter that occupation?  
PROBENT  
very \_\_\_\_\_ very  
improbable 50/50 \_\_\_\_\_ probable
41. How difficult an occupation would you say it is to enter at present?  
DIFFENT  
very \_\_\_\_\_ very  
easy \_\_\_\_\_ average \_\_\_\_\_ difficult
42. Taking all the factors you consider relevant into consideration, how would you rate your overall attitude toward that occupation?  
OVERALL  
very \_\_\_\_\_ very  
negative \_\_\_\_\_ neutral \_\_\_\_\_ positive
43. How would you rate your parents' attitudes toward your intended occupation?  
PATTOCC  
very \_\_\_\_\_ very  
negative \_\_\_\_\_ neutral \_\_\_\_\_ positive
44. To what extent do you feel that you may have been influenced by your parents' attitudes towards further education and your intended occupation?  
PINFL  
not \_\_\_\_\_ very  
at all \_\_\_\_\_ a bit \_\_\_\_\_ much
45. Has a member of your family been employed in this, or a closely related, occupation?  
MFEMPL  
Yes No  
Y = 1  
N = 2
46. Do you know anyone who is, or has been, employed in this, or a closely related occupation, other than members of your family?  
ACQEMPL  
Yes No  
Y = 1  
N = 2
47. If you have answered "Yes" to question 43 or 44, how would you rate your overall attitude toward that person?  
ATTPER  
very \_\_\_\_\_ very  
negative \_\_\_\_\_ neutral \_\_\_\_\_ positive



ODMQ SCORING:-

UNIV

Liverpool	1
Manchester	2
Reading	3
UC Cardiff	4
UWIST	5
UC London	6
Chelsea College	7

DISC

		OSI
Architecture	1	263.7
Biology	2	189.5
Chemistry	3	200.9
Electrical/Electron. Eng.	4	259.5
Mech. Eng.	5	259.5
English	6	147.9
Geography	7	171.9
History	8	164.3
Law	9	280.8
Medicine	10	285.4
Philosophy	11	172.6
Physics	12	193.0
Psychology	13	218.5
Sociology	14	183.6
Pharmacy	16	287.0
Miscellaneous	17	000.0

i.e. very specific disciplines have very high OSI

PRESTM, PRESTF - High scores most prestigious.

APPENDIX 5b

TRANSFORMATION OF PARENTAL OCCUPATIONS INTO PRESTIGE LEVELS

Abbreviations used are:-

Father's occupation = OCCUPF

Mother's occupation = OCCUPM

Prestige of father's occupation = PRESTF

Prestige of mother's occupation = PRESTM

Classification of Occupations and Directory of Occupational Titles = CODOT

<u>CODOT (OCCUPF)</u>	<u>PRESTF</u>	<u>CODOT (OCCUPM)</u>	<u>PRESTM</u>
002	69	102	61
022	75	111	73
031	71	113	61
041	62	114	73
063	61	119	61
091	71	151	62
094	61	173	35
095	61	174	54
101	71	210	71
102	61	231	71
111	73	251	71
113	61	254	57
114	73	310	40
119	61	360	35
151	62	400	38
173	35	430	37
174	54	810	38
210	71	910	32
231	71	970	18
251	71		
254	57		
310	40		
360	35		
400	38		



430	37
810	38
910	32
970	18
043	73
064	61
103	62
112	73
161	62
212	71
213	71
214	71
215	71
219	75
220	67
221	67
224	67
249	71
252	73
253	64
256	64
500	31
860	24

APPENDIX 6

CORRELATIONS OF NEWOSI & OSI BY NEWOCSEX

1.	NEWOCSEX1 & NEWOSI1	.6514	p = .001
	N = 124		
	2	.1896	p = .017
	3	-.0370	p = .341
	4	.0777	p = .195
	5	.0471	p = .302
	6	-.0271	p = .383
2.	NEWOCSEX2 & NEWOSI1	-.0889	p = .306
	N = 35		
	2	.9961	p = .001
	3	-.1761	p = .156
	4	-.1398	p = .212
	5	.0860	p = .312
	6	.1346	p = .220
3.	NEWOCSEX3 & NEWOSI1	.0371	p = .371
	N = 81		
	2	.2965	p = .004
	3	.8526	p = .001
	4	-.1430	p = .101
	5	.0601	p = .297
	6	.0280	p = .402
4.	NEWOCSEX4 & NEWOSI1	-.0619	p = .347
	N = 43		
	2	-.0278	p = .43
	3	-.1478	p = .172
	4	.3977	p = .004
	5	.1195	p = .223
	6	.2829	p = .033
5.	NEWOCSEX5 & NEWOSI1	-.0069	p = .486
	N = 27		
	2	.8829	p = .001
	3	.2363	p = .118

	4	.1952	p = .165
	5	1.000	p = .001
	6	.0626	p = .398
6. NEWOCSEX6 & NEWOSI1		.0762	p = .329
N = 36	2	-.0862	p = .309
	3	.0073	p = .483
	4	.3986	p = .008
	5	-.3291	p = .025
	6	.4175	p = .006

NEWOCSEX1... with occup ch  
 2... , inconsistent/int  
 5... , "pure" no choice  
 3... with occup ch  
 4... , inconsistent/int  
 6... , "pure" no choice

NEWOSI 1-6 are predicted values of OSI, generated from  
 NEWOCSEX 1 - 6 respectively.

NB. NEWOCSEX1 with occup ch  
 2 , inconsistent/intermediate  
 3 with occup ch  
 4 , inconsistent/intermediate  
 5 , pure undecided  
 6 , pure undecided

Correlations of NEWOCSEX & NEWOSI:-

1	.6514	N = 124	p = .001
2	.9961	N = 35	p = .001
3	.8526	N = 81	p = .001
4	.3977		
5	1.000		
6	.4175		

NB. Equations produced from the 6 groups used to predict OSI for each of the 6 groups.

Correlations between NEWOCSEX & NEWOSI are equivalent; the remaining correlations show the extent to which equations from other groups also predict for that subgroup.

e.g. for NEWOCSEX5, correlation is greatest with NEWOSI5, but the equation from NEWOCSEX 2 (i.e. "NEWOSI2") also predicts well for group 5.



APPENDIX 7

LETTER TO HEADS OF DEPARTMENTS

FROM THE DEPARTMENT OF PSYCHOLOGY

ELEANOR RATHBONE BUILDING' P.O. BOX 147 LIVERPOOL L69 3BX

TEL: 051 - 709 - 6022

The University of Liverpool

Dear

I am engaged in postgraduate research into occupational decision making and hope to make various comparisons between students in a number of disciplines.

I would therefore be very grateful if you would grant me permission to administer a number of questionnaires and tests to as many as possible of your first year **students**.

The questionnaire concerns simple demographic and biographical information, e.g. age, sex, parental occupation, and the tests are concerned with non-clinical attitudes and personality factors related to occupational choice. There are no measures of intelligence or clinically abnormal factors. All results will be treated with the utmost confidentiality.

From this data I will attempt to discern some of the essential factors which determine why individuals select certain disciplines.

I hope this information may be of some interest to you, and I will, of course, supply you with my findings.

If group administration of the tests would be impossible, or very inconvenient, I would be prepared to consider alternative arrangements.

I look forward to hearing from you.

Yours faithfully,

Joan E. McDonough



APPENDIX 8

FROM THE DEPARTMENT OF PSYCHOLOGY

ELEANOR RATHBONE BUILDING' P.O. BOX 147 LIVERPOOL L69 3BX

TEL: 051 - 709 - 6022

The University of Liverpool

October 1981

Dear Student,

I am carrying out research into Vocational Decision-Making, and would be grateful for your cooperation.

I would like you to fill in each of the enclosed questionnaires, and return them to me via your department.

All replies will be treated in confidence, and if there are any points that you would like to expand on, please put them on a separate piece of paper. It is very important that you treat these questionnaires seriously, even if the reason for any question is not immediately apparent to you.

Thank you for your help.

Yours sincerely,

J.E.McDonough

APPENDIX 9

FROM THE DEPARTMENT OF PSYCHOLOGY

ELEANOR RATHBONE BUILDING' P.O. BOX 147 LIVERPOOL L69 3BX

TEL 051 - 709 - 6022

The University of Liverpool

January 1982

Dear Student,

I am conducting a major survey into Occupational Decision-Making among the students of six Universities, and would be extremely grateful to you for your cooperation.

I should like you to complete a number of questionnaires concerned with personality and demographic factors, the completion of which takes approximately an hour and can be done in your own time.

All questionnaire responses will be totally anonymous, and will be treated in the utmost confidence.

If you would be prepared to participate, please complete the tear-off slip below, and return it to me at the Department of Psychology.

I look forward to hearing from you.

Yours sincerely,

J.E.McDonough.

---

NAME:

DEPARTMENT:

UNIVERSITY:

I am / am not prepared to participate in the survey on Occupational Decision-Making.