

**A Thesis Submitted for the Degree of PhD at the University of Warwick**

**Permanent WRAP URL:**

<http://wrap.warwick.ac.uk/140874>

**Copyright and reuse:**

This thesis is made available online and is protected by original copyright.

Please scroll down to view the document itself.

Please refer to the repository record for this item for information to help you to cite it.

Our policy information is available from the repository home page.

For more information, please contact the WRAP Team at: [wrap@warwick.ac.uk](mailto:wrap@warwick.ac.uk)

CLERICAL AND MANUAL WORKERS' SELF AND

OTHER IMAGES

by

Alan James Brown M.A. (Econ.) distinction, Manchester

For the degree of PhD. in Industrial Relations

Submitted to The University of Warwick

September 1976

Research conducted in the School of Industrial and Business Studies,  
University of Warwick.

V	Orientation to Unions	61
	Orientation to Family	62
	Statistical Tests	63
	Chi-Square One-Sample Test	64
	Binomial Test	64
	Chi-Square for Two Independent Samples	64
	Fisher Exact Probabilities	65
Chapter 6	Results	66
	Summary of Significant Relationships	66
	I Significance of Variables	66
	II A Selective Comparison of Variables (a) within element group	74
	II A Selective Comparison of Variables (b) between element groups	79
	III A Comparison of Subsamples	83
	IV Characteristics of Sample (a) description (b) selected comparisons	84
	V Orientation to Unions	86
	Orientation to Family	89
Chapter 7	Interpretation	92
Chapter 8	Conclusion	102
Appendix A	A Study of Clerical Workers' Role Constructs - information for subjects	123
Appendix B	Clerical Workers' Role Constructs - score sheet	125
Appendix C	Rating Scale	126
Appendix D	Role Descriptions	127
	Key to Appendices E and F	128
Appendix E	Repertory Grids used for Reliability Test	129
Appendix F	Examples of Content Analysis Classifications Given to One Judge	139

Appendix G	Alternative Analytical Techniques	141
	Abbreviations Used in Appendices H to M	148
Appendix H	Tests for Significance of Variables	149
Appendix J	Tests for II A Selective Comparison of Variables	
	(a) within element group	213
Appendix K	Tests for II A Selective Comparison of Variables	
	(b) between element groups	259
Appendix L	Tests for III A Comparison of Subsamples	277
Appendix M	Data for IV Characteristics of Sample	
	(a) description	
	(b) selected comparisons	341
Appendix N	Notes on the Administration of the Repertory Grid	352
Appendix P	The Principal Components Analysis	356

#### Bibliography



# LIST OF TABLES

	Page
Figure 1 Occupational Distribution of Employment in G.B., 1961-1981	2
Figure 2 Trade Union Membership and Density in the U.K., 1948-1970	2
Figure 3 Repertory Grid of a Female Clerical Worker	28
Figure 4 Structure of the Sample by Firm and Occupation	32
Figure 5 Principal Component for a Male Manual Worker	39
Figure 6 Repertory Grid of a Male Manual Worker	39
Figure 7 Association between Workmindedness and Potency in use of Self-image by Total Sample	57
Figure 8 Association between Self Workmindedness and IR Workmindedness Perceived by Total Sample	58
Figure 9 Comparison of Clerical and Manual Workers' Use of Self Workmindedness	59
Table 599 Total Sample Orientation to IR Characters	87
Table 600 Subsample Orientation to IR Characters	88
Table 601 Manual Male Union Member Orientation to IR Characters	88
Table 602 Total Sample Orientation to Family	90
Table 603 Subsample Orientation to Family	90
Table 604 Manual Male Union Member Orientation to Family	91
Table 605 'Neithers' by Union Membership for Orientation to Family	91
Figure 10 Clerical and Manual Use of Content Analysis Variables	93
Figure 11 Subsample use of Content Analysis Variables	94
Figure 12 Society Image Compared to Self and Other Images	103

Tables 1 to 192	Tests for I Significance of Variables	Appendix H
Tables 193 to 327	Tests for II Selective Comparison of Variables (a) within Element Group	Appendix J
Tables 328 to 381	Tests for II Selective Comparison of Variables (b) between Element Groups	Appendix K
Tables 382 to 573	Tests for III Comparison of Subsamples	Appendix L
Tables 574 to 598	Data for IV Characteristics of Sample Tests for (a) Description (b) Selected Comparisons	Appendix M
Figure 13	Response-sheet for Female Clerical Worker	Appendix P
Figure 14	Response-sheet for Male Manual Worker	Appendix P
Figures 15a) to 15h)	INGRID Computer Print-Out for Female Clerical Worker	Appendix P
Figures 16a) to 16f)	INGRID Computer Print-Out for Male Manual Worker	Appendix P

Explanatory Note:

Tables are summarised in the text and reported in full in the Appendices, and are numbered in the order in which they occur in the text. Tables 599 to 605 only are fully reported in the text, and relate to V Orientation to Unions and Family.

### Acknowledgments

The author would like to acknowledge the guidance given to him by his supervisor Professor George Bain. Thanks go to his colleagues Alex Shubsachs and Tom Watson for their comments on the work as it progressed, for their help in reliability testing, and for their advice on statistical analysis. None of these persons, of course, is responsible for the shortcomings of the study, which responsibility remains with the author alone.

### Declaration

The author declares that none of the material contained in this thesis has been submitted before for a degree. Mr. Jack Moss, then a student at Manchester Polytechnic, carried out the majority of the routine interviews on which the analysis is based. He was paid by a grant from the Centre for Industrial, Economic and Business Research, University of Warwick. The author himself designed the research instruments and proved them in a pilot study. The principal components analysis was carried out by the Medical Research Council service for analysing repertory grids under Dr. Patrick Slater of St. George's Hospital Medical School, University of London. The content analysis and hypothesis testing was carried out by the author. Whilst the methodology is based on published Kelly repertory grid analysis the application is an adaptation of that method. The theoretical interpretation is, as much as can be, the author's own.

### Summary

The thesis takes as its starting point the explanation by David Lockwood of clerical anti-unionism in terms of a 'prestige' model of society, and of manual pro-unionism in terms of a 'class' model of society. The present author attempts to gather information about how clerks and manual workers see themselves and others in the work situation (self-image and other-image) in a manner which prestructures subject response as little as possible. The emphasis is thus upon meaning rather than behaviour as such. To this end Kelly repertory grid analysis is adapted and applied to clerks and manual workers in several research locations in North-West England. The data is processed for principal components and content analysed. Specific hypotheses are tested, including those that clerks will adopt a 'clerical stereotype' of workmindedness, impotence, selflessness, happiness and low union-mindedness, whilst manual workers adopt a 'manual stereotype' of low workmindedness, potency, egocentrism, unhappiness, and unionmindedness. All subjects in both occupational groups are found to espouse the clerical stereotype, despite being almost all union members. The stereotypes are related to Lockwood's society images and are found to be congruent in some respects, but different in others, chiefly in the use by our subjects of the variables of potency and egocentrism. Union membership, where a relationship can be directly tested, is found to be associated with impotence and workmindedness. Most of our subjects are anti-union in orientation. Their union membership is a product of external factors which have not influenced their self and other - images. The relationship between psychological and sociological perspectives

is discussed.

By the use of an unusual but appropriate method of investigation it is hoped that an original contribution is made to the theoretical and empirical understanding of the way clerks and manual workers can see aspects of their work situations.

(296 words)

## CHAPTER 1

### THEORETICAL BACKGROUND TO THE RESEARCH

This research arose from an interest in David Lockwood's work on white-collar unionisation. A large part of this introduction will be concerned with showing theoretical and methodological links with two of his early publications which have laid enduring foundations in the academic study of white-collar unionisation.<sup>1</sup>

Before embarking on academic arguments it may be appropriate to comment on the practical significance of white-collar unionisation. This significance is illustrated by two facts. Firstly, that in advanced industrial nations white-collar workers form a large and increasing proportion of the total labour force. Figure 1 shows that this has been the case for Britain, with some marked slowing down in the rate of increase in recent years. Secondly, that whilst union recruitment of manual workers in such nations is now relatively static, union recruitment of white-collar employees has proceeded at a brisk pace during the last decade. Figure 2 shows the position in Britain.

---

1. D. Lockwood, The Blackcoated Worker, Allen and Unwin, London, 1958.

J. Goldthorpe and D. Lockwood, 'Affluence and the British Class Structure', Sociological Review, 1963.

Lockwood's later work is more exclusively in the field of class and the class position of the manual worker. The article by Goldthorpe and Lockwood will in the text be referred to as Lockwood's. The joint authorship with Goldthorpe is recognised but it is the content which is clearly a development of Lockwood's ideas from The Blackcoated Worker which is important here.

Figure 1: Occupational Distribution of Employment in Great Britain

Occupational group	1961-1981		projected
	1961	1971	1981
employers and managers	1,973	2,355	2,762
professional workers	656	875	1,423
intermediate non-manuals <sup>1</sup>	1,324	1,860	2,484
junior non-manuals <sup>2</sup>	4,808	5,255	5,370
personal service workers	1,030	1,272	1,562
foremen and supervisors-manual	566	600	649
skilled manual	5,700	5,133	4,526
semi-skilled manual	3,500	3,077	2,714
unskilled manual	1,787	1,769	1,802
agricultural	444	306	207
own account	867	971	1,307

1 technical

2 clerks, cashiers and shop assistants

	1961	1966	1971	1981	
clerical alone	3,055	3,401	3,549	3,589	ooo's

Source: Project of Department of Employment Unit for Manpower Planning.  
Table of occupational groups reported in D of E Gazette,  
October 1975.  
Figures for clerks alone reported in D of E Gazette, July 1975

Figure 2: Trade Union Membership and Density in the UK, 1948-1970

Type of employees in trade union	number of members				density of membership			
	1948	1964	1969	1970	1948	1964	1969	1970
white-collar	1,964	2,623	3,157	3,531	28.8	29.0	33.7	38.0
blue-collar	7,398	7,442	7,076	7,459	53.1	51.0	49.7	52.7
All	9,362	10,065	10,233	10,990				

Source: G.S. Bain and R. Price, "Union Growth and Employment Trends in the United Kingdom, 1964-1970", British Journal of Industrial Relations, 1972.

The discussion of Lockwood will centre on two major themes, the first being his rejection of conventional measures of class identification and consequent espousal of the complex 'imagery' concept,<sup>1</sup> and the second being an interpretation of his thesis on the class consciousness of clerical workers in terms of those images.<sup>2</sup>

Whilst examining the idea of 'embourgeoisement' - the assimilation of the working class into the middle class - Lockwood makes the following points about the measurement of class identification by means of the 'poll-type interview'. He maintains that responses will vary between a forced-choice format and an open format, that in a forced-choice format responses will vary according to the categories and designations used (e.g. lower class v. working class), and that responses on class identification which appear the same may have different meanings to respondents.<sup>3</sup> 'This is because such responses will be influenced not only by the form of question that is put, which can for any given sample be held constant, but also by respondents' own images of their society and of its class structure, which, it is known tend to be highly variable. Thus the same question will be answered in terms of many different, and perhaps widely different, frames of reference.'<sup>4</sup>

These are methodological points with which the present author agrees most strongly. Indeed, we may add the further point that response

---

1. J. Goldthorpe and D. Lockwood, op. cit.

2. D. Lockwood, op. cit.

3. J. Goldthorpe and D. Lockwood, op. cit., p. 143.

4. J. Goldthorpe and D. Lockwood, op. cit., p. 144.



to a given question does not indicate the salience of the matter to the respondent. That is, the fact that a subject is willing to assign himself to a social class does not necessarily mean that class is very important to him, or very important to the understanding of how he thinks and acts. Lockwood puts this problem aside when he defines alternative social images in ideal-typical terms.

It would be helpful if, before describing specific sorts of images, we could define more precisely what 'image' is as a concept. In the first instance, Lockwood would seem to mean a model of society, implying a reasonably well developed system in terms of which social reality is interpreted. He recognises Bott and others as the originators of this idea.<sup>1</sup> Lockwood uses the terms consciousness, orientation and perspective more or less interchangeably with imagery. He asserts that the polar types of image are associated with particular complexes of beliefs, values and attitudes, and that these types are related to the subject's place in the social system.

Lockwood's two ideal-types of social model or image are

1. The dichotomous or power model of the working class. This view of the world emphasises the conflict of interest between 'Us' (workpeople) and 'them' (owners, and, by extension, managers). This Marxian-type view sees as critical the ownership/non-ownership (or control/non-control) of capital and thus of economic power. It is a conflict model of confrontation of mutually and antagonistic forces. In contrast to their conflict with the out-group (and, as Simmel would say, a consequence of that conflict) is the community of interest within each group.

---

1. E. Bott, Family and Social Network, London, Tavistock, 1957.

2. The hierarchical or prestige model of the middle class.

This view of the world emphasises both the heterogeneity of individual interests and the interdependence of those interests in the total system for the good of all. It is a model of individual competition and aspiration within a wider normative and ideological consensus.<sup>1</sup>

It can be seen that it turns out to be difficult to describe a model of society without putting it in the framework of its associated values and attitudes. Lockwood speaks (in describing the work of Bott and others) of this being a gestalt of interrelated components.<sup>2</sup> The most important element in the stratification view is the distinction between two and many strata, and the most important element in the related psychological response is the distinction between collective and individualistic orientations.

The following schematic presentation of the two images and their associated values and attitudes is reproduced from Lockwood.<sup>3</sup>

	<u>Working class perspectives</u>	<u>Middle class perspectives</u>
General beliefs	<p>The social order is divided into 'us' and 'them': those who do not have authority and those who do.</p> <p>The division between 'us' and 'them' is virtually fixed, at least from the point of view of one man's life chances. What happens to you depends a lot on luck; otherwise you have to learn to put up with things.</p>	<p>The social order is a hierarchy of differentially rewarded positions: a ladder containing many rungs.</p> <p>It is possible for individuals to move from one level of the hierarchy to another. Those who have ability and initiative can overcome obstacles and create their own opportunities. Where a man ends up depends on what he makes of himself.</p>

---

1. J.D. Goldthorpe and D. Lockwood op. cit., p. 146.

Other terminology in widespread use and roughly equivalent to power/prestige is conflict/consensus, and pluralist/unitary.

2. J. Goldthorpe and D. Lockwood op. cit., p. 146

3. J. Goldthorpe and D. Lockwood op. cit., p. 147

General values	'We' ought to stick together and get what we can as a group. You may as well enjoy yourself while you can instead of trying to make yourself 'a cut above the rest'.	Every man ought to make the most of his own capabilities and be responsible for his own welfare. You cannot expect to get anywhere in the world if you squander your time and money. 'Getting on' means making sacrifices.
Attitudes on more specific issues	(on the best job for a son) 'A trade in his hands'. 'A good steady job'. (towards people needing social assistance) 'They have been unlucky'. 'They never had a chance'. 'It could happen to any of us'. (on Trade Unions) 'Trade Unions are the only means workers have protecting themselves and of improving their standard of living'.	'As good a start as you can give him'. 'A job that leads somewhere'. 'Many of them had the same opportunities as others who have managed well enough'. 'They are a burden on those who are trying to help themselves.' 'Trade Unions have too much power in the country'. 'The Unions put the interests of a section before the interests of the nation as a whole'.

We have gone to some lengths to describe these images of society because they will be useful in looking at Lockwood's earlier work on clerical workers.<sup>1</sup> Clearly, they owe their development to that earlier work though they were not explicitly formulated at that time.

In The Blackcoated Worker Lockwood exposed the inadequacies of grand (chiefly Marxian) theory to explain the particular variations to be found in the progress and character of clerical unionism, and put forward a middle range theory which has been built on ever since. His argument, briefly summarised, is this. Marxian theory suggests that all those persons dependent upon their labour for a livelihood share a common interest in their opposition to the owners of capital. In as far as they are not aware of this they are simply in a state of 'false consciousness'. All would be equally amenable to unionisation once they had been brought to a realisation of their true condition. Lockwood takes issue with the fundamental question of what is the 'true' situation of clerical workers. He distinguishes between the workers' market situation, work situation and status situation.

1. D. Lockwood op. cit.

### 1. Market Situation

Lockwood points out that there are great differences both between manual and clerical workers, and within those groups, in market factors such as income, security, promotion and non-pay factors. These variations he relates to the character of white-collar unions rather than the density of unionisation.<sup>1</sup>

### 2. Work Situation

Lockwood describes two ideal-types. The first is the paternalistic 'counting house' type - small offices, internal social fragmentation of the office staff throughout occupational, departmental and informal status distinctions, the absence of institutionalised blockage to mobility, and no widespread or systematic criteria of job grading and remuneration. This type is associated with low class consciousness and is unfavourable to union recruitment. The second is the bureaucratic type - large office units, strict classification and grading, blocked upward mobility, unhindered horizontal mobility, impersonal and standardised working relationships. This type is similar in many respects to factory conditions and although it does not necessarily imply identification with manual workers it is conducive to the development of the feeling of common interest amongst clerks, and to union recruitment.<sup>2</sup> Physical distance and the clerk's proximity to

---

1. density =  $\frac{\text{actual membership of union}}{\text{potential membership of union}} \times 100$

2. According to Lockwood in The Blackcoated Worker (p.137) it is not necessary that clerks feel class consciousness in order that they join unions. It is necessary and sufficient that they feel a sense of common interest within their own group. Class consciousness, as Lockwood uses it, entails a further recognition of the identity of interest of that group with other, particularly manual, occupational groups. The development of class consciousness is thus a sufficient reason for the unionisation of clerical workers, and it is with the development of class consciousness that The Blackcoated Worker explicitly deals (Subtitle 'A Study in Class Consciousness').

administrative authority serve to create social distance between clerical and manual workers, and inhibits mutual identification. The lessons Lockwood draws are that there are no simple distinctions to be made between clerical and manual workers' class consciousness, and that his own analysis of the variations in the work situation of clerical workers is useful for explaining the variations in the density of unionisation within the clerical worker group.

### 3. Status Situation

Again Lockwood paints a picture of the heterogeneity of the clerical situation. High status is associated with the professional orientation of occupational achievement, education, clean and 'respectable' work. Many clerks are finding themselves increasingly badly placed in relation to that ideal. Comparison with manual employees may be unfavourable. Importantly, Lockwood finds that status threat tends not to generate class consciousness amongst clerical workers, but rather to lead them into exaggerated status consciousness and a weakened sense of class identity. In fact, Lockwood suggests that the status situation of clerks is less influential in determining their class consciousness, and therefore feelings about unions, than is market situation and, particularly, their work situation.

Our interest is not so much in unions as organisations, and hence in the effect of market factors on the character of clerical unions, but, rather, is in the clerks' cognitive orientation to unions and union activities. Hence our specific interest in Lockwood is principally in his delineation of the work situation determinants of class consciousness.

Lockwood uses the methodology of ideal-types, His polar opposites are the counting-house, on one side, and the bureaucracy on the other. The counting-house case corresponds closely to the prestige image of society. Participants believe in individual advancement within an open many-layered hierarchy. The bureaucratic case corresponds, in its ideal-extreme, to the power model of society. Participants see the environment as a relatively closed dichotomous system within which advancement is possible only through collective organisation.

When describing modern reality Lockwood points to the complexity of the actual situation. The counting-house case implies strong identification of clerks with management. The bureaucratic case implies a breakdown of that identification but does not necessarily imply that this is replaced by identification with manual workers. Indeed, insofar as clerks do see their situation as becoming more like that of manual workers, as they may in terms of work situation and status, this may be seen as a threat which acts to decrease class consciousness rather than increasing it. The power model previously described does apply to the ideal typical bureaucracy but is complicated by this matter of reference group. Some sort of power model is implied by the generation of a sense of collective interest within the clerical group of bureaucracies, but clerks perhaps come to see themselves as a special case in a three-layered class structure.

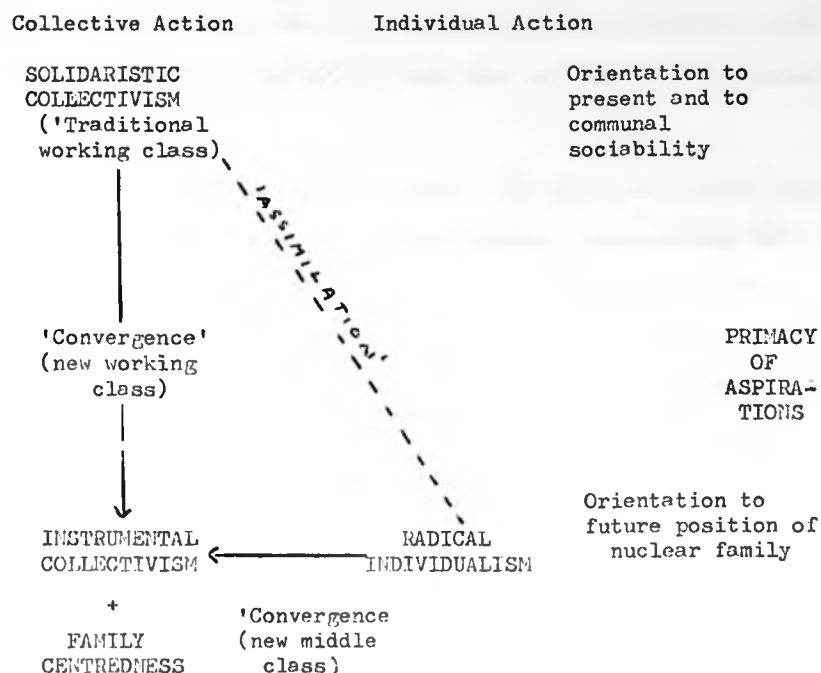
That changes in traditional (or ideal-typical) class structure, whereby the working class and middle class move towards one another (proletstianisation and embourgeoisement), do not involve each taking the other's perspective, but rather involve a process of 'convergence'

to some third position, is suggested by Lockwood in the later article.

The following diagram is reproduced from Lockwood.<sup>1</sup>

## Normative Convergence

## PRIMACY OF MEANS



Lockwood here distinguishes between means - collective v. individual action - and ends (aspirations) - present time communal sociability v. future position of nuclear family. The convergence of the two traditional types (solidaristic collectivism and radical individualism) is to the third position of instrumental collectivism and family centredness. The working class are shown to be changing the ends for which they strive from community to family centredness.<sup>2</sup>

1. D. Lockwood op. cit., pp. 152 and 153

2. The case of the affluent worker is taken further in J.H. Goldthorpe, D. Lockwood et al., The Affluent Worker: Industrial Attitudes and Behaviour, Cambridge, Cambridge University Press, 1968.

The middle class are shown to be changing the means which they apply from individualism to instrumental collectivism. It is somewhat misleading to show convergence to a single case because, as Lockwood suggests, the two traditional classes are making different changes from different starting points, and their end position may well be different, if only in the mix of elements. The middle class case is the one which concerns us here.

Lockwood suggests that both the 'old' and the 'new' middle class share a dominant concern with the nuclear family. The position and advancement of the family is said to provide a key element in the motivation of individual striving for social and occupational betterment. Disillusionment with the effectiveness of individual efforts caused the middle class to become organised in the defence of, particularly, the social status of the family.<sup>1</sup> What makes this collectivism different from the collectivism of the traditional working class is that it is instrumentally rather than ideologically oriented. There is no implied identification with the working class, or espousal of ideas and ideals of the labour movement (on the part of the member - the organisation is another matter). Collective organisation is seen simply as a mechanism which changing circumstances have made necessary if the old goals of the enhancement of family social status are to be achieved. Again, as in The Blackcoated Worker it can be seen that the result may be not identification with manual workers, but increased distinction from them in an effort to maintain

---

1. J. Goldthorpe and D. Lockwood op. cit., p. 154



traditional economic and social relativities.

We are now in a position to look more critically at the methodology Lockwood uses. In The Blackcoated Worker he uses two ideal-types, with the strong implication of a single dimension on which, at various points, real situations could be placed. Even there he seemed to be struggling with the variability of identification - class consciousness, and resolves the problem by, in the later article, the introduction of a second dimension. The simple linear model, of identification leading to class consciousness leading to collective action, becomes a three dimensional one in which identification and class consciousness are no longer necessary for collective action to be established. A sense of common interest is seen once more<sup>1</sup> to be sufficient. In doing this he attacks a further, related problem. In The Blackcoated Worker Lockwood was driven by his rejection of Marxian false consciousness into the presentation of a simple and straightforward relationship between working conditions and the appreciation of those conditions. This made it even more difficult for Lockwood to handle his own findings that deterioration in clerks' work and status situations sometimes led to even greater identification with management.- For in some senses Marx was right; reality has to be interpreted, and is not self-evident. Lockwood in the later article, handles this factor by pointing to the variability of interpretation and response that may occur in relation to apparently similar work situations.<sup>2</sup> Indeed, he

---

1. As it was briefly in The Blackcoated Worker, p. 137. This time the dynamics of the situation are more fully expressed in theoretical terms.

2. He follows this up in later publications largely in terms of manual workers. J.H. Goldthorpe, D. Lockwood et al., The Affluent Worker: Industrial Attitudes and Behaviour, Cambridge, Cambridge University Press, 1969.

goes further by showing how apparently similar responses (i.e. collective action) can have different meanings for different actors.

Lockwood still here deals with a small number of ideal-types. His methodology is essentially unchanged. In line with the principle of economy of concept he makes the smallest number of categorisations necessary to explain the phenomenon in terms of his particular theory. Three types cover all Lockwood's behavioural possibilities. The first two are the familiar prestige hierarchy now called radical individualism on the one hand, and the dichotomous power model, now called solidaristic collectivism on the other.<sup>1</sup> The third type, of instrumental collectivism and family centredness, is itself a continuum (and thus could seem to imply four categories and four dimensions), in as far as Lockwood expects clerical and manual workers to differ in the mix of these two elements. Because of their respective starting points the middle class is expected to remain more strongly family centred than oriented to instrumental collectivism, whilst the working class is expected to remain more strongly committed to collectivism than family.<sup>2</sup>

The criticism we wish to make is this. Lockwood has eschewed data collection methods which force subjects into predetermined response categories. But in his chief works on clerical workers he has arrived by a consideration of the objectively defined situations of clerks at a small number of dimensions, to explain their psychological orientations.

- 
1. Characterised as the proletarian and the deferential in terms of manual workers. D. Lockwood, 'Sources of Variation in Working Class Images of Society', Sociological Review, 1966, p. 250.
  2. Characterised as the privatised worker with a pecuniary model of society. D. Lockwood op. cit., p. 250

That the number of dimensions is small cannot of itself be faulted. If the explanation is adequate this is simple economy. Also, these are dimensions which might theoretically allow cases to be distributed along their lengths (or within their space) in a continuous fashion. However, use of ideal-type analysis always involves the danger of the polar type gaining a life of its own, becoming a caricature which is increasingly applied to reality as if it in itself accurately described reality. For example, Lockwood's ideal-type and his use of them implies a monolithic interpretation of the concept of bureaucracy. Increasingly bureaucracies are being portrayed by other writers as complex and multidimensional. Pugh's analysis suggested that there were at least three major dimensions to the broad Weberian concept of bureaucracy.<sup>1</sup> Hence the continuum between counting-house and bureaucracy is likely to be complex and multidimensional too.

The more important part of our criticism for the purposes of this study is that relating to Lockwood's own methods of data collection. The data used in The Blackcoated Worker is not <sup>on</sup> the same psychological level as the generalisations (i.e. about cognitive models of society) which are made from it. The small number of generalised categories compel a forced fit of subjects into those categories just as do the 'poll-type interviews' which Lockwood criticises so strongly. If there is a difference it lies in the manner and appropriateness of the setting up of those categories. It is easy to agree with Lockwood that questionnaires are often constructed before the researcher knows very much about the situation which he is studying. The theories underlying the questions, having been formulated in another, earlier context, may well be inappropriate to the current

---

1. D.S. Pugh, D.J. Hickson and C.R. Minings, 'An Empirical Taxonomy of Structures of Work Organizations', Administrative Science Quarterly, 1969. By factor analysis the following dimensions were recognised; 'structuring of activities', 'concentration of authority', and 'line control of workflow'.

and particular situation. This is why it is important to examine the data on which Lockwood's own theoretical conclusions are based. Two questions are to be asked. Firstly, is the theory based on empirical reality, or, acknowledging the interplay between theory and observation, does the situation studied play a large enough part in the formulation of the concepts which are in turn applied to that situation? Secondly, does the nature of the observation and data collection lead plausibly to the theory which is constructed from them?

The answer to the first question must be a resounding 'yes'. In The Blackcoated Worker Lockwood bases his theoretical conclusions on a wealth of empirical data. Furthermore, he proceeds fairly cautiously on the theoretical level, and only fully articulates his theoretical ideas in later articles when those ideas have matured.<sup>1</sup> The answer to the second question cannot be so unequivocal. Lockwood uses largely macro information about his clerks, and where it is more particular it is either secondary data - having been collected by somebody else for different purposes - or relates to the organisations, firms and unions, of which those clerks are members, rather than to the clerks themselves.<sup>2</sup> In other words, the observation of The Blackcoated Worker constitutes the data on which what is sociology is called an 'action analysis' is based without referring directly to the perceptions of the actors concerned within the appropriately specified context. The theory of the attitudinal and behavioural effects of the work situation, and the later elaboration of the models of society, are theories of the way individuals and groups

---

1. And were implemented in relation to manual workers in the Luton Studies which he conducted with John Goldthorpe et al. J.H. Goldthorpe, D. Lockwood et al., The Affluent Worker, Cambridge, Cambridge University Press, 1968.

2. These conclusions are more of the fact than opinion and can be verified by reference to The Blackcoated Worker

of individuals interpret reality. This interpretation, says Lockwood, is a complex gestalt in the mind of the actor. We are left in doubt as to the extent to which it is, rather, in the mind of the researcher. Indeed, Lockwood himself has sensitised us to the manner in which persons may interpret reality in different ways, and in ways perhaps surprising to the observer.

So why is there not the appropriate mode of investigation? The first reason is the very good one that a man can accomplish only so much at one time. The analysis which Lockwood did present in The Blackcoated Worker is of a very high order. The second reason is that Lockwood has set himself and others a very difficult methodological nut to crack. The problem posed<sup>1</sup> is to obtain information directly from actors, to obtain it in a relatively unstructured manner, though in an appropriate context, and to process that information so as to make it meaningful to others and useful in solving theoretical or empirical problems. Unfortunately, there exists an inverse relationship between structure of investigation and ease of generalisation. It is difficult to generalise from individual and ideosyncratic information. Hence the forced-choice questionnaire. Hence, also, the data collection and processing methods used in this present study, which will be described in the next section.

---

1. It is not until the 1963 article that the issues are plainly stated. The Luton Study attempted a resolution by the use of some open-ended questions, which were then content analysed.

## CHAPTER 2

### THE REPERTORY GRID ANALYSIS

Since Lockwood's pioneering work on clerks and unions there have been a small number of notable further contributions to the literature. Lockwood himself, with Goldthorpe et al., sought a small amount of information from clerical workers in the Luton Studies.<sup>1</sup> This was structured in terms of his earlier theory and thus cannot be taken as an independent investigation of the empirical bases of that theory. To some extent this is true of the comprehensive investigation by Weir.<sup>2</sup> The 'attitudes' of white-collar workers which he reports are responses to questions framed from the 'Lockwoodian' perspective. Explicit comparison is made with the Luton material. The work by Bain<sup>3</sup> is more independent of Lockwood's framework, but, important though it is in its own right, it is on a macro level inappropriate to a direct elaboration of an action framework.<sup>4</sup>

- 
1. J.H. Goldthorpe, D. Lockwood et al., op. cit.
  2. D. Mercer and D. Weir, 'Attitudes to Work and Trade Unionism among White-Collar Workers', Industrial Relations Journal, 1972.
  3. G.S. Bain, The Growth of White-Collar Unionism, Oxford University Press, Oxford, 1970.
  4. For the sake of completeness mention must be made of B.C. Roberts et al. Reluctant Militants: A Study of Industrial Technicians, Heinemann, 1972. This work shows for technicians the same kind of changes in occupational experience as Lockwood described for clerical workers. It thus provides some support for Lockwood's theory. It does not fully meet the requirements we have specified in that a) its research method is strongly prestructured, and b) it relates to technicians who are by Roberts's own analysis of a different economic, status and organisational position to clerical workers. Also C.W. Mills, White-Collar, Oxford University Press, 1951. Mills presents many of the arguments later taken up by British academics, but he does so a) for the American case, and b) without presenting in this publication any evidence for his psychological or action generalisations.

The challenge which the present writer wished to take up was to investigate the perceptions of clerical workers with as few preconceptions as possible. This was not to be a conventional test of Lockwood's theoretical framework in that such a test would inevitably involve some kind of direct operationalisation of the theory at the level of the individual, whilst the present study aimed to avoid precisely this kind of prestructuring. Nor was the research to involve observation and analysis of action itself, but would concentrate on that aspect of the action analysis concerned with the meaning of social reality to individual actors. The research was thus intended to have implications for action by analysis of meaning underlying action, and to provide some estimate of the appropriateness of Lockwood's theory by independently investigating the perceptions of clerical workers, and subsequently relating the findings to Lockwood's theoretical framework.

The focus of the research is on how clerical workers view themselves in the work context. It seemed plausible that self-image would be the more fundamental concept than society-image. For if a person describes society as being such-and-such a structure he is implicitly giving the perspective from a position in that structure to which he has assigned himself. It seemed that this might be a way out of a methodological dilemma - that some framework has to be given to a respondent in order for him to see meaning in the research situation and to make a response, but that the theoretical demands of the research were such that prestructuring of responses was to be kept to a minimum. The contextual framework was to be, chiefly, that the subject would be approached in relation to work, and be asked about matters which could clearly be seen to be associated with work, and that he would be asked repeatedly about

---

himself.<sup>1</sup>

In case this seems needlessly devious the reader is reminded of the criticisms made by Lockwood of the prestructured 'poll-type interview'.<sup>2</sup> The present writer made the further decision to avoid conventional attitude measures. There were two main reasons for this. The first was the extent of disagreement amongst psychologists as to just what attitude is, and as to how it is best measured. The second was the complexity of the attitude scaling process when done according to recognised psychological methods (such as Likert or Thurstone scaling). Attitude measures, in any event, whether done to rigorous psychometric standards or at the more usual 'opinion-poll' level, are not free of a large element of prestructuring of response.

There is a great difference between actively and independently thinking something, or thinking in a certain manner about something, and agreeing with somebody else in response to their questions, that you do indeed think like that. Firstly, whilst it may be true that you think like that, it may not have the importance or inclusiveness to you that the investigator assumes. Secondly, the range of choice open to you may not allow you to communicate how you really think and all you can do is choose the closest approximation. Anybody who has done very much interviewing will be familiar with this situation of apparent congruity of terms and concepts, where both parties collude to hide the

---

1. This will become more clear when the methodology is described in more detail.

2. Page 3.



the real gulf of meaning between them.<sup>1</sup> Thirdly, the whole range of available responses, even the whole response situation, may be alien to you. Mary Speak has shown empirically that subjects do answer questions which are in fact meaningless to them, and that, furthermore, their response to these meaningless questions tend to form a consistent statistical and 'meaningful' pattern.<sup>2</sup>

The obvious advantage of structuring is, of course, comparability. The responses may not be in the subjects' terms but they are in the same terms, and can be counted. Totals and sub-totals may be arithmetically manipulated. Methods which do not so structure responses will inevitably have difficulties in handling the resultant data. What follows is a description of a method adapted by the author from psychology - the repertory grid method of analysing personal constructs, following the work of George Kelly - to investigate the way clerical workers see themselves in relation to their familial and industrial situations.

#### Personal Construct Theory

Repertory grid methods have the advantage of being grounded in a theory of human perception congruent with the present writer's emphasis

- 
1. For a vivid description of this laingian collusion between the parties to an interview - which might as well be between the subject and an absent questionnaire writer - see D. Silverman and J. Jones, 'Getting In: The Managed Accomplishment of "Correct" Selection Outcomes', in J. Child, Man and Organisation, Allen and Unwin, London, 1973.
  2. M. Speak, 'Communication Failure in Questioning, Errors, Misinterpretations and Personal Frames of Reference', Occupational Psychology, 1967.

on self-image as basic to an understanding of behaviour. This personal construct theory was elaborated by Kelly as recently as the 1950s.<sup>1</sup> Both theory and methodology are still a centre of lively debate in psychological circles. There are still many unresolved problems, particularly in the application of the methods. To an extent each application has to be uniquely designed. In fact the methodology is still largely clinical in character and this present application was faced with original problems both in application to the industrial relations area, and in making comparisons and generalisations from the information generated. The theoretical presentation follows Bannister and Fransella who have been largely responsible for bringing Kelly's work to the notice of the British academic world.<sup>2</sup>

The theory of personal constructs proposes that man is by nature an inquisitive and inquiring animal. He tries to make sense of his world by theorising about past events and predicting future events. The fundamental postulate of the theory<sup>3</sup> is

'a person's processes are psychologically channelised by the ways in which he anticipates events'.<sup>4</sup>

This idea has sociological parallels. The functional explanation of social order is based on the ability of persons to predict the behaviour of others. The mechanisms by which normative (as opposed to power

---

1. G.A. Kelly, The Psychology of Personal Constructs, Norton, 1955.

2. D. Bannister and F. Fransella, Inquiring Man, Penguin, 1971.

3. There are many postulates which might be here reported, Only a very few have been chosen for their particular relevance.

4. Bannister and Fransella op. cit., p. 19.

enforced) predictability is maintained are socialisation and role encumbency. On the other hand, an inability to anticipate outcomes is often part of sociological definitions of alienation and anomie (as meaninglessness or normlessness).

Personal construct theory attacks the central problem of what constitutes meaning when it explains how people are able to anticipate events. Things have meaning to us in terms of their similarities to other things, in contrast to still other things.

'A person anticipates events by construing their replications'.<sup>1</sup> For example, one of our subjects described herself as being like her boss in feeling that she could not go on strike, and both herself and her boss as being unlike a given shop-floor worker who she thought would feel he/she could strike. In the jargon of the theory the things, in this case people, are called elements, and the dimension on which they are placed, in this case the feeling that they could or could not go on strike, is called a construct. Hence the word construing, which is the process of generating such constructs in relation to given elements.<sup>2</sup>

The ordinary man is portrayed by Kelly as a theorist with the same problems as academic theorists. In order to predict he has to generalise about the particularity of the past. In order to generalise from the particular he has to classify - to disregard the unique qualities in

---

1. Pannister and Fransella, op. cit., p. 20.

2. It must be emphasised that the construct does not exist independently of the elements. Given that we try to make sense out of every problem which we perceive, neither do the elements exist independently of the construct. These are the two dimensions of a conceptual 'space'. This will become more clear when a specific example is more fully discussed.

things to look for what they have in common with other things. The problem of ultimate meaning is avoided by not being raised at all. Things have meaning by their relationship to other things. In the example given the meaning of striking to the subject is bound up with her feelings about the people she feels could or couldn't strike. Conversely, her feelings about them are coloured by whether she feels they could strike or not. In this example, by design, the position of 'self' is crucial. Knowledge of self is the only (apparently) reliable data a person possesses. It tends, therefore, to form a basic standard with which other things are contrasted or identified. The subject above identifies with her boss and contrasts herself with the shop-floor worker, in relation to whether or not they could strike. When we come to look at the other distinctions this subject makes it will be seen that, in fact, she morally disapproves of striking. Fundamental to this present research is the idea that the sort of person people see themselves to be enables us to predict their orientation to social institutions such as work and unions, if we know also the 'web' of their construing - what sort of people belong to these institutions, and what sort of behaviours are implied by membership, and how these relate to self-image.

The word 'orientation' is purposefully used in preference to 'attitude'. In his thinking about attitude the author has been strongly influenced by the work of Fishbein who defines attitude (following Thurstone) in terms simply of favourable/unfavourable evaluation - as 'the amount of affect for or against a psychological object'.<sup>1</sup> Fishbein

---

1. M. Fishbein, 'Attitude and the Prediction of Behaviour', in K. Thomas (ed.), Attitudes and Behaviour, Penguin, 1971.

argues strongly for the conceptual distinction between behaviour, behavioural intentions, and attitudes. Though he does not flatly contradict the view of attitude as a predisposition to respond to certain stimuli in certain ways,<sup>1</sup> Fishbein insists that the links between attitude, behavioural intentions and behaviour are complex and problematical. Only when we consider a large set of a person's behavioural intentions, for example, can we form a good estimate of a person's attitude.<sup>2</sup> This supports Lockwood's emphasis upon complex imagery, but undermines the assumption that from imagery we can then predict with confidence specific behaviour such as joining unions. To further complicate the picture, Fishbein argues that there is not a simple relationship of consistency between beliefs or cognitions and attitude. Following Fishbein's view attitude becomes a very shadowy concept of general evaluation. ' . . . attitude is a hypothetical variable abstracted from the totality of an individual's beliefs, behavioural intentions, and actions toward a given object. Any given belief, behavioural intention or behaviour, therefore, may be uncorrelated or even negatively correlated with his attitude. Thus, rather than viewing specific beliefs or classes of beliefs and specific behavioural intentions or types of behavioural intentions as part of attitude, these phenomena must be studied as variables in their own right, which, like attitudes, may or may not function as determinants of specific behaviour.'<sup>3</sup>

The personal construct measures which the present writer is using are not measures of, separately, beliefs, attitudes, behavioural intentions or behaviour. The theory of personal constructs is tangential to the

---

1. A definition used by Allport and others. F.H. Allport, Social Psychology, Houghton Mifflin, 1924.

2. M. Fishbein op. cit., p. 61.

3. M. Fishbein op. cit., p. 63.

theory of attitude, and it would be wrong to label the material generated from the application of personal construct theory as 'attitudinal'. The repertory grid analysis of a person's web of construing is perhaps a different way of approaching that totality of beliefs and behavioural intentions (if not behaviour) to which Fishbein refers. We prefer to think of personal construct theory as being more concerned with meaning than with evaluation,<sup>1</sup> and to use the relatively neutral term orientation to refer to the products of our analysis. The relationship of those orientations to specific beliefs, attitudes, behavioural intentions or behaviour can then be considered as a separate issue.

To recap, personal construct theory following Kelly suggests that we attribute meaning by making distinctions between things along various dimensions. The number of dimensions or constructs which we commonly use is quite small. Kelly claimed that few people would use more than twenty or thirty<sup>2</sup> such constructs.

Responses in the present study were elicited in the following way. The subject was greeted in the manner described in Appendix A and given

- 
1. It will be later seen that this gave certain problems. When carrying out the content analysis (p. 58 onwards) we used a specific category for "moral evaluations", but it was clear that all the content to be analysed had an evaluative element when one knew the full context in which it was used.
  2. Bannister and Fransella *op. cit.*, p. 68. There is reason to believe, therefore that the eight constructs elicited in the present study would cover the most important of these.

standard instructions. He or she was presented with cards, three at a time, with descriptions of people printed on them. In total there were ten descriptions: self, father, mother, husband/wife/boyfriend/girlfriend, boss, friend at work, shop-floor worker, union member, union representative, and striker. The subject was asked to think of particular people to fit the descriptions, and to think of the same person for a given description throughout the study. Of the three cards presented to the subject each time one was always "self" (that is, the subject's self), whilst the other two were different combinations of the <sup>remaining</sup> nine persons in the element list.<sup>1</sup> The subject was asked:

'How are any two of these people similar?'

This elicits one pole of a construct. The subject was then asked:

'What seems to you to be the opposite of this'.<sup>2</sup>

If necessary the subject's response to the first question was fed back to him, in order to elicit its opposite, the other pole of the construct.<sup>3</sup>

The subject was then asked to grade all ten elements on the construct which had been generated. As an aid to the subject a printed nine-point scale was provided.<sup>4</sup> Where the construct was simply irrelevant to the subject's view of an element or person description he was expected to use

- 
1. These permutations can be seen by reference to the score-sheet submitted as Appendix B. The noughts indicate the cards presented in a particular "sort".
  2. This is an adaptation of Kelly who asked for "some important way in which any two of them seem to be alike and in contrast to the third". (Dannister and Fransella, p. 66). All three elements should for Kelly's subjects lie within the range of convenience of the construct. We found Kelly's method too time consuming and difficult for the subject. Our wording, as will be seen (p. 55) had the unforeseen result of allowing many of our subjects to avoid characterizing themselves.
  3. Persons vary to a surprising degree in what they consider to be the opposites of given things. This question is not a mere formality.
  4. Appendix C.

the middle category of the rating scale. Personal construct theory recognises this possibility when it says that constructs have a range of convenience, or applicability, and that some elements will be outside the range of convenience of some constructs.

This process of generating the construct and rating all the elements was carried out eight times with eight different permutations or "sorts" of cards. The result for each subject was an eight by ten repertory grid of constructs on graded elements.<sup>1</sup> Appendix B shows the structure of such a repertory grid.

Two related methodological points are noted here. The first is that in some instances the subject did not in fact know a real person to fit the person description he was given. The subject was in that case asked 'to think of the sort of person who would fit the bill'. No record was kept of whether subjects were referring to actual persons or to hypothetical sorts of persons. They were treated as equivalent. Secondly, the study in its analysis explicitly generalises from particular elements (or groups of elements) and constructs. It takes, for example, given elements as used by different subjects as equivalent, even though the chances are that the subjects have different actual persons in mind.

The defence of the procedure under both counts is that it appears to work. After factor analysis the constructs generated from these elements can be seen to have consistency of meaning both within individual grids, and between grids. This individual consistency can be estimated by the reader if he considers the randomly chosen subjects used to test rater reliability for the content analysis (Appendix E).

---

1. It can be seen that the research instrument is not a conventional interview. Nevertheless, for the sake of brevity, it will be referred to as an "interview".



Consistency between grids, or lack of it, and patterns of difference and similarity between categories of subject, is what the analysis of the research is all about, and so must be estimated by an evaluation of the results as a whole. Reliability and validity is further discussed in Chapter 4.

The first stage of the analysis of individual grids was for them to be factor analysed for principal components. This was done by Dr. Patrick Slater's M.R.C. service for the analysis of repertory grids using INGRID. Like all techniques for factor analysis the aim of principal component analysis is to reduce the variability of data by accounting for as much as possible of its variance in terms of underlying dimensions (or factors, or components). Only factors passing Bartlett's test of significance were admitted.<sup>1</sup> This had the effect, since INGRID maximises the variance explained by the first component, of eliminating all but the first component of most subjects.<sup>2</sup> From those factors remaining only elements and constructs possessing factor loadings (derived from their correlation coefficients) passing the Burt-Banks test of significance were admitted.<sup>3</sup> This is an exceptionally stringent decision rule (0.576 and above for the .05 confidence level for the first component, 0.616 for the second<sup>4</sup>) when applied to repertory grids. As the focus of the research is upon

---

1. M.S. Bartlett, 'Tests of Significance in Factor Analysis', British Journal of Statistical Psychology, 3, 1950.

2. A decision was made, therefore, to consider only the first component for all subjects.

3. C. Burt and C. Banks, 'A Factor Analysis of Body Measurement for British Adult Males, Annals of Eugenics, 13, 1947.

4. Child cites 0.3 as a commonly used decision rule for factor analysis of general data, which might be expected to exhibit higher loadings than repertory grids by virtue of its normally greater prestructuring of response. D. Child, The Essentials of Factor Analysis, Holt, Rinehart and Winston, 1970.

self-image only those subjects (100 in all) who had a significant loading on the element "self" were retained for further analysis.

An example is given in Figure 3 of the elements and constructs shown by the analysis described so far to be significant in the repertory grid of a female clerical worker.<sup>1</sup>

Figure 3. Repertory Grid of a Female Clerical Worker

Element

Self	shop-floor worker
husband/wife	striker
boss	
friend at work	

Constructs of component

feel couldn't strike	feel could strike
not union minded	strongly union minded
rewarding office work	unrewarding shop-floor work
conscientious	lazy
interested in white-collar work	not interested in white-collar work
not like disruption	like to dictate terms and take-over companies
listen carefully before striking	strike at least thing

Self describes herself and the other elements or persons on the left in terms of the constructs or items on the left. She describes those persons on the right in terms of those items on the right. The items are inter-related in that horizontally they may be read as dimensions, and in that vertically as well as horizontally they may be read as a component.

---

<sup>1</sup>The principal component analysis is further discussed on page 38, when a male manual example is introduced. The computer analysis of both examples is laid out in detail in Appendix P.

That is, they go together when they are used by this subject in relation to those persons. The subject's "image" of the various elements, including self, is described by the interrelated constructs of the component. Although individual constructs could conceivably be affectively neutral, it is clear from a consideration of the total component that this subject disapproves of shop-floor workers and strikers in as far as she sees them as lazy, dictatorial, striking on whim, etc. By extension, it seems plausible to say that the position of 'union minded' implies disapproval of unions, in-as-far as union membership is associated with all these negatively evaluated persons and activities.

In this example identification by the subject with constructs and other elements does obviously imply moral approval, whilst contrast does obviously imply moral disapproval, because of the pejorative nature of the language used. Frequently, however, the language used is neutral in tone, or its evaluative direction uncertain. It is more generally useful to speak of the orientation of self - contrast or identification - than with evaluation of the component as a whole.<sup>1</sup> In these terms it can be seen that the subject feels there to be a distance between herself, husband, boss and friend on the one hand, and the shop-floor worker and striker on the other. 'We' do rewarding office work and do not like our working lives to be disrupted by things like strikes. 'They' are not concerned with our kind of work, but do unrewarding work in a sloppy fashion.

---

1. This example, by its very illustrative straightforwardness, has more in common with Fishbein's conceptualisation of attitude than do many other cases.

'They are more concerned, apparently, with union matters, power and militancy than with doing a conscientious job. Though this subject says that she would 'listen carefully before striking' her mind is already made up: she 'feels she couldn't strike'.

This example will be discussed further in relation to the content analysis described in Chapter 4. It should be noted that the constructs include both beliefs and behavioural intentions. The elements are described both in terms of attributes and potential activities. The method does truly present persons in the manner presupposed by the author's theoretical orientation; that is, as influenced in what they might do by the sorts of person they consider themselves and others to be.

### CHAPTER 3

#### THE RESEARCH FORMAT

The subjects studied live and work in the north-west of England. The two major groups compared are clerical workers and manual workers, both at a number of firms in private industry.<sup>1</sup> Figure 4 shows the numbers interviewed at each research location, with the identity of the firms suitably disguised. The pilot study was carried out in the early part of 1972 by the writer, and most of the other interviews in the summer of 1973 by Mr. Jack Moss, then a student at Manchester Polytechnic. Mr. Moss was paid by a grant from the Centre for Industrial, Economic and Business Research, University of Warwick.

It must be said at the outset that no attempt was made to sample firms in a rigorous manner. The extreme difficulty experienced in gaining access to clerical workers (especially ununionised clerical workers) made that impossible. Nor were workers randomly sampled from their organisations. Again, practical difficulties made this impossible. Workers had to be interviewed as and when they were willing and available.<sup>2</sup>

- 
1. Research locations were very difficult to find and maintain. There seemed to be at least three reasons for this:
    - i. The methodology of the study was unfamiliar to industry, causing anxiety and avoidance reactions.
    - ii. Firms commonly want their non-unionised clerical workers left well alone lest they become militant and unionised.
    - iii. Organisational structures are such that clerical workers can be less easily spared time for research participation than can either manual workers or higher management.
  2. In the pilot study where an attempt was made to interview all 32 clerical workers employed in fact only 19 could be interviewed. Some unavailability is to be expected, but 40% seems very high. The author expects less reluctance from managers and employees when in future he has an established method and published results to which he can refer participants.

The findings of this research are, therefore, illustrative of the way clerical and manual workers can be shown to think. This limitation on generalisability is made less serious by the enormous diversity of situations in which people work. It is doubtful if any research, however well structured, could legitimately make generalisations about the perceptions of clerks in general, or of manual workers in general.

Figure 4. Structure of the Sample by Firm and Occupation

	Clerical	Manual
Pilot	19	-
A & B	12	33
X & Y	5	-
M.O.	53	27
TOTAL	89	60

There follows a short description of each of the firms in the study.

Pilot and A & B

These were two manufacturing locations of the same firm,<sup>1</sup> in two different towns in the North-West. They each employed about 400 people, of which the majority were manual workers. The labour market as a whole is rather depressed relative (1972-3) to the rest of the country, and this industry suffers from over capacity and inter-firm competition. This had had

---

1. To give the product as well as location would make the firm easily recognisable.

the consequence that workers and management co-operate more closely than one might otherwise expect. Management is actively encouraging the growth of industrial unions for both manual and white-collar workers. These two unions - overlapping considerably in resources and personnel - are seen to be relatively weak. There is no history of labour stoppages. At the time of the study unionisation of clerks was only partial and uneven, though the 50% recruitment needed to gain negotiating rights had been attained.<sup>1</sup> There was an unofficial but effective closed shop for manual workers.

The clerks involved in Pilot and A & B constituted approximately 48% of those falling within the clerical category<sup>2</sup>. Manual workers interviewed in A & B were 10% of the total.

#### X & Y

This family manufacturing firm employs 60 people. The market for the product is fairly buoyant. Relations between management and staff are close and there has never been any major dispute. Some clerks belong to a major national union, but union orientation and membership within the firm is seen to be rather low. The clerks interviewed formed 33% of the total.

#### M.O.

This mail order firm employs 1400 people. In the years immediately preceding the study the firm had become prosperous and had encouraged

- 
1. The union's affairs were then in such a state of flux that they could not be more precise about membership. Recruitment was proceeding on a personal level. Where in a department there was an active and sociable union organiser, recruitment was said to be strong.
  2. Operational definitions are discussed shortly.

its workers to join the major general union. It became, in fact, a closed shop for manual workers. Wages had been low, but with prosperity and unionisation several increases were paid in quick succession. Industrial relations within the firm were seen to be good. 13% of the clerks were interviewed, and 5% of the manual workers.

#### Definitions

There is no water-tight and unambiguous way of defining either clerical workers or manual workers.<sup>1</sup> Each apparently simple term contains a complex of factors such as skill, routine, responsibility and, of course, brain v. hand. For the purposes of this research clerical workers were defined as those employees

- i. doing relatively routine tasks primarily involving documentation of some kind, and,
- ii. exercising no supervisory responsibility.

Most clerks work in an office, but this is not necessarily so. Store-keepers would come under our definition. More typically do typists in typing pools and secretaries to managers, in-so-far as their work is routinised and involves a large amount of typing.<sup>2</sup> Accounts clerks are a fairly straightforward case.

Manual workers were defined as those employees

- i. doing relatively routine operations directly on the product or equipment with which that product is made, and
- ii. exercising no supervisory responsibility.

All the manual workers interviewed worked in the works - there were no

---

1. See G.S. Bain and R. Price, 'Who is a White-Collar Employee?', British Journal of Industrial Relations, 1972.

2. It is an arbitrary decision, though a commonly accepted one, to call typing clerical rather than manual.



drivers, for example. The amount of skill exercised varied a great deal, from general labourer to such crafts as 'engraver'. The manual workers interviewed at A & B covered a wide range of activities and skills. Those interviewed at M.O. were mainly packers and loaders.

#### Unionisation

It will have been seen that unions were fairly active in all the research locations. It was hoped that respondents would be structured not only clerical/manual, but also member/non-union member. It proved possible to interview a number of clerical non-members (11 as opposed to 47 members), but not of manual workers. Our contacts were in the first instance with management, but we had to work closely with the unions. The two locations where we were able to interview manual workers were both closed-shops. Hence all our manual respondents are union members. Our close association with unions perhaps added to our difficulty in securing the co-operation of clerical non-members. Though lacking hard data to demonstrate the point, the writer feels strongly that non-union members were much more likely than members to avoid being interviewed.

#### Self-image

Of the 149 subjects interviewed 100 had significantly characterised themselves. They had used gradings on constructs to make comparisons between themselves and others, resulting after the principal components analysis in significant factor loadings on the element 'self'. The other 49 had tended to put self towards the middle when grading elements. They were perfectly free, within the instructions they had received, to do this. The fact that 'self' was represented in every initial sort (see p. 26) was intended to give subjects every opportunity to characterise themselves,

but the instructions allowed the subject to put aside one of the three elements in every sort (see footnote p.26 ). This loss of a third of all our subjects was spread evenly over subject categories, and was particularly regrettable where categories were already small.

#### CHAPTER 4

##### THE CONTENT ANALYSIS

The problem at this stage of the research was to so process the highly personal repertory grids that generalisations could be made from them. We were particularly interested in the subjective meaning encapsulated in the constructs which the respondents had generated themselves. These constructs were unique to each respondent. Insofar as repertory grid methods are reported in the literature as being applied individually to numbers of persons, and generalisations being made about those persons as groups - which is rarely - the method commonly used is to give the subject both construct and element, and then to make generalisations about the numerical structure of the resulting grids.<sup>1</sup> Our insistence on a method which minimised the prestructuring of responses, and our interest in the subjective meanings represented by unique verbal responses, precluded use of such a procedure.

This is not anti-numericism on our part. The methods we use are numerate, for the simple reason that at present the only known way of generalising from data is by the manipulation of numbers or quantities. Our method generated the grid of element gradings which is common to repertory grid applications, and it was from those gradings<sup>2</sup> that the

---

1. See, for example, J.F. Watson, 'A Repertory Grid Method of Studying Groups,' British Journal of Psychiatry, 1970.

2. See p. 27.

#### CHAPTER 4

##### THE CONTENT ANALYSIS

The problem at this stage of the research was to so process the highly personal repertory grids that generalisations could be made from them. We were particularly interested in the subjective meaning encapsulated in the constructs which the respondents had generated themselves. These constructs were unique to each respondent. Insofar as repertory grid methods are reported in the literature as being applied individually to numbers of persons, and generalisations being made about those persons as groups - which is rarely - the method commonly used is to give the subject both construct and element, and then to make generalisations about the numerical structure of the resulting grids.<sup>1</sup> Our insistence on a method which minimised the prestructuring of responses, and our interest in the subjective meanings represented by unique verbal responses, precluded use of such a procedure.

This is not anti-numericism on our part. The methods we use are numerate, for the simple reason that at present the only known way of generalising from data is by the manipulation of numbers or quantities. Our method generated the grid of element gradings which is common to repertory grid applications, and it was from those gradings<sup>2</sup> that the

---

1. See, for example, J.L. Watson, 'A Repertory Grid Method of Studying Groups,' British Journal of Psychiatry, 1970.

2. See p. 27.

principal components analysis was conducted. It was our decision, however, having extracted the first principal component for each respondent, to make no further major use of those gradings, and certainly not to base our analysis on a manipulation of those gradings. Our reasons for this were threefold. Firstly, the emphasis on meaning rather than structure. Secondly, the congruence of a dichotomous presentation of the principal component as a dimension with the classification process suggested by personal construct theory. Thirdly, the fact that any given grading of element on construct does not have a standard significance in relation to the principal component. For example, an element may be included in the component (significantly loaded) even though its grade on a certain construct is lower than the grade on that construct of an element which may not be so included. The reason for this lies in the gradings of that element on the other constructs in the component. The principal component analysis, as its designer (Slater) intended, preserves the web of meaning of construct on element of the original grid. To focus on particular grades may be misleading.

INGRID, the principal component program used, presents as output loadings for each element and construct (from which one extracts those which are large enough to be statistically significant, as described in Chapter 2) which are either positive or negative. Figure 5 shows such a set of loadings. It is thus easy to lay out the constructs in the manner in which they are interrelated, and to put the elements (person descriptions) at the appropriate ends of the resulting dimension.

Figure 6 shows this done for the subject reported in Figure 5.<sup>1</sup>

Figure 5. Principal Component for a Male Manual Worker

ELEMENT	LOADING	CONSTRUCT	LOADING
1	-.9891 *	1	-.2597
2	.5104	2	-.9377 *
3	.9275 *	3	-.9482 *
4	1.0426 *	4	-.9413 *
5	.9207 *	5	-.7195 *
6	-.3409	6	-.9545 *
7	-.2029	7	-.9595 *
8	-.7086 *	8	-.8363 *
9	-1.0352 *		
10	-.1246		

This first principal component accounted for 72.26% of the variance of the grid.

\* indicates significant at .05 confidence level (0.576 and over).

Figure 6. Repertory Grid of a Male Manual Worker

Element	
mother	self
wife/girl friend	union member
boss	union representative
Constructs	
inactive, apathetic members	active union members
not aware at all	well aware of the condition of the working class
different attitude to self towards work	same attitude as self towards work
a bit irrational about striking	sensible about striking
no sense of responsibility	have a sense of responsibility towards workmates
no socialist ideals at all	strong socialist ideals
frightened to death of losing job	not afraid of losing our jobs

1. As a result of the considerations discussed in 3 above there is no standard dividing line for positive or negative for all constructs in the Component.

Comparison of Figure 6 with Figure 3 of Chapter 2 (p.29) may make clear some of the difficulties involved in comparing repertory grids. Figure 3 was of a female clerical worker who, broadly speaking, was anti-union and anti-strike. Figure 6 is of a male manual worker who is broadly pro-union and pro-strike. This would, in fact, be one way of classifying their responses, but would not be very revealing. We want to know why one is for unions and strikes and the other against. When we look more closely at the manual worker we see that he attributes to his mother, wife and boss an irrational attitude towards striking. The rest of his responses make clear that he means that a fear of striking, or flat refusal to strike is irrational. Striking to him is one action by which his socialist ideals may be operationalised, and by which he fulfills his responsibility towards his workmates. This to him is being 'sensible' about striking. This is the sort of man who the clerical worker described as 'striking at the least thing' and 'liking to dictate terms and take over companies'. Clearly, they put different interpretations on the same actions (striking) and things (unions). How, then, to best classify these interpretations or meanings?

In the content analysis the individual constructs were classified according to their meaning to the subject in one of the following eight categories. A construct could be positive or negative on the category dimension.

- WM Work mindedness. Orientations to work, own job, others' jobs. Involvement in work matters.
- P Potency. Possession of strong feelings and emotions. Exhibiting vigorous behaviour.
- Eg Egocentrism. Self-centredness.

- H Happiness and contentment
- Um Union-mindedness. Positive and negative orientations to unions and matters clearly related to unions (e.g. striking) Interest in union matters.
- Ev Evaluation. Straightforwardly moral evaluations.
- id Identification with subject's self.
- Not possible to fit into above classification. A decision was made to include references simply to family in this category.

Of these categorisations only the first six were subsequently processed. Constructs categorised as 'id' and '-' were discarded.

The categorisations were those which suggested themselves to the writer after detailed but unstructured study of the processed data for all subjects. Clearly they are not the product of a completely open-minded view of the data. The categories themselves have theoretical implications. The writer did not at the time fully comprehend all those implications for he is by training a sociologist, whose limited psychological expertise has been gained from working with psychologists as colleagues. Without realising it the writer was using categories some of which closely resemble those factors which Osgood derived from analysis of semantic differentials.<sup>1</sup>

Semantic differentials are generated by asking subjects to rate the object on a bipolar adjectival scale. Examples of such adjectival poles are fair - unfair, strong - weak, and active - passive. The scale provides a range of points, including a middle, neutral point, which the subject can use according to how like one of the adjectives, and

---

<sup>1</sup> Osgood too was concerned with meaning.  
C.S. Osgood et al., The Measurement of Meaning, Urbana, University of Illinois, 1957.



how unlike the other, he considers a concept to be. From a factor analysis of a large number of cases and scales Osgood concluded that scales could be grouped into three important factorial categories.

'Three factors appear to be dominant, and these three factors emerge in roughly the same order of magnitude from most analyses. They are usually termed the Evaluative, Potency, and Activity factors. The Evaluative factor regularly appears first and accounts for up to three quarters of the extractable variance. It appears that the most important component of the reaction to a concept is a general like - or - dislike, pro - or - con, approach - or - avoid response. Examples of scales which are usually found to have a high loading on the Evaluative factor are good - bad, beautiful - ugly, fair - unfair and honest - dishonest. The second factor to appear in most analyses is a Potency factor which typically accounts for approximately half as much variance as the Evaluative factor. This second factor is concerned with power and related notions like size, weight and toughness. Strong - weak, heavy - light, rugged - delicate and hard - soft are all scales which normally have a high loading on the Potency factor. The third factor - Activity - is usually of a similar magnitude to the Potency factor, and is exemplified by scales like fast - slow, active - passive, tense - relaxed and excitable - calm. It is sometimes found that the Potency and Activity factors collapse into a single Dynamism factor, but the consistency with which the three major factors are found is such that Osgood and his colleagues have felt able to use<sup>1</sup> them as measures of the three dimensions of 'semantic space'.

Our category Evaluation seems very like Osgood's Evaluative factor, except that we have singled out moral evaluation from general evaluations. Our category Potency seems very like Osgood's Dynamism factor, combining as it does potency as an attribute and potency as manifested in vigorous activity. The author does not claim to have independently come to similar conclusions to Osgood. Certainly he had read Osgood's work in the past and remembered it without recollecting its source. Faced with apparently similar data (bipolar constructs) he had come to similar

---

1. R. Warr and G. Knapp, The Perception of People and Events, Wiley, 1968, p. 64.

conclusions by a combination of unconscious plagiarism and force of circumstances. There is an obvious evaluative element to such data. This can be seen as its 'attitudinal' element, following Fishbein's definition (see pages 23-25 ). The present writer sought to isolate as much of this element as possible - by creating the special 'evaluation' category - in order to maintain the distinction between his methods and attitudinal measures. The potency category was an equally obvious dimension relating to our subject's views of unions. It stood out as a critical part of the explanation of differing self orientations to unions and union activities.<sup>1</sup>

There are basic differences between the present analysis and that of Osgood. Both are concerned with meaning, but the writer would not label the results of his analysis measures of 'semantic space'. Osgood's scales are semantic in that they have the apparent clarity of language expressed in an objective and logical manner. They assume common understanding of meaning and universally accepted opposites. Personal constructs, though ultimately resting upon the ability of language to communicate shared meanings, allow the subject to express himself diffusely and to give his own opposites to concepts. Subjects are often surprising in what they give as opposites when given a free choice. These were given in our study. Aggressive - thoughtful. Prepared to stand up for their rights - shy. Believe the unions try to get a fair deal for their workers - believe that unions get more strength for themselves. Aims to be out for himself - aim to work

---

1. The writer concludes that if he had more clearly seen the connection with Osgood he would have more closely followed his example by separating Potency and Activity.

for a reasonable standard of living. As well as illustrating the complexity of some distinctions made, and the diffuseness with which subjects express those distinctions, these examples all show pairings that are not strict logical or semantic opposites of each other. We accept this so readily in real life that we may not even notice the fact. Semantic differentials are also prestructured (albeit on the basis of past experimentation) whilst repertory grid methods in terms of response categories are not. Semantic differentials constrain the subject with the logical structure of 'correct' linguistic forms. Repertory grids allow the subject to explain what he means in his own words, and to give operational definitions by applying the concepts to particular objects.

#### Manifest and Latent Content

A distinction is often made in content analysis between what is clearly said by words interpreted at their face value - manifest content - and what is implicit in words by making guesses about the intentions or orientation of the writer/speaker - latent content. Latent content is revealed by a consideration of large numbers or groups of words. This is similar in principle to the manner in which the meaning to the subject of a particular construct in a repertory grid is made more clear to the observer by a consideration of its relationship to other constructs, and the applications of those constructs. It is in both cases a matter of content. In the present study, however, no distinction was made between manifest and latent meanings. There were two reasons for this. Firstly, latent content is often taken to mean 'underlying attitude', whilst we wished to restrict

ourselves to meaning. Meaning is never fully manifest. The observer always has to interpret, especially if he wishes to convert the particular to the general. In-as-far-as our categories are all more general than the subject responses, and have theoretical connotations to the researcher not necessarily in the mind of the subject, they inevitably require that we go beyond the face value of responses to be categorised. It was not at the time felt that the manifest/latent distinction was particularly helpful to what we were trying to accomplish. Secondly, the central practical difficulty faced by the researcher in interpreting and generalising from the repertory grids was their richness of meaning. A clinical analysis of just one grid would be a large and complex undertaking. The researcher, dealing with 149 grids, was forced to compromise the ideals of interpretation which he has put forward so strongly. The principal components analysis preserved the meaningful interrelationship of construct and element for each subject. Complexity of material and objectivity of approach at the stage of the content analysis led the researcher to take the meaning of individual constructs at their face value as much as possible, looking at the wider context only when meaning did not appear obvious.<sup>1</sup>

#### Reliability and Validity

Tests of the reliability and validity of methods and measures are an important part of the psychological approach. Tests defines these concepts very simply. 'Test reliability', he says, 'is the relationship between the test score on a particular occasion and the

---

1. It will be seen that in subsequent analysis constructs and elements were considered only in the aggregate, rather than as particular configurations for individual subjects. Efforts were then made to reconstruct configurations at the group level.

score on the same test on a subsequent occasion.'<sup>1</sup> Of validity Keats says, 'For many purposes an objective test must be shown to be valid in terms of predicting performance on an outside criterion.'<sup>2</sup>

Reliability is thus the stability of a measure, and reliability can itself be measured as internal consistency, repeat reliability, split-half reliability and parallel forms of reliability.<sup>3</sup> Measures of validity on the other hand, should show the extent to which the method under investigation really measures that which it purports to measure. The problem here is in finding an independent criterion whose relationship to a factor is known, where the relationship of the measure to that factor under investigation is also known, or thought to be known. In practice the distinction between reliability and validity becomes blurred. The best estimate of validity may be performance on another, different, test. An assumption is that the other test is valid, and for this reason Kelly is said to have defined validity as 'the capacity of a test to tell us what we already know'.<sup>4</sup>

Bennister is skeptical about the routine application of standard tests of reliability and validity to repertory grids.<sup>5</sup> He proposes

- 
1. J.A. Keats, An Introduction to Quantitative Psychology, Wiley, 1970, p. 60.
  2. J.A. Keats op. cit., p. 63.
  3. For explanation and discussion of these measures see an experimental textbook such as Keats's.
  4. Bennister and Fransella op. cit., p. 77.
  5. D. Bennister and J. Nair, The Evaluation of Personal Constructs, Academic Press, 1968.

that particular tests should be designed in relation to particular applications of repertory grid methods.

There are in the present study three points at which reliability and/or validity can be estimated. These are as follows. Firstly, the validity of the whole approach can be judged from the persuasiveness of the conclusions. This is not meant facetiously. The personal nature of individual grids make any outside imposed measure of validity completely arbitrary. Conclusions after the analysis of many grids, on the other hand, can be related to observation and theory from other sources.

Secondly, an estimate was made of the consistency with which subjects used the rating scales for the constructs they had generated. Twenty subjects, after they had completed the repertory grid, were asked again to rate every element on every construct. It was decided that it would not be appropriate to ask them <sup>again</sup> to generate the construct, for the retest situation would be quite different to the test situation just before it. For simplicity of analysis these additional grids were also analysed for principal components, and a comparison made between the two grids for these subjects in terms of the constructs and elements included or not included in the first principal component. This procedure has the advantage of, hopefully, testing the consistency of the web of meaning rather than simple individual evaluations. In the principal component for the first grid these 20 subjects significantly characterised 209 elements and constructs.<sup>1</sup> In their second grid 13

---

1. From a potential total of 1600.

additions and 14 omissions had changed this total to 208. There had been, therefore, 27 changes, or 13 per cent of either total. The statistical significance of these facts is not clear. Comparison of totals would obviously show a lack of significant variation. Though it would be possible to execute a chi-square test on either of the two changes individually, in relation to equal probability expecteds,<sup>1</sup> such a test would not simultaneously take changes in both directions into account. The promising sounding McNemar test for the significance of changes tests, in fact, for difference between changes themselves, and is thus not applicable. The researcher concludes simply that 13 per cent change in constructs and elements seems subjectively to indicate a high degree of consistency of rating.

Finally, a estimate was made of the extent to which different judges would place constructs in the same content analysis categories. Two of the researcher's colleagues, both psychologists, kindly agreed to categorise the constructs of 20 subjects. The first principal component for these subjects, with the researcher's own categorisations, are displayed for illustration in Appendix E. The test subjects were randomly chosen after the researcher had made categorisations for all subjects in the study. The first judge requested examples of the researcher's categorisations and was given categorisations for four different subjects (Appendix F).

---

1. For example:

	O	E
Constructs in test	209	104.5
Constructs in test also in retest	125	104.5

additions and 14 omissions had changed this total to 208. There had been, therefore, 27 changes, or 13 per cent of either total. The statistical significance of these facts is not clear. Comparison of totals would obviously show a lack of significant variation. Though it would be possible to execute a chi-square test on either of the two changes individually, in relation to equal probability expecteds,<sup>1</sup> such a test would not simultaneously take changes in both directions into account. The promising sounding McNemar test for the significance of changes tests, in fact, for difference between changes themselves, and is thus not applicable. The researcher concludes simply that 13 per cent change in constructs and elements seems subjectively to indicate a high degree of consistency of rating.

Finally, an estimate was made of the extent to which different judges would place constructs in the same content analysis categories. Two of the researcher's colleagues, both psychologists, kindly agreed to categorise the constructs of 20 subjects. The first principal component for these subjects, with the researcher's own categorisations, are displayed for illustration in Appendix E. The test subjects were randomly chosen after the researcher had made categorisations for all subjects in the study. The first judge requested examples of the researcher's categorisations and was given categorisations for four different subjects (Appendix F).

---

1. For example:

	O	E
Constructs in test	209	104.5
Constructs in test also in retest	195	104.5



It will be seen that this did not cause him to be very much closer to the researcher in his judgements than was the second judge. That second judge when faced with Evaluation defined as 'straightforwardly evaluative statements' pointed out that he would include in this category intellectual evaluations as well as moral evaluations. This caused the researcher to make explicit in his instructions that he meant 'straightforwardly moral evaluations'. He asked the judge to reclassify his intellectual evaluation categorisations. The 20 subjects used 121 constructs in their first principal component. Categorisations by any two judges could either agree or disagree. The agreement between researcher and Judge 1 was 73 per cent, between researcher and Judge 2 was 67 per cent, and between Judge 1 and Judge 2 was 67 per cent. The instructions to the judges were not explicit as to manifest any latent content - the point taken in the previous section. Lack of consensus on the 'width' of interpretation may be responsible for some of the inter-coder differences. If we test agreement/disagreement by chi-square one sample, with a null hypothesis of equal probability of agree or disagree, we get chi-square values<sup>1</sup> which are significant at greater than .001, with one degree of freedom. Obviously, if we allow greater chance probability of disagree than agree the significance of the findings appears even greater. It is noted that chi-square is only appropriate to independent observations, whilst the independence of our content analysis categorisations is to some extent suspect. Chi-square is the statistic most commonly used in the research reported here. The

---

1. Chi-square values of 25.00, 16.76, and 13.89, respectively.

writer would defend his use of chi-square by pointing to the disagreement which seems to inevitably occur whenever a statistic is applied to empirical data, and by demonstrating in Appendix G that he did try very hard to find something better, but without success. In any event it is not the matter of independence of variables per se which is important in chi-square, but that N may be artificially inflated. The size of N is often critical in nonparametric statistics in causing the relationship investigated to be seen as significant or not significant. Our decision (p.39 ) to process only polar categorisations rather than grades compels us to use nonparametric statistics of some kind. The fact, however, that we allocate subjects positive or negative on content analysis categories, ignoring the number of constructs involved in making that allocation, means that the most closely related variables have not been double counted at all.

## CHAPTER 5

### THE MAIN ANALYSIS

The steps in the research process so far have been:

- (a) the administration of a modified repertory grid to certain clerical workers in order to elicit their personal construct systems,
- (b) the analysis of every grid for principal components,
- (c) the discarding of all grids where 'self' was not significantly characterised, and the discarding from the remainder of all elements and constructs not meeting required significance levels, within the first principal component, and
- (d) the categorisation of each construct in one of six content categories.

The 100 subjects characterising self are 10 clerical male union members (CMU), 3 clerical male non-union members (CMN), 37 clerical female union members (CFU), 8 clerical female non-union members (CFN), 28 manual male union members (MMU), and 14 manual female union members (MFU). For each we have a principal component which characterises several elements from the list : self, father, mother, husband/wife/boyfriend/girlfriend, boss, friend at work, shop-floor worker, union member, union representative, and striker. In the analysis these descriptions are arranged in four element groups.

- 1. self
- 2. family - father, mother and husband/wife/boyfriend/girlfriend.
- 3. workfellows - boss and friend at work.

4. industrial relations characters - shop-floor worker, union member, union representative and striker.<sup>1</sup>

It was hoped that comparisons involving these groupings would illuminate the way in which self oriented himself to others.<sup>2</sup>

The constructs in each subject's principal component have been each assigned one of six categories: workmindedness, potency, egocentrism, happiness, union mindedness and evaluation.

The elements in each subject's principal component were then assigned a positive or negative score on the relevant content analysis categories, according to which end they had been of the original constructs. For the most part element groups emerged as being deployed consistently at one end only of the principal component. In those few cases (one element group for each of six subjects) where they were split an average of the original repertory grid gradings was used to locate the group as a whole in the content analysis categories. In most cases the location of the group and its parts were the same.

- 
1. Whilst categorisations 1, 2 and 3 are matters of fact, category 4 involves some implicit hypotheses about the way in which self sees these elements. A design fault not obvious in the pilot study, which was conducted on clerical workers alone, is that 'shop-floor worker' will not have the same connotations for manual workers as for clerks. It will be further noted that the number of elements in each element group is not the same. This does not affect the comparative analysis, which is in terms of element groups, as described in the next paragraph. It may have affected the frequency with which elements were significantly characterised (as revealed by the principal components analysis). Although subjects were asked to grade all elements on all constructs it remains that the minority group of 'workfellows' was so rarely significantly characterised that it takes little part in subsequent analysis.
  2. It was found in the pilot study that those clerical subjects always identified with family and contrasted themselves with industrial relations characters.

The main analysis is structured as follows:

I Significance of variables. How does the sample, or subsample, see itself on each construct category? For example, do clerks see themselves as of high or low potency, or are they equally divided?

II Comparison of variables

(a) within element group. Does that part of the sample, or subsample, which sees itself, or family, or workfellows, or IR characters, as high (or low)<sup>1</sup> on a variable also see that variable as high (or low), on other variables? For example, do clerks who see themselves as highly workminded also see themselves as highly unionminded?

(b) between element groups. Does that part of the sample, or subsample, which sees itself, or family, or workfellows, or IR characters, as high (or low) on a variable, also see other element groups as high (or low) on that same variable? For example, do clerks who see themselves as of low potency also see IR characters as of low potency?

III Comparison of subsamples. How do subsamples compare on variable scores for given orientations? For example, do clerks see themselves as less unionminded than manual workers see themselves as unionminded?

IV Characteristics of sample

(a) description. For sample and subsamples description according to occupation, union membership, sex, age and length of service.

---

1. whichever is significant.

(b) comparison. Comparisons between subsamples on descriptive characteristics. For example, do clerks have greater length of service than manual workers?

V Orientations to unions and family. Do the sample and subsamples place self at the same end of constructs as they place IR and family characters (identify), or at the opposite end (contrast)? For example, do clerical workers identify or contrast themselves with IR characters?

An examination of the categorisations made in the content analysis seemed to indicate a certain configuration of classifications. This involved positive scores on some categories, and negative scores on others. In order to make this configuration as clear as possible some of the content dimensions were reversed so as to make the configuration involve a positive score on all categories. The name of these dimensions was similarly reversed. Hence potency became impotence, egocentrism became selflessness, and unionmindedness became non-union mindedness.

#### Identifiers

It will be a convenient shorthand to first define a 'clerical stereotype' and a 'manual stereotype'.

Clerical stereotype - highly workminded  
highly impotent  
highly selfless  
highly happy  
highly non-unionminded

Manual stereotype = low on workmindedness  
                            low on impotence  
                            low on selflessness  
                            low on happiness  
                            low on non-unionmindedness

In what follows it should be borne in mind that adherence to these stereotypes as a whole is not tested, although the analysis has implications for this matter of the total stereotype profile. The analysis reported here is in terms of individuals variables and of the relationships between pairs of variables. The tests applied are not tests of the degree of association between variables (as in correlation analysis) but are tests designed to show whether two sets of figures or samples could have come from the same population, or whether they are significantly different. They are thus tests of specific hypotheses. Those hypotheses are stated in this subsection.

#### I Significance of variables

The hypotheses, expressed in general form, are :

- (i) that all clerical subsamples tend to see themselves, family and workfellows in terms of the clerical stereotype,
- (ii) that all clerical subsamples tend to see IR characters in terms of the manual stereotype,
- (iii) that all manual subsamples tend to see themselves, family, workfellows and IR characters in terms of the manual stereotype,
- (iv) that all clerical subsamples tend to see themselves, family and workfellows as high on evaluation,
- (v) that all clerical subsamples tend to see IR characters as low on evaluation,
- (vi) that all manual subsamples tend to see themselves, family and IR characters as high on evaluation, and

- (vii) that all manual subsamples tend to see workfellows as low on evaluation.

There are no hypotheses relating to the total sample. The null hypotheses are that subjects are equally likely to put a given character as high or low on the variables, of which in total there are six. The tests are chi-square one sample and the binomial test.

## II A Selective comparison of variables (a) within the element group

The element groups are self, family, IR characters and workfellows. The comparison here is between the variables used by subjects to describe a given group of elements or characters. The general hypothesis is that subjects will tend to use the six variables in a consistent way. That is, if they see a character as high on a variable, they will tend to see that same character as high on another variable, and vice versa. At its simplest, therefore, the hypothesis is that pairs of variables expressed as joint frequencies will tend to vary together in the same direction.

Only variables found in previous analysis to be individually significantly are used, and hypotheses are based on the findings relating to the significance of individual variables. This has the result that there is no special case involving manual subsample's use of evaluation - which hypothetically could have been in the reverse direction to other variables used to describe self, family and IR characters, but which is in fact in the same direction. Chi-square one sample and binomial tests are used, the latter being one-tailed. Analysis is provided for the largest subject aggregations of all, clerical and manual.



In operational terms the hypotheses are tested by taking that end of a variable known to be significantly used, and generating the joint frequencies of this with other variables describing the same element group. An example will make this more clear. In Figure 7 below (Table 193 in Appendix J), from all subjects those seeing themselves as highly workminded are taken. Whether they see themselves as high or low on impotence is ascertained and compared to a null hypothesis of equal probability. The null hypothesis is always that the subject is equally likely to put the given character as high or low on the second variable.

Figure 7. Association between Workmindedness and Potency in use of Self-image by Total Sample

		ALL / SELF	
		highly workminded	
ALL/SELF <sub>low</sub>	impotence <sub>high</sub>	O	E
		5	23
		41	23
		missing	

Chi-square = 28.17 with 1 degree of freedom significant at better than .01

key: O = observed  
E = expected

## II A Selective comparison of variables (b) between element groups

The analysis is similar in many respects to II(a), except that comparisons are made, for given variables, between groups of elements or characters. The general hypothesis is that subjects tend to identify with family, in that they describe family in similar terms to the way they describe themselves, and tend to contrast themselves with IR

characters, in that they describe IR characters using opposite poles of variables to those they use to describe themselves. It is to be noted that an initial hypothesis might have been that the manual subsample would identify with IR characters, but preceding analysis has already shown that this is not likely to be so. In any event, chi-square one sample is used throughout and the direction of hypothesised difference from expectation is not important.

For example, in Figure 8 below (Table 328 in Appendix K) subjects from the total sample who see themselves as highly workminded are taken, and whether they see IR characters as highly workminded or not is ascertained. This is compared to a null hypothesis that they will be equally likely to see IR characters as high or low on workmindedness. Comparisons are made for the largest aggregations of subjects - all, clerical and manual -

Figure 8. Association between Self Workmindedness and IR Workmindedness Perceived by Total Sample

		ALL / SELF	
		highly workminded	
		O	E
ALL/IR	low	52	26
	high	0	26

missing 45

Chi-square = 52.00 with 1 degree of freedom significant at better than .01

key: O = observed  
E = expected

between all element groups except workfellows<sup>1</sup>, and using the same variable. The null hypothesis is always equal probability of high or low on the variable for the second element group as the first.

### III A comparison of subsamples

Comparisons are made between the subsamples on given variables and element groups. The general hypothesis is that there is a difference between relevant subsamples in how their members describe themselves and other characters or elements. The null hypothesis is of no difference. The test is by chi-square for two independent samples, and Fisher exact probabilities.<sup>2</sup>

For example, Figure 9 (Table 382 in Appendix L) compares the self workmindedness of clerical and manual subsamples. Do these subsamples have similar proportions seeing themselves as highly workminded, and vice versa.

Figure 9. Comparison of Clerical and Manual Workers' use of Self Workmindedness

Elements		SELF	
Subsample		Clerical	Manual
Variable	low	0	3
	high	33	19
workmindedness		missing: clerical 25 manual 20	

Chi-square = 2.48 with 1 degree of freedom not significant

1. Variables individually not significant
2. All Fishers are significant for both one and two tails, so which is appropriate need not be debated

The comparisons are clerical-manual, clerical male union member - manual male union member, clerical female union member - manual female union member, male - female, CNUM - CFUM, MNUN - MFUM, union member - non-union member, CFUM - clerical female non-member.

IV Characteristics of Sample (a) description  
(b) selected comparisons

The description is tabulated for the total sample and all subsamples by all descriptive variables. Those variables are occupation, union membership, sex, length of service and age. Occupation can take the values clerical or manual, union membership the values union member or non-union member, sex the values male or female, length of service the values short (under four years) or long (four years and over), and age the values young (under forty years) or old (forty years and over).

Comparisons have been made of all the subsamples by all descriptive variables with null hypotheses of no difference. The comparisons between most subsamples do not give any significant results and are not reported at all. Worthwhile comparisons involve those subsamples which have been revealed in III A Comparison of Subsamples to possess significant differences in dependent variables. That is clerical-manual and male-female. They are tested here by chi-square for two independent samples, and Fisher exact probabilities.<sup>1</sup> The composition of the total sample is tested for difference from equal probability by use of the chi-square one - sample test.

---

1. All insignificant for both one and two tails.

#### V Orientation to Unions

This data is intended to summarise the respondent's orientations towards union matters, by defining them as contrasting or identifying themselves (or neither) with the union related characters shop-floor worker, union member, union representative and striker (the IR element group).

To do this the first principal component of each subject's repertory grid was examined. Subjects putting themselves on one side or the other of this group of constructs had already been selected. It was now ascertained whether they placed IR characters at the same (identify) or opposite (contrast) end to self. Where those characters were split - some at the same end as self and some at the other - a simple majority was taken to indicate direction of orientation. Where the split was equal the orientation was taken to be in 'neither' direction.<sup>1</sup> It may seem to be stretching the point to give such a positive direction to a 2-1 split, but in the two cases where this occurred the isolated character was shop-floor worker, who is a fringe member of the group of IR characters. The context left no doubt in those two cases as to the nature of the subjects' views. In fact, in the vast majority of cases a clear and uncomplicated contrast was observed. The general hypothesis is that clerical workers will tend to contrast themselves with IR characters, and that manual workers will tend to identify with IR characters.

---

1. If no IR characters were significantly characterised according to the principal components analysis, the designation was also 'neither'.

Findings for the total sample are compared for significance to the expectation of equal probability of contrast or identify and, secondly, to the expectation that clerical workers will contrast themselves with IR characters whilst manual workers identify. The null hypotheses are thus of no difference to the projected results of these expectations. Significance is tested by chi-square one - sample with one degree of freedom.

Orientations for particular subsamples are examined by applying a one-tailed binomial test to each subsample. The hypothesis for clerical subsamples is that they will contrast themselves with IR characters. The hypothesis for manual subsamples is that they will identify with IR characters. Null hypotheses are of no difference to the projected results of equal probability of contrast/identify.

The manual union member subsample is compared to the rest of the sample for possible difference (null hypothesis no difference), using chi-square for two independent samples with one degree of freedom.

In every case 'neithers' are ignored.

#### Orientation to Family

This analysis parallels that of orientation to unions. In this instance the data is intended to summarise the respondent's orientation towards family characters, by defining themselves as contrasting or identifying themselves (or neither) with the family characters father, mother and boyfriend/girlfriend/husband/wife. The method is the same as before. The general hypothesis is that all subjects will tend to identify themselves with family.

Findings for the total sample are compared to only the one expectation - of equal probability of contrast or identity. Manual and clerical subsamples are not expected to differ in their orientation to family. The null hypothesis is of no difference to that expected from equal probability. The test is chi-square one-sample with one degree of freedom.

Orientations for particular subsamples are again examined by a one-tailed binomial test.

The manual male union member subsample is compared to the rest of the sample for possible difference (null hypothesis no difference), using chi-square for two independent samples with one degree of freedom.

In all the above cases 'neithers' are ignored, but because there seems to be a possibly significant difference in the incidence of neithers these are compared for two subsamples using chi-square for two independent samples, with one degree of freedom.

#### Statistical Tests

The required level of significance ( $\alpha$ ) decided upon was .05. Manipulation of the data was aided by the use of the SPSS computer package.<sup>1</sup> The statistical tests provided by that package were not suited to the data, and these were drawn from Siegel's 'Nonparametric Statistics for the Behavioural Sciences'.<sup>2</sup> For the most part analysis was of 2 x 2 contingency tables, giving one degree of freedom.

---

1. H. Lie, D. Dent and C. Hadlari Hull, 'Statistical Package for the Social Sciences', McGraw-Hill, New York, 1970.

2. S. Siegel, 'Nonparametric Statistics for the Social Sciences', McGraw-Hill, Tokyo, 1956

Chi-Square One-Sample Test (Siegel p. 43)

Expecteds were generated by a null hypothesis that there was an equal probability of a high or low score on the variable. The test is one-tailed, but is applicable with no modification whichever the direction of divergence of the actual data away from the 'expected'. It, therefore, does not matter whether or not there is a directional hypothesis, or whether or not it is being confirmed. The critical value for the .05 significance level is 3.84, with one degree of freedom.

Binomial Test (Siegel p. 250)

Where any expected value in the one-sample situation was less than 5 the binomial test was applied. Tables in Siegel give direct readings of actual probabilities for  $N$  of 5 and over (less than this was taken to indicate insignificance) when  $P = Q = \frac{1}{2}$ . The test is one-tailed where there is a directional hypothesis, and two-tailed where there is not.

Chi-Square for Two Independent Samples (Siegel p. 107)

The comments made for chi-square one-sample apply here, except that the null hypothesis is of no difference between the samples. Expecteds are calculated by multiplying the marginal totals for each cell and dividing by  $N$ . The critical value (again 3.84 for .05 significance) is a measure of the divergence of the data from these expected values.



Fisher Exact Probabilities (Siegel p. 256)

Where in the two sample case  $N$  is between 3 and 19 the Fisher test was applied. Above this level chi-square was used, below this level insignificance was assumed. Siegel gives a table from which significance levels can be read directly. Hence the actual probabilities were not calculated and are not reported.

## CHAPTER 6

### RESULTS

#### Summary of Significant Relationships

##### I Significance of Variables $\alpha = .05$

Only variables found to be significant are listed here. Data for all variables is listed in Appendix H and numbered consecutively. By significance is meant that subjects used the variable in a consistent way (high or low) to make distinctions about elements (self, IR characters, family, workfellows). Nothing is said about the proportion of subjects using the variable, as opposed to not using it,<sup>1</sup> although when this falls to low levels it becomes impossible to attribute significance to the distribution of those who do.

ALL SUBJECTS together who use the following variables in relation to THEMSELVES tend to do so in this manner:

1. highly workminded
2. highly impotent
3. highly selfless
4. highly happy
5. highly non-unionminded
6. high on evaluation

---

1. It is impossible, given the techniques used, to say how many subjects we would expect to use given variables. There is thus no standard against which to test the significance of those who do.

ALL SUBJECTS together who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

7. low on workmindedness (highly non-workminded)
8. low on impotence (highly potent)
9. low on selflessness (highly egocentric)
10. low on happiness (highly unhappy)
11. low on non-unionmindedness (highly unionminded)
12. low on evaluation

ALL SUBJECTS together who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

13. highly workminded
14. highly impotent
15. highly selfless
16. highly happy
17. high, non-unionminded
18. high on evaluation

ALL CLERICAL workers together who use the following variables in relation to THEIR WORK tend to do so in this manner:

25. highly workminded
26. highly impotent
27. highly selfless
28. highly happy
29. highly non-unionminded
30. high on evaluation

ALL CLERICAL workers together who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

- 31. low on workmindedness
- 32. low on impotence
- 33. low on selflessness
- 34. low on happiness
- 35. low on non-unionmindedness
- 36. low on evaluation.

ALL CLERICAL workers together who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

- 37. highly workminded
- 38. highly impotent
- 39. highly selfless
- 40. highly happy
- 41. highly non-unionminded
- 42. high on evaluation

CLERICAL MALE UNION MEMBERS who use the following variables in relation to THEMSELVES tend to do so in this manner:

- 49. highly workminded
- 53. highly non-unionminded
- 54. high on evaluation

CLERICAL MALE UNION MEMBERS who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

- 55. low on workmindedness
- 60. low on evaluation

CLERICAL MALE UNION MEMBERS who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

- 61. highly workminded
- 65. highly non-unionminded

CLERICAL FEMALE UNION MEMBERS who use the following variables in relation to THEMSELVES tend to do so in this manner:

- 73. highly workminded
- 74. highly impotent
- 75. highly selfless
- 76. highly happy
- 77. highly non-unionminded
- 78. high on evaluation

CLERICAL FEMALE UNION MEMBERS who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

- 79. low on workmindedness
- 80. low on impotence
- 81. low on selflessness
- 82. low on happiness
- 83. low on non-unionmindedness
- 84. low on evaluation

CLERICAL FEMALE UNION MEMBERS who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

- 85. highly workminded
- 86. highly impotent
- 87. highly selfless
- 88. highly happy
- 89. highly non-unionminded

CLERICAL FEMALE NON-UNION MEMBERS who use the following variables in relation to THEMSELVES tend to do so in this manner:

101. highly non-unionminded

CLERICAL FEMALE NON-UNION MEMBERS who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

107. low on non-unionmindedness

CLERICAL FEMALE NON-UNION MEMBERS who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

113. highly non-unionminded

ALL MANUAL workers together who use the following variables in relation to THEMSELVES tend to do so in this manner:

121. highly workminded

122. highly impotent

123. highly selfless

124. highly happy

125. highly non-unionminded

126. high on evaluation

ALL MANUAL workers together who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

127. low on workmindedness

128. low on impotence

129. low on selflessness

130. low on happiness

131. low on non-unionmindedness

132. low on evaluation

ALL MANUAL WORKERS together who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

- 133. highly workminded
- 134. highly impotent
- 135. highly selfless
- 136. highly happy
- 137. highly non-unionminded
- 138. high on evaluation.

MALE MANUAL UNION MEMBERS who use the following variables in relation to THEMSELVES tend to do so in this manner:

- 147. highly selfless
- 148. highly happy
- 149. high on evaluation

MALE MANUAL UNION MEMBERS who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

- 152. low on impotence
- 153. low on selflessness
- 154. low on happiness
- 155. low on non-unionmindedness
- 156. low on evaluation

MALE MANUAL UNION MEMBERS who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

- 157. highly workminded
- 158. highly impotent
- 160. highly happy
- 161. highly non-unionminded
- 162. high on evaluation

MALE UNION MEMBERS who use the following variables in relation to WORKFELLOWS tend to do so in this manner:

165. low on selflessness

FEMALE MANUAL UNION MEMBERS who use the following variables in relation to THEMSELVES tend to do so in this manner:

169. highly workminded

170. highly impotent

173. highly non-unionminded

FEMALE MANUAL UNION MEMBERS who use the following variables in relation to IR CHARACTERS tend to do so in this manner:

175. low on workmindedness

176. low on impotence

178. low on happiness

179. low on non-unionmindedness

FEMALE MANUAL UNION MEMBERS who use the following variables in relation to FAMILY CHARACTERS tend to do so in this manner:

181. highly workminded

182. highly impotent

185. highly selfless

187. highly non-unionminded

Of 132 variables tested 107 (81%) were found to be used in a significant manner. 25 (19%) were not significant, of which variables related to workfellows accounted for over half (55%). The variables did not differ greatly in the extent to which they were significant/insignificant. Out of 32 mentions, workmindedness was insignificant 12 times, impotence 15, selflessness 16, happiness 12, non-unionmindedness



10, and evaluation 15 times. Insignificance was largely caused by N falling too low for analysis - 51 times or 60% of total insignificants. A further 18 or 21 per cent occurred where expecteds fell so low that the binomial test had to be used. The incidence of insignificance correlates perfectly by rank order with the size of the subsample in this fashion:

All <sup>1</sup>	N = 100	insignificants	= 6		
Clerical	N = 58	"	= 6		
Manual	N = 42	"	= 6		
CFU	N = 37	"	= 7		
MMU	N = 28	"	=10	MFU	N = 14
CMU	N = 10	"	=17	Insignificants	13
CFN	N = 8	"	=21		

It can be concluded that the variables are approximately equally used and that there are two prime causes of insignificance; sample sizes falling to too low a level, and the disinterest of subjects in characterising workfellows.

The results confirm the hypotheses that clerical subsamples will tend to see themselves and family in terms of the clerical stereotype, and will see IR characters in terms of the manual stereotype. The hypotheses for manual subsamples are not confirmed. For these manual workers the reverse is found: they also tend to see themselves and family in terms of the clerical stereotype and IR characters in terms of the manual stereotype. These findings are clear-cut for the larger groupings of ALL, CLERICAL, and MANUAL. The more complicated pattern for the smaller groupings is discussed in the next chapter.

---

1. CMF is included in ALL and in Clerical but is too small (N = 3) for separate analysis.

II A Selective Comparison of Variables (a) within element group  $\lambda = .05$

The following relationships should be considered as an extension of those previously described under I Significance of Variables. A variable does not appear here unless it has been previously demonstrated that subjects tend to make significant distinctions using it. Hence there is<sup>here</sup> no comparison of variables used to describe workfellowes. Also, for one variable involved in each relationship only one extreme is used. That is the significant extreme (e.g. for all subjects only those seeing themselves as highly workminded are considered). There is thus a loss of a small number of subjects who do use the other extreme (e.g. those of all subjects who see themselves as non-workminded). As the calculations are based on joint frequencies there is also the loss of those subjects who use one but not both variables in a significant manner. The losses mean that only the larger aggregations - all clerical and manual - can be meaningfully analysed. In the main, only those relationships found to be significant are listed here. Data for all relationships is listed in Appendix J and numbered consecutively. By significant is meant that subjects using a certain variable in a certain manner tend also to use another in certain (and, in fact, similar) manner, within a given element group (e.g. to describe self).

ALL SUBJECTS together who see THEMSELVES as HIGHLY WORKMINDED and use the following variable tend to see themselves as:

- 193. highly impotent
- 194. highly selfless
- 195. highly happy
- 196. highly non-unionminded

197. high on evaluation

All 10 additional joint frequencies between those variables, numbered 198 to 207, are also significantly related in a like manner.

ALL SUBJECTS together who see IR CHARACTERS as LOW ON WORKMINDEDNESS and use the following variable tend to see IR characters as:

208. low on impotence

209. low on selflessness

210. low on happiness

211. low on non-unionmindedness

212. low on evaluation

All 10 additional joint frequencies between those variables, numbered 213 to 222, are also significantly related in a like manner.

ALL SUBJECTS together who see FAMILY CHARACTERS as HIGHLY WORKMINDED and use the following variable tend to see family characters as:

223. highly impotent

224. highly selfless

225. highly happy

226. highly non-unionminded

227. high on evaluation

Of the 10 additional joint frequencies between those variables, numbered 228 to 237, all were also significantly related in a like manner except: 236. family happiness with family evaluation - not significant.

ALL CLERICAL workers together who see THEMSELVES as HIGHLY WORKMINDED and use the following variable tend to see themselves as:

- 238. highly impotent
- 239. highly selfless
- 240. highly happy
- 241. highly non-unionminded
- 242. high on evaluation

Of the 10 additional joint frequencies between those variables, numbered 243 to 252, all were significantly related in a like manner.

ALL CLERICAL workers together who see IR CHARACTERS as LOW ON WORKMINDEDNESS and use the following variable tend to see IR characters as:

- 253. low on impotence
- 254. low on selflessness
- 255. low on happiness
- 256. low on non-unionmindedness
- 257. low on evaluation

Of the 10 additional joint frequencies between these variables, numbered 258 to 267, all were also significantly related in a like manner

ALL CLERICAL workers together who see FAMILY CHARACTERS as HIGHLY WORKMINDED and use the following variable tend to see family characters as:

- 268. highly impotent
- 269. highly selfless
- 270. highly happy
- 271. highly non-unionminded
- 272. high on evaluation

Of the 10 additional joint frequencies between those variables, numbered 273 to 282, all were also significantly related in a like manner except:

- 277. Family selflessness with family happiness - not significant
- 280. family happiness with family non-unionmindedness - not significant
- 281. family happiness with family evaluation - not significant

ALL MANUAL workers together who see THEMSELVES as HIGHLY WORKMINDED and use the following variable tend to see themselves as:

- 283. highly impotent
- 284. highly selfless
- 285. highly happy
- 286. highly non-unionminded
- 287. high on evaluation

Of the 10 additional joint frequencies between those variables, numbered 288 to 297, all were also significantly related in a like manner except:

- 296. self happiness with self evaluation - not significant.

ALL MANUAL workers together who see IR CHARACTERS as LOW ON WORKMINDEDNESS and use the following variable tend to see IR characters as:

- 298. low on impotence
- 299. low on selflessness

- 300. low on happiness
- 301. low on non-unionmindedness
- 302. low on evaluation

Of the 10 additional joint frequencies between those variables, numbered 303 to 312, all were also significantly related in a like manner except:

- 311. IR happiness with IR evaluation - not significant.

ALL MANUAL workers together who see FAMILY CHARACTERS as HIGHLY WORK-MINDED and use the following variables tend to see family characters as:

- 313. highly impotent
- 314. highly selfless
- 315. highly happy
- 316. highly non-unionminded
- 317. high on evaluation

of the 10 additional joint frequencies between those variables, numbered 318 to 327, all were also significantly related in a like manner except:

- 326. family happiness with family evaluation - not significant.

Of the 134 relationships tested 127 were found to be significant, and 7 (5.2%) insignificant. Of those insignificant relationships 5 concerned the happiness-evaluation joint frequency, whilst the other 2 were happiness with selflessness and with non-unionmindedness. 5 had frequencies too small for analysis and 2 were large enough only for the binomial test. The prime cause of insignificance seems therefore to have been the 'leakage' of subjects described at the beginning of this subsection, combined with the relatively low usage of the happiness and evaluation variables.

Previous analysis (I Significance of Variables) has shown that the major groupings of subjects tend to see self and family as high on each of the six content analysis variables, and IR characters as low. Here it is shown that within the ALL, CLERICAL and MANUAL groupings those subjects who see self and family as high on a given variable also tend to see self and family as high on other variables, and that those subjects who see IR characters as low on a given variable also tend to see IR characters as low on other variables. The hypothesis is confirmed that subjects use the six variables in a consistent way. This provides some support for viewing the defined clerical and manual stereotypes as having some validity at the individual level as well as in the aggregate.

II A Selective Comparison of Variables (b) between element groups  $\alpha = .05$

The comments made as a preliminary to II(a) apply here also. Data tables are to be found in Appendix K.

ALL SUBJECTS together who see THEMSELVES as HIGHLY WORKMINDED and use the following variable tend to do so in this manner:

328. IR characters low on workmindedness

329. Family characters high on workmindedness

ALL SUBJECTS together who see THEMSELVES as HIGHLY IMPOTENT and use the following variable tend to do so in this manner:

330. IR characters low on impotence

331. Family characters high on impotence

ALL SUBJECTS together who see THEMSELVES as HIGHLY SELFLESS and use the following variable tend to do so in this manner:

332. IR characters low on selflessness

333. Family characters high on selflessness

ALL SUBJECTS together who see THEMSELVES as HIGHLY HAPPY and use the following variable tend to do so in this manner:

334. IR characters low on happiness

335. Family characters high on happiness

ALL SUBJECTS together who see THEMSELVES as HIGHLY NON-UNIONMINDED and use the following variable tend to do so in this manner:

336. IR characters low on non-unionmindedness

337. Family characters high on non-unionmindedness

ALL SUBJECTS together who see THEMSELVES as HIGH ON EVALUATION and use the following variable tend to do so in this manner:

338. IR characters low on evaluation

339. Family characters high on evaluation

All joint frequencies between IR characters and family characters for all the preceding variables, and numbered 340 to 345, are significantly related in the manner: ALL SUBJECTS who see IR CHARACTERS as LOW tend to see FAMILY CHARACTERS as HIGH.

ALL CLERICAL workers together who see THEMSELVES as HIGHLY WORKMINDED and use the following variable tend to do so in this manner:

346. IR characters low on workmindedness

347. Family characters high on workmindedness

ALL CLERICAL workers together who see THEMSELVES as HIGHLY IMPOTENT and use the following variable tend to do so in this manner:

348. IR characters low on impotence

349. Family characters high on impotence

ALL CLERICAL workers together who see THEMSELVES as HIGHLY SELFLESS and use the following variable tend to do so in this manner:

350. IR characters low on selflessness

351. Family characters high on selflessness



ALL CLERICAL workers together who see THEMSELVES as HIGHLY HAPPY and use the following variable tend to do so in this manner:

352. IR characters low on happiness

353. Family characters high on happiness

ALL CLERICAL workers together who see THEMSELVES as HIGHLY NON-UNIONMINDED and use the following variable tend to do so in this manner:

354. IR characters low on non-unionmindedness

355. Family characters high on non-unionmindedness

ALL CLERICAL workers together who see THEMSELVES as HIGH ON EVALUATION and use the following variable tend to do so in this manner:

356. IR characters low on evaluation

357. Family characters high on evaluation

All joint frequencies between IR characters and family characters for all the preceding variables, and numbered 358 to 363, are significantly related in the manner: ALL CLERICAL workers who see IR CHARACTERS as LOW tend to see FAMILY CHARACTERS as HIGH.

ALL MANUAL workers together who see THEMSELVES as HIGHLY WORKMINDED and use the following variable tend to do so in this manner:

364. IR characters low on workmindedness

365. Family characters high on workmindedness

ALL MANUAL workers who together see THEMSELVES as HIGHLY IMPOTENT and use the following variable tend to do so in this manner:

366. IR characters low on impotence

367. Family characters high on impotence

ALL MANUAL workers together who see THEMSELVES as HIGHLY SELFLESS and use the following variable tend to do so in this manner:

368. IR characters low on selflessness

369. Family characters high on selflessness

ALL MANUAL workers together who see THEMSELVES as HIGHLY HAPPY and use the following variable tend to do so in this manner:

370. IR characters low on happiness

371. Family characters high on happiness

ALL MANUAL workers together who see THEMSELVES as HIGHLY NON-UNIONMINDED and use the following variable tend to do so in this manner:

372. IR characters low on non-unionmindedness

373. Family characters high on non-unionmindedness

ALL MANUAL workers together who see THEMSELVES as HIGH ON EVALUATION and use the following variable tend to do so in this manner:

374. IR characters low on evaluation

375. Family characters high on evaluation.

All joint frequencies between IR characters and family characters for all the preceding variables, and numbered 376 to 381, are significantly related in this manner: ALL MANUAL workers who see IR CHARACTERS as LOW tend to see FAMILY CHARACTERS as HIGH.

Of the 53 relationships tested all were found to be significant. Subjects overwhelmingly put family characters at the same pole of variables as they had put themselves, and IR characters at the opposite pole of variables to themselves. The hypothesis is confirmed that they all, clerical and manual, identify with family and contrast themselves with IR characters.

### III A Comparison of Subsamples $\alpha = .05$

The comparisons all designed to test for difference between subsamples in their description by variable of element or character groups along three principal dimensions - occupation, sex and union membership.

The specific comparisons made are:

#### Clerical - Manual

clerical male union member	-	manual male union member
clerical female union member	-	manual female union member

#### Male - Female

Clerical male union member	-	clerical female union member
manual male union member	-	manual female union member

#### Union member - Non-union member

clerical female union member	-	clerical female non-member <sup>1</sup>
------------------------------	---	---

Only in three instances is the null hypothesis of no difference refuted. Of total tables numbered 332 to 573 only those three showing significant difference will be here reported. The others can be seen in Appendix I.

336. Clerical workers see themselves as more non-unionminded than manual workers see themselves as non-unionminded. Note that Table 29 shows that clerical workers do significantly see themselves as non-unionminded. Table 125 shows that manual workers also significantly see themselves as non-unionminded.

---

1. There were no manual non-members in the sample, and clerical male non-members were too small in number ( $N = 3$ ) for individual analysis.

455. Females see themselves as more impotent than males see themselves as impotent. Note that Females significantly see themselves as impotent,<sup>1</sup> whilst males do not see themselves as impotent.<sup>2</sup>

458. Females see themselves as more non-unionminded than males see themselves as non-unionminded. Note that both females and males significantly see themselves as non-unionminded.<sup>3</sup>

IV Characteristics of Sample (a) description  
(b) selected comparisons

Data is found in Appendix II. Descriptive tables are numbered 574 to 586. An attempt was made to interview a sufficiently large number of both manual and clerical workers (largely successful), and of union members and non-union members (largely unsuccessful). As random sampling was not used the proportions of those categories in this sample does not reflect their proportions in the population. It is not possible to assert, for example, that manual workers in total are more unionised than are clerical workers, although of the sample

---

1. Chi-square = 31.72 significant at better than .01

2. Chi-square = 2.31 not significant

3. Females chi-square = 37.10 significant at better than .01  
Males chi-square = 8.76 significant at .01

All the above chi-squares have one degree of freedom.

this was true. No attempt was made to stratify the sample by sex, service or age, and because random sampling was not used it is again not possible to make assertions about the distribution of those characteristics in the population. Analysis of these descriptive tables is given for the total sample in tables 587 to 591 so that significant differences (from equal probability) for whatever reason can be ascertained e.g. that the sample is significantly weighted towards union membership. This may be of importance internally to the study e.g. in the light of that weighting towards union membership the prevalence of non-unionmindedness is all the more surprising. The significant findings are summarised here.

Comperison between clerical and manual, and between male and female are made in tables 592 to 598. In two instances the null hypothesis of no difference is refuted, and only these significant results are given here.

588. The total sample contains significantly more union members than non-union members.

591. The total sample contains significantly more young persons than old.

592. The clerical subsample contains significantly more non-union members than does the manual subsample, and vice versa.

593. The clerical subsample contains significantly more females than does the manual subsample, and vice versa.

In other words, the total sample is biased towards young union members, reflecting our failure to interview ununionised manual workers, whilst the clerical subsample is biased towards female non-union members, when compared to the manual subsample.

#### V Orientation of Unions

The relatively small number of tables under this and the following heading are all specifically referred to in the following text. They are, therefore, given in the text as Tables 599 to 605.

Table 599 shows that of all subjects a significantly greater number contrast themselves with IR characters by putting those characters at the opposite pole of constructs to self, than identify with IR characters by putting them at the same pole of constructs as self. This is so whether we expect equal numbers to contrast as identify, or if we expect the same number as there are manual workers to contrast.

Table 600 shows that for every individual subsample a significantly greater number of respondents contrast themselves with IR characters than identify. Only in the IMU subsample is the number of identifications or neithers at all large.

Table 601 shows that IMU does indeed have a significantly larger number of identifications with IR characters than the rest of the sample, although IMU subjects still overwhelmingly contrast rather than identify.<sup>1</sup>

---

1. Table 600

TABLE 599: Total Sample Orientation to IR Characters

	ALL		
	O	E <sub>1</sub>	E <sub>2</sub>
Identifies with IR characters	5	48	39
Contrasts with IR Characters	91	48	57

Ignores 'neithers'

key: O = observed

E<sub>1</sub> = expected under equal probability

E<sub>2</sub> = expected under occupational proportions

Chi-square 1 = 77.04 with 1 degree of freedom

Chi-square 2 = 49.92 with 1 degree of freedom

Significant 1 - at better than .01

Significant 2 - at better than .01

TABLE 600: Subsample Orientation to IR Characters

Subsample	CNU	CIR	CFU	CFN	MMU	MFU
identifies with IR characters	0	0	0	0	5	0
contrasts with IR characters	9	3	37	8	21	13
neither	1	0	0	0	2	1

Ignoring 'neithers', the probability of the occurrence of each of these distributions ( $H_0 = P = Q = \frac{1}{4}$ ) is .002, - , less than .001, .004, less than .002, less than .001, respectively. One-tailed test.

TABLE 601: Manual Male Union Member Orientation to IR Characters

Subsample	All except MMU	MMU
identifies with IR characters	0	5
contrasts with IR characters	70	21

Chi-square = 10.57  
Significant at better than .01  
Calculation ignores 'neithers'  
One degree of freedom



TABLE 600: Subsample Orientation to IR Characters

Subsample	CMU	CMR	CFU	CFR	MMU	MFU
identifies with IR characters	0	0	0	0	5	0
contrasts with IR characters	9	3	37	8	21	13
neither	1	0	0	0	2	1

Ignoring 'neithers', the probability of the occurrence of each of these distributions ( $H_0 = P = Q = \frac{1}{2}$ ) is .002, - , less than .001, .004, less than .002, less than .001, respectively. One-tailed test.

TABLE 601: Manual Male Union Member Orientation to IR Characters

Subsample	All except MMU	MMU
identifies with IR characters	0	5
contrasts with IR characters	70	21

Chi-square = 10.57  
Significant at better than .01  
Calculation ignores 'neithers'  
One degree of freedom

### Orientation to Family

Table 602 shows that of all subjects a significantly greater number identify with family characters by putting those characters at the same pole of constructs as self, than contrast with family characters by putting those characters at the opposite pole of constructs to self.

Table 603 shows that for most individual subsamples a significantly greater number of respondents identify rather than contrast themselves with family. This is not so for MMU where a level of significance is not reached.

Table 604 shows that MMU make a significantly greater number of contrasts with family than do the rest of the sample.

The occurrence of neithers seemd to be frequent and patterned. Table 605 examines one aspect of possible patterning by comparing union members who make all the 'neither' responses with non-union members who make none. The low chi-square shows this to be not statistically significant.

These analyses reinforce the findings reported in II Comparison of variables (a) within element group. There the analysis involved a comparison between those subjects using given combinations of variables. Hence there was some loss of subjects who (a) did not use the first variable in the common manner, and/or (b) did not use both of the given variables. In this present section there is no loss of subjects. The principal component

TABLE 602. Total Sample Orientation to Family

	ALL	
	O	E
Identifies with family	74	40
Contrasts with family	6	40

Ignores 'neithers'

Chi-square = 57.80 with 1 degree of freedom  
Significant - at better than .01

TABLE 603. Subsample Orientation to Family

Subsample	CMU	CMN	CFU	CFN	MMU	MFU
Identifies with family	9	1	30	8	14	10
Contrasts with family	0	0	0	0	6	0
neither	1	0	7	0	8	4

Ignoring 'neithers', the probability of the occurrence of each of these distributions ( $H_0 = P = Q = \frac{1}{2}$ ) is .002, -, less than .001, .004, .058, and .001, respectively (all except MMU significant,  $\alpha = .05$ ). Binomial test, one-tailed.

TABLE 604. Manual Male Union Member Orientation to Family

Subsample	ALL except MMU	MMU
identifies with family	60	14
contrasts with family	0	6

Chi-square = 15.38  
Significant at better than .01  
Ignores 'neithers', One degree of freedom

TABLE 605. 'Neithers' by Union Membership for Orientation to Family

	Union members	Non-union members
Positive orientation	69	11
Neutral Orientation ( 'neither' )	20	0

Chi-square = 1.85 with 1 degree of freedom  
Significant - no

for every subject is characterised contrast/identify<sup>1</sup> in relation to self. We find that the number of individuals who identify with IR characters is very small. So also is the number who contrast with family. ALL and all subsamples contrast themselves with IR characters, and ALL and all subsamples except male manual union members identify with family.

1. There is some very small loss of information for the two subjects where the overall categorisation hides some internal variation.

## CHAPTER 7

### INTERPRETATION

The data suggests that the sample as a whole tends to identify with family by describing both self and family characters in terms of what has been called the clerical stereotype - highly workminded, impotent, selfless, happy, non-unionminded and highly evaluated - and to contrast itself with IR characters by describing them in terms of what has been called the manual stereotype - highly non-workminded, potent, egocentric, unhappy, union-minded, and lowly evaluated (see Figure 10). Workfellows are very rarely significantly characterised, and are ignored in most of the analysis and interpretation. This general picture of identification with family and contrast with IR characters is true<sup>also</sup> of the subsamples comprising all clerical workers on the one hand and all manual workers on the other, and holds over three kinds of analysis - I significance of individual variables, IIb) a comparison of the use of variables by subjects to describe different element groups, and V a direct measure of orientation to family and unions.

The reader is reminded that the analysis IIa) went some way towards demonstrating the consistency of the use of these stereotypes on the individual level. These estimates of consistency provided by IIa) and IIb) provide some evidence of the validity of the methods used, as proposed on p. 10. They will not be referred to again in this chapter. Nor will the fact that IVb) revealed the total sample to be biased towards young members. Whether this bias has any part to play in explaining the views of the total sample cannot be ascertained, for the bias disappears in the subsamples and comparisons cannot be made.

This chapter is concerned primarily with an interpretation of I Significance of variables when broken down by subsample (see Figure 11). It is an attempt to make clear by comparative analysis the factors behind the views which clerks, and more surprisingly, manual workers, hold of themselves, family and IR characters.

Figure 10. Clerical and Manual use of Content Analysis Variables

<u>Subsample</u>	<u>Element Group Described</u>		
	Self	Family	IR characters
Clerical	workminded	workminded	non-workminded
	impotent	impotent	potent
	selfless	selfless	egocentric
	happy	happy	unhappy
	non-unionminded	non-unionminded	unionminded
	highly evaluated	highly evaluated	lowly evaluated
Manual	workminded	workminded	non-workminded
	impotent	impotent	potent
	selfless	selfless	egocentric
	happy	happy	unhappy
	non-unionminded	non-unionminded	unionminded
	highly evaluated	highly evaluated	lowly evaluated

Figure 11. Subsample use of Content Analysis Variables

Subsample	Element Group Described		
	Self	Family	IR characters
CMU	workminded	workminded	non-workminded
	non-unionminded	non-unionminded	
	highly evaluated		lowly evaluated
CFU	workminded	workminded	non-workminded
	impotent	impotent	potent
	selfless	selfless	egocentric
	happy	happy	unhappy
	non-unionminded	non-unionminded	unionminded
CFN	non-unionminded	non-unionminded	unionminded
MMU	-	workminded	-
	-	impotent	potent
	selfless	-	egocentric
	happy	happy	unhappy
	-	non-unionminded	unionminded
	highly evaluated	highly evaluated	lowly evaluated
MFU	workminded	workminded	non-workminded
	impotent	impotent	potent
	-	selfless	-
	-	-	unhappy
	non-unionminded	non-unionminded	unionminded

Key: CMU Clerical Male Union Members  
 CFU Clerical Female Union Members  
 CFN Clerical Female Non-union Members  
 MMU Manual Male Union Members  
 MFU Manual Female Union Members

A limited analysis can be made of the effect of union membership in isolation by comparing subsample CFU (clerical female union member) with CFN (clerical female non-union member).<sup>1</sup> CFU hold the same views as the total sample except only that they do not significantly evaluate family. CFN do not hold any views which are significantly opposed to those of CFU, but, in fact, positively hold only the following views: self and family as being highly non-unionminded, and IR characters as being highly union minded. In contrast to comparable union members (clerical females) these subjects do not feel highly workminded, impotent, selfless, happy and highly evaluated. Nor do they see family in those terms and IR characters in their opposites.

Two things need to be said at this stage. Firstly, that this comparison between union members and non-union members holds constant sex and occupation. The results may be specific to female clerical workers, and different for males and for manual workers. This is something our data is incapable of testing directly. Secondly, it must be said that the fact that virtually all subjects use the variables in the same way (that is, put given element groups at the same end of variable dimensions) is in some senses a weakness, for non-significance comes to mean not simply a large number deviating from the norm, but often that only a small number use the variable at all. It has already been noted that the significance of variables is related in a positive fashion to subsample size. The conclusion cannot be avoided, therefore, that when we compare a large subsample such as CFU (N = 37) with a small one such as

---

1. There were no non-unionised manual workers in the sample, and the male clerical non-union members subsample was too small for worthwhile analysis (N = 3).



CNU (N=8), differences in the way variables are used may at least in part be attributable to differences in sample size.<sup>1</sup>

With this caveat an analysis of the effect of sex can be attempted. The only significant relationships revealed by III A comparison of subsamples concerned occupations and sex. Clerical workers saw themselves as more non-unionminded than manual workers saw themselves. Females saw themselves as more non-unionminded than males saw themselves. As the clerical subsample is significantly biased towards female membership it is likely that a large proportion of the occupational relationship with union mindedness is, in fact, attributable to sex. Females also saw themselves as more impotent than males saw themselves and it might well be said that self potency is linked to self union mindedness through the intervening variable of sex.<sup>2</sup>

This is borne out by a comparison of subsamples CNU and CNU (clerical male union members), and of subsample MFU (manual female union members) and MMU (manual male union members).

- 
1. The analysis attempts to lean most heavily on the larger subsamples. CNU and CNU in particular have been treated with caution.
  2. Of the three subjects in the small clerical male non-union member sample all three put themselves high on potency, and two out of three put themselves high on potency. All put themselves high on non-union mindedness and were, of course, not union members. This subsample was too small for separate statistical analysis.

As has been described, CFU use the 'clerical stereotype' in reference to self and family, and the 'Manual stereotype' in reference to IR characters. CMU make significant distinctions with three variables: workmindedness, non-unionmindedness and evaluation. Self is seen as high on all three, family as high on workmindedness and non-unionmindedness, and IR characters as low on workmindedness and evaluation. There is thus broad agreement between males and females on workmindedness and non-unionmindedness, but males do not make many distinctions which females make. In particular they do not see themselves as impotent and IR characters as potent, as females do.

The first thing to note about the manual subsamples is that they do not use the 'manual stereotype' to describe themselves. They use the 'clerical stereotype' with some omissions rather than contradictions. IFU see themselves as highly workminded, impotent, happy, and non-union minded. They see IR characters as low on workmindedness, impotence, happiness and non-unionmindedness. They see family as high on workmindedness, impotence, selflessness and non-unionmindedness. IFU do not use selflessness, happiness or evaluation in relation to self, selflessness or evaluation in relation to IR characters, and happiness or evaluation in relation to family. LMU see themselves as highly selfless, happy and high on evaluation, IR characters according to the manual stereotype, and family largely according to the clerical stereotype. IFU do not characterise themselves on workmindedness, impotence, or non-unionmindedness, IR characters on workmindedness, or family on selflessness. The two manual subsamples see family and IR characters in very similar terms, except that females see the latter as low on workmindedness and males do not. The way these subsamples see themselves is quite different. Females see themselves as high on three of the

most critical of the clerical stereotype variables - workmindedness, impotence and non-unionmindedness - and males do not. There is an important area of agreement between females both clerical and manual, and males both clerical and manual. Females see themselves as impotent. Males do not.

The distinction between clerical and manual occupations can now be examined in some detail. A comparison of the total clerical subsample with the total manual subsample would seem to show no difference. Both see themselves and family in terms of the complete clerical stereotype, and IR characters in terms of the complete manual stereotype. This is interesting in itself, in that it contradicts theoretical expectation - the expectation on which was based the hypothesis that manual workers would see themselves in terms of a defined "manual stereotype". But the preceding analysis of the effects of union membership and sex has already indicated that this simple picture of the clerical/manual distinction may be misleading.

The total picture for self image of manual workers is made up of two separate halves. - males seeing themselves as selfless, happy and highly evaluated, and females seeing themselves as workminded, impotent and non-unionminded. A somewhat similar picture emerges when we consider the clerical subsamples. Clerical female union members used almost all the variables. Importantly, they described themselves and family as impotent, selfless and happy, and IR characters as potent, self-centred and unhappy, whilst clerical male union members did none of these things. Clerical female non-union members used only the variable of non-unionmindedness, suggesting the possibility that their non-membership was related to feelings of potency, in comparison with members.

So the monolithic nature of the occupational subsamples breaks down when we consider other factors, particularly sex. There are also differences between clerical and manual occupations revealed by holding sex constant. The comparison of CMU and MFU confirms that neither see themselves as impotent, but in other respects these subsamples differ markedly. Their self images are almost again two separate halves - CMU seeing themselves as workminded, non-unionminded and highly evaluated, and MFU seeing themselves as selfless, happy and highly evaluated. CMU is close to MFU except for the variable potency. The workminded - non-unionminded link seems to be common to both the female sex and clerical work. Only non-union members and male manual workers do not use these two variables to describe themselves. The female subsamples of CFU and MFU differ in their self images in that MFU does not use many of the variables used by CFU, but they agree in describing themselves as high on the important variables workmindedness, impotence and non-unionmindedness. They also agree closely in relation to family and IR characters, describing the former with the clerical stereotype and the latter with the manual stereotype. MFU is similar in this respect, except for not seeing IR characters as non-unionminded, but CMU does not describe family or IR characters in much detail at all. Family are seen as workminded and non-unionminded, IR characters as non-workminded and lowly evaluated.

The most important conclusions from the analysis would seem to be:

1. The adherence by the sample as a whole, and by both the clerical and manual subsamples in aggregate, to the clerical stereotype in describing self and family, and to the manual stereotype in describing IR characters.

2. The tentative conclusion that for clerical females union membership is positively related to feelings of impotence and workmindedness.
3. That females see themselves as more impotent and non-union-minded than males see themselves.
4. The use by females of both occupations of impotence to describe themselves and family, and of potent to describe IR characters.
5. That men do not do this (4).
6. The use by clerks of both sexes and by female manual workers of workmindedness and non-unionmindedness to describe themselves and family, and of non-workmindedness and union-mindedness to describe IR characters.
7. That male manual workers do not do this for self and do not see IR characters as non-workminded. They do see family in the same terms as 6 above. The degree to which they identify with family and contrast with IR characters is much less than other subsamples, though the IR contrast is still statistically significant.

The analysis thus provides some tentative links between the images that subjects have of themselves, family and IR characters and occupation, and between those subjects' union membership and sex.

Union membership is only partly explained in that the factors of self impotence and workmindedness were argued to be positively related to union membership only for female clerical workers (2). Self impotence and non-unionmindedness were shown to be related to sex (3) and (5) - being significant only for women- but union membership was not found to

be significantly related to sex (Table 596, Appendix H). The result is useful, in that many clerks are women, but male clerks are possibly just as likely as women to be union members and we must look again for factors relating to male union membership.

All females and clerks of both sexes made more clear their identification with IR characters by characterising themselves and family as workminded and non-unionminded (6), and IR characters as non-workminded and unionminded. The implication seems to be that workmindedness and unionmindedness are seen to be in some ways incompatible. Nevertheless, the majority of these subjects are union members. Workmindedness and non-unionmindedness has not been sufficient reason to stop them joining unions. A tentative conclusion, therefore, is that one must look for the reasons these subjects joined unions in areas other than their immediate work situation and their orientation to unions. This conclusion may not hold for male manual workers, who came closest to espousing the 'manual stereotype'. They did not view themselves as either workminded or non-unionminded, and did not see IR characters as non-workminded. Though we cannot say that they took the reverse standpoint, we can say that male manual workers did not exhibit the female and clerical pattern.

We cannot, therefore, narrow the search for factors relating to union membership of male manual workers. We can say that for female clerical workers there appears to be a complex relationship between feelings of self impotence, workmindedness and non-unionmindedness, but that this does not preclude union membership.

## CHAPTER 8

### CONCLUSION

The time has come to relate our findings back to those theoretical considerations expressed in Chapter 1. To be considered in particular is the light our work has thrown on the 'models of society' idea.

It will be recalled that basic to Lockwood's explanation of the way persons interpret their work situation, and thus to the way that work situation influences work related behaviours such as joining unions, is the complex model which those persons use to understand society and their place in it. In the first instance Lockwood described two models, the dichotomous or power model, and the hierarchical or prestige model. The power model is of a closed society composed of two opposing classes with individual betterment being only possible for the working class by means of collective action. The prestige model is of an open society of many strata within which an individual may move on his merits. Individual betterment in the prestige model is best achieved by individual striving. Manual workers supposedly see society in terms of the power model and join unions for ideological as well as instrumental reasons. Clerical workers whose work situation approximates still to the paternalistic counting house tend to see society in prestige terms and are resistant to collective organisation. In as far as clerks experience their work situation as more impersonal and bureaucratic they may come to see society in power terms, or, more likely, come to accept the necessity of collective action for the attainment of their individual

goals. This latter instrumental but non-ideological use of collective organisation Lockwood termed instrumental collectivism with family centredness.

Our research produces a picture of the self image of clerks and of the way they see industrial relations characters in terms of the six variables workmindedness, potency, egocentrism, happiness, union mindedness and evaluation. As was anticipated at the outset, this is not completely comparable with the 'models of society', as would be the case of a conventional test duplicating Lockwood's theoretical framework. But it does tell us how certain clerks described themselves and their environment when placed in a relatively free response situation.

Figure 12 shows elements of the two extreme models of society, power and prestige, set against the variables from our research to which they in substance relate. The highs and lows of the variables indicate on the left hand side the so-called "clerical stereotype", and on the right hand side the "manual stereotype".

Figure 12. Society Image compared to Self and Other Images

<u>Image of Society</u>	<u>Clerical Stereotype</u>		<u>Manual Stereotype</u>	<u>Image of Society</u>
PRESTIGE				POWER
job commitment	HIGH	workmindedness	LOW	alienation
mobility	LOW	potency	HIGH	ascription
Family centredness	LOW	egocentrism	HIGH	ideological orientation
job satisfaction	HIGH	happiness	LOW	discontent
individualism	LOW	unionmindedness	HIGH	collectivism



The prestige model of society and the clerical stereotyped self-image are congruent except at the variable <sup>of</sup> potency. Clearly a belief in the possibility of own mobility within society would be congruent with a feeling of personal potency, not of impotency. Likewise, a belief in the unchangeable nature of one's own social position would be congruent with a feeling of personal impotency, and not of potency.<sup>1</sup> Our research does not show whether our subjects did see society as of many or few strata. It does show that if they saw society as having many strata they had feelings of personal effectiveness which by our logic would be congruent with pessimism about their own chances of mobility up the social hierarchy.

This raises the possibility that what we have here is congruent with the idea of middle class instrumental collectivism and family centredness elaborated by Lockwood in his later article.<sup>2</sup> Certainly our subjects did not pursue individualism for its own sake, but for the sake of others, typically the family. One aspect of the ends for which clerks might, according to Lockwood, strive - the advancement of the family - is preserved. The old means are suggested by our low potency be seen to be increasingly ineffective, as Lockwood suggests. Where we depart from Lockwood's model is that we find a low degree of union mindedness, and hence no evidence for his hypothesised collectivism, instrumental

- 
1. Note that in fact, very few subjects claimed potency for themselves. They usually attributed it to IR characters.
  2. J. Goldthorpe and D. Lockwood, "Affluence and the British Class Structure", Sociological Review, July 1963.

or otherwise. This may to some extent reflect our decision in the content analysis to term opposition to union related activities such as striking,<sup>ss</sup> 'non-unionmindedness'. However, our finding that virtually all subjects contrast themselves with IR characters also indicates a general antipathy to unions in our subjects. Nevertheless, they were mostly union members and the possibility that our research has concealed ambivalent feelings about unions such as implied by instrumental collectivism cannot be dismissed.

An alternative interpretation would be that these subjects no longer believed in, or strove for mobility. Their feelings of low personal potency would be compatible with limited aspirations for personal mobility, and limited aspirations for mobility of own family as a unit. Aspirations for mobility may be inter-generational - for children as individuals - through to the mechanism of education. This is largely speculation. What is apparent is a consistent desire by clerks for a quiet life. They see themselves as shy, unworldly people, unobtrusive and undemanding.<sup>1</sup> Clerks characterise their own temperament as placid and thoughtful. They see themselves as of low activity, not wanting to be forward or cause bother, thinking critically rather than acting rashly or recklessly.<sup>2</sup> This seems closely bound up with the way clerks relate to their jobs, a way which we at one stage of the research labelled a "good housekeeping" orientation. Not only do they frequently and in general terms characterise themselves as conscientious where IR

---

1. The particular words quoted here were ones which were used by subjects in our study.

2. Note that the small number of subjects who contrasted themselves with family and/or identified with IR characters tended to reverse this aspect of potency. For example, a non-unionminded subject might say that he stuck to his own principles whereas IR characters were easily led. A unionminded subject would tend to say that he and IR characters were principled whereas family had no sense of responsibility.

or  
characters are seen as lazy skivers, but clerks also show a commitment to smooth and efficient running of their work processes. Given this it is hardly surprising that they do not favour strikes. It may be that this orientation is to some extent pragmatic, in that administrative work not done whilst striking causes overloads when work is resumed. But such a distinction between clerical and manual work is itself ideological, and is bound up on the clerical side with the ideology of good housekeeping. For manual workloads, too, are abnormally heavy after a stoppage until backlogs are cleared. On the other hand, the belief that all normal bureaucratic procedures have to be followed even in times of crisis shows a commitment to procedures rather than to the substantive organisational processes to which bureaucratic procedures are means and not ends.<sup>1</sup>

If it is accepted that clerks accept their office boundaries as the limit of their understanding and aspiration, being neither dynamic individualists, nor collectivists, instrumental or otherwise, we may be fairly asked why did they join unions in the first place?

- 
1. In Merton's terminology, these clerks were to some extent ritualists. This we would see as a perfectly rational adaptation to their work situation, bearing in mind its limited perspective and the lack of knowledge of clerks of organisational functioning at higher levels. Most importantly, clerks are not in a power position to be anything but ritualists in a definitional sense if this is what is demanded of them by their superiors. If their superiors require them to carry out the administrative procedures not done during a strike, as well as all their current duties, clerks are badly placed as individuals to refuse. Two thoughts flow from this. Firstly, the self-justifying nature of bureaucratic procedure. Secondly, that clerical unions will be faced with ambivalent attitudes of their members towards militancy until they get to grips with the coercive nature of the work situation.

Our research was not designed to answer this question, in that we did not follow non-members through the process of recruitment. Within our sample subjects had varying degrees of choice as to whether or not to join a union. All our manual workers were faced with a closed shop and had no choice if they were to work for the firm. A large part of our clerical sample employed by the Mail Order firm were under strong pressure from management and union to join, and most did. Not surprisingly non-membership in our sample was most common for clerks in those other organisations where choice was greatest. That is, in the small firm of X and Y where membership was seen as purely a matter for the individual, and in the two divisions of the same large firm, Pilot and A and B, where management encouragement was passive and union recruiting conducted in a restrained manner. In these latter locations interviews with union officials suggested that the mechanism can be social pressure. The appointment of a dynamic union representative who was an important figure in the office social-system seemed to mark out the areas of high recruitment from those where it was low. Roberts found something similar in his study of industrial technicians. Firstly he emphasises the limited perspective of the technicians.

'Nearly a third of quality controllers and of laboratory assistants signified that they "did not know" how the state of industrial relations in their own establishments compared with elsewhere. The full implications of this lack of knowledge of the external situation can only be appreciated if the process of unionisation is seen as taking place within and around the local work and market situation as perceived by the potential member.'<sup>1</sup>

These particular white-collar workers studied by Roberts tend to work in small groups, and this was related to unionisation in a manner

---

1. B.C. Roberts et al., Reluctant Militants: A Study of Industrial Technicians, Heinemann, 1972, p. 277.

contradicting the idea that unionisation of white-collar workers is a function of large office size and impersonal, bureaucratic relationships.

'In fact it emerged that those who joined unions on entering a firm were most likely to be those who had found unionists to make up a majority in a small work-group of ten or fewer.'<sup>1</sup>

Whereas from 40 per cent to 66 per cent of the subjects Roberts studied (varying by precise occupational category, from planning and production engineers to laboratory technicians, respectively) joined a union when they were approached by a representative on joining the firm, the figure for those not so approached was only 7 per cent to 28 per cent.<sup>2</sup>

Roberts concludes:

'It seems, therefore, that for most draughtsmen and laboratory assistants, joining a trade union may be a "social" act and has to be distinguished from the kind of rational choice which seems implicit in the a priori categorization of attitudes by the union or professional membership. Whatever the ideology of the individual draughtsman or laboratory assistant, the short-term psychic costs involved in a rebuttal of what is normatively acceptable in his work-group seems likely to outweigh the long-term ideological commitment expressed in his personal career ambitions.'<sup>3</sup>

1. B.C. Roberts op. cit., p. 278. Note that these relationships do reveal the precise sociological mechanisms at work.
2. Note that the question posed is 'when is a new entrant most likely to join a union?' and not 'when are ununionised workers most likely to join a union?' Put this way it is less remarkable that new entrants are most likely to join a union when there is one, and when they are approached by a representative. The relationship with unit size remains, however, and it is this which hints at a sociological mechanism of group pressures.
3. B.C. Roberts op. cit., p. 279.

We would not agree with this picture of social influences consisting solely of negative sanctions, nor of conformity to social influence as being irrational. We take the view, implicit in the action perspective, that all behaviour is rational to the actor, and if seen from his perspective. Lupton long ago argued this in the industrial area for restriction of output<sup>1</sup>, and there is no reason to think that joining unions is any less a rational act.

We will now turn our attention to the manual stereotype/power model side of Figure 12. The manual stereotype, as perceived by our subjects of IR characters, is broadly consistent with the power or class model of society. The exceptions are again potency, and possibly egocentrism.

It has been already argued that a belief in ascribed social roles ~~seems more congruent~~ with feelings of personal impotence than potency. This may be an effect of differing areas of relevance of the concepts, or of perceived compensation for social ineffectiveness by personal potency. The incongruence relating to egocentrism occurs because the manual stereotype has been generated from responses of subjects who use it to characterise other people and not themselves. Our clerks saw themselves as employing individualistic (nonunionminded) means to achieve the end result of the good of the family. That majority who contrasted themselves with IR characters saw those characters as pursuing collective means for the end result of the benefit of the individual. They saw IR characters as self-centred, often referring to their view that whilst they themselves were family minded IR characters were not.

---

1. T. Lupton, On The Shop Floor, Oxford, Pergamon, 1963.

This brings us to an important point. The manual stereotype was rarely used to describe self, even by manual workers. In as far as the manual stereotype, or substantial parts of it, was always used to describe IR characters, this is the same as saying that it was only rarely (5 cases out of 100, in fact) that our subjects identified with IR characters. The shortcomings of our sampling methods have been noted. Even so it is remarkable in a sample where 40 per cent are manual workers, and 90 per cent are union members, that only 5 per cent should use the self-image most closely approximating to the power model of society.

When it is used as self-image, rather than other-image, the manual stereotype does seem to correspond closely to the power model of society. Separate analysis was not conducted because of the small numbers involved, but it seems that those subjects (all male manual union members) who described themselves with the manual stereotype, and identified with IR characters, took the power model view that they were using collective means to the end of benefiting their class as a whole, including their family. Persons who did not, (for example some family members and workfellows) they felt were people who did not have any principles at all, making it difficult to say that they actively pursued any consistent ends.

The fact that those subjects positively orientated to unions and union matters were in such a small minority makes it likely that they were particularly active and ideological. It is not known how representative they might be of all persons who might espouse the power model. Clearly, the power model is itself ideologically structured in a more obvious way than is the prestige model. It requires more

active support of its adherents. It may be, therefore, that those who fully articulate the power model of society will normally be numerically in a minority, as activists usually are.

Our findings are that subjects tend to use either the clerical stereotype or the manual stereotype, and not to mix parts of each. Their deviations from the stereotypes were omissions rather than contradictions. It is true that our method forced a polar position on each variable, or part of the stereotype, but there was potential freedom for the variables to be mixed. Of course, in the first instance they were, and only for the analysis were poles reversed so that the clerical stereotype scored all HIGH and the manual stereotype scored all LOW. What is being said is that all the subjects concurred in a use of the variables which was consistent with the researcher's own view of them as forming stereotypes based on rationality similar to that employed by the prestige and power models of society. They were never mixed in their rationality.

This may be a reflection of the ideological nature of both stereotypes and models of society. Where subjects see the interrelationships between statements they make (rather than compartmentalising them) they might be expected to use those statements in a consistent manner. If those statements are not of objective fact but are subjective judgments it is obviously more easy to manipulate interpretations of social reality in order to achieve consistency.

It is hoped that it is now becoming apparent that we have, as promised, attempted to reconstruct the web of meaning, represented initially by individual repertory grids, on the group level. The two



dimensions of this web are constructs on the one hand, and characters or element groups on the other.

On both dimensions we note a surprising lack of variation within the total sample in its larger aggregations. Clerks and manual workers, union members and non-members, overwhelmingly identify with family by describing themselves and family in terms of a clerical stereotype of workmindedness, impotence, selflessness, happiness and non-union-mindedness. They evaluate themselves and family highly. Clerks and manual workers, union members and non-members, overwhelmingly contrast themselves with IR characters by describing those characters in terms of a manual stereotype of non-workmindedness, potency, egocentrism, unhappiness and unionmindedness. They give IR characters low evaluation.

One aspect of this web we have remarked on is its anti-unionism. Most of our subjects not only rejected union matters (constructs) and union characters (elements) in a negative fashion, but positively espoused a contrary perspective - the clerical stereotype or prestige model of society. We have tried to reconcile this perspective with the fact that almost half of our subjects are manual workers and most are union members by pointing to the varying degrees of choice open to the subjects. We have further identified certain factors which appear to be related on the individual level to union membership.<sup>1</sup> It was found that female clerical workers who are union members seem

---

1. Related to the state of being in the union or not, and not to the act of joining.

to see themselves as being impotent and workminded whilst female clerical workers who are not members do not see themselves as either impotent or workminded.

This relationship with potency is very plausible. As pointed out when relating stereotypes to models of society, impotence could logically be related to feelings of the impossibility of individual advancement and thus to the felt need for collective representation. What we have done is to point to the pervasive nature of this factor on the individual level. It is not associated only with particular beliefs or cognitions, but to a wide-ranging orientation to the environment in the case of female clerical workers. This may be illustrated by reference to subject 10 in Appendix E, a subject who makes particularly frequent use of constructs which we have categorised as potency based, on a non-industrial and non-class level. Subject 10 sees herself as like her mother and her friend in being placid, tolerant, sentimental, nostalgic, soft, sympathetic and liking to help people. They are unlike her boss and the striker who are volatile, bad tempered, intolerant, sophisticated (believing in things going on today, not what is in the past), unsympathetic and unhelpful. The contrast with boss as well as striker, whilst not usual is not exceptional. Some of these subjects see themselves as so generally 'unworldly' that like their mothers they have no real psychological place in the work situation. They may contrast with any or all of the male 'potent' characters of father, husband, boss, shop-floor worker, and striker.

The suggestion that union membership may be associated with positive feelings of workmindedness seems on the face of it less plausible. Indeed, we ourselves have found that clerks of both sexes and female manual workers tend to link workmindedness with non-unionmindedness, and vice versa. It should be noted, however, that non-unionmindedness is not associated with union membership. If it were our sample would be predominantly non-members rather than, as is the case, members. What we have here may be another indication that union membership is a function of social factors. It may be that in a work situation where the dominant ethic is one of commitment to the job the union representative who is successful in recruiting will be one who, like most leaders, adheres closely to group norms and influences most strongly other members who adhere to group norms. Persons who are not workminded may be relatively isolated from group processes, and for this reason less likely to be members of the union.

We are able to comment directly on associations with union membership only for female clerical workers because of a lack of male clerical, and manual non-union members. The associations for female clerical workers are statistically significant at acceptable confidence levels, but must be expressed as tentative and illustrative, in the light of the methodological considerations discussed in the previous chapter. With the same caveats we can make several statements about unionmindedness, bearing always in mind the lack of association of unionmindedness with union membership.

Clerks of both sexes, and female manual workers, link workmindedness with non-unionmindedness in describing themselves and family (identify), and link non-workmindedness and unionmindedness when describing IR characters (contrast). Male manual workers do not see themselves in

these terms, and do not see IR characters as non-workminded. It can be no coincidence that all the identifications with IR characters occurred in the male manual union member group.

There is thus for most clerks (of both sexes) and females, a contradiction between the orientations of non-unionmindedness and workmindedness (what might in another study have been called attitudes), and the behavioural state of being a union member. There is, firstly, the direct contradiction between the non-unionmind orientation and the state of being a union member, and secondly, the fact that these same subjects contrast their own workmindedness with the non-workmindedness of IR characters, and might therefore plausibly be expected to associate non-workmindedness with union membership, and vice versa.

This may be better understood if we are more precise about relevant behaviours. The act of joining the union, we have pointed out, is one where many of our subjects have no choice, and we need not expect a high degree of association between their orientation towards unions and their joining. A substantial minority of our subjects do have a degree of choice, and we have noted the possibility that their joining was the product of social rather than ideological forces. For female clerical workers, many of whom have choice in the matter, joining a union seems to be positively related to feelings of impotence and workmindedness.

Once a person has joined a union we might say that that decision has only an historical significance from a behavioural point of view. Being a member is a state rather than a behaviour. Its place in self-image is of great interest, but if we wish to relate self-image (or attitude) to behaviours we would have to isolate specific components

of self-image and relate them to specific behaviours associated with being a union member. For our findings illustrate the discrepancy which may occur between a general concept such as attitude or self-image and behaviours such as joining unions. If the focus of our attention were to be behaviour itself we would, as Fishbein<sup>1</sup> suggested, need to build up a picture of our attitude-type concept pragmatically, from the behaviour of subjects in a large number of closely related contexts. Some specific industrial actions which a union member might be asked by his union to carry out include working-to-rule, striking, picketing, voting on issues such as affiliation to the TUC and the payment of levies to the Labour Party.

Neither prestige model of society nor clerical self-image would have predicted the fact that our subjects were nearly all union members. Joining the union, whether because of closed shop or social pressures, had not been an act which of itself caused changes in overall attitude or orientation to unions, or 'core structures', as Kelly would have put it.<sup>2</sup> There was a relative absence of industrial action in the firms where our subjects worked and for most of our subjects an anti-union self-image had obviously not been threatened. Many said, for example, that 'they would not strike'.

There must be some degree of interplay between the independence and militancy of the union as an organisation and the overcoming of

- 
1. H. Fishbein, 'Attitude and the Prediction of Behaviour', in K. Thomas (ed.), Attitudes and Behaviour, Penguin, 1971.
  2. D. Bannister and F. Fransella, Inquiring Man: The Theory of Personal Constructs, Penguin, 1971, p. 57.

of self-image and relate them to specific behaviours associated with being a union member. For our findings illustrate the discrepancy which may occur between a general concept such as attitude or self-image and behaviours such as joining unions. If the focus of our attention were to be behaviour itself we would, as Fishbein<sup>1</sup> suggested, need to build up a picture of our attitude-type concept pragmatically, from the behaviour of subjects in a large number of closely related contexts. Some specific industrial actions which a union member might be asked by his union to carry out include working-to-rule, striking, picketing, voting on issues such as affiliation to the TUC and the payment of levies to the Labour Party.

Neither prestige model of society nor clerical self-image would have predicted the fact that our subjects were nearly all union members. Joining the union, whether because of closed shop or social pressures, had not been an act which of itself caused changes in overall attitude or orientation to unions, or 'core structures', as Kelly would have put it.<sup>2</sup> There was a relative absence of industrial action in the firms where our subjects worked and for most of our subjects an anti-union self-image had obviously not been threatened. Many said, for example, that 'they would not strike'.

There must be some degree of interplay between the independence and militancy of the union as an organisation and the overcoming of

- 
1. M. Fishbein, 'Attitude and the Prediction of Behaviour', in K. Thomas (ed.), Attitudes and Behaviour, Penguin, 1971.
  2. D. Pannister and F. Francella, Inquiring Man: The Theory of Personal Constructs, Penguin, 1971, p. 37.

resistance to industrial action in its members.<sup>1</sup> In our subjects membership of a union was not seen as implying commitment to future militant behaviour. This was both a cause and a consequence of the unions' lack of independent strength in the various firms in which research was conducted. In at least one major firm it was also related to the declining state of the industry, to which the weakness of the union must also have been in turn related.

This insight is not original. It has been recognised by unions in practical terms that the task of creating an ideologically loyal membership may be accomplished by requiring of that membership progressively more militant action. This is in line with the 'consistency' theories in the psychological literature. For example, cognitive dissonance theory<sup>2</sup> suggests that it is stressful for an individual to hold cognitions or beliefs which seem to him to be incongruent. He will reduce dissonance by one or more of a variety of means; by denying the incongruence if this is possible in the light of his other belief systems, by compartmentalising the conflicting beliefs, or by changing the beliefs to bring them more in line with one another.

This has been extended by some theorists to suggest a need for

- 
1. It is for this reason that the foregoing list of behaviours a union might ask of its members resembles that put forward by Blackburn and Prandy as a measure of the 'unionateness' of the union as an organisation.  
R.M. Blackburn and K. Prandy, 'White-Collar Unionisation: A Conceptual Framework', British Journal of Sociology, 1965.
  2. L. Festinger, A Theory of Cognitive Dissonance, Row and Petersen, 1957.

balance across the modalities of attitude, belief and behaviour.<sup>1</sup> The logic is the same as that for cognitive dissonance. The individual's thought processes can be structured into systems and there is a need of the individual for consistency within such systems, and to a lesser extent between interrelated systems.

Our union member with the clerical stereotyped self-image may believe both that being a union member implies a willingness to strike and that it is morally wrong to strike. He may in the first instance be able to simply compartmentalise these beliefs, if no specific action has been required of him, and no specific matter has crystalised these kinds of issues. If one belief changes it may well be the first, for experience may be demonstrating to our subject that union membership does not necessitate participating in strikes after all. It has not happened to him yet. Behaviour may be a more effective changer of beliefs, however. If the union successfully mobilises our subject in a strike action, especially if it is over an issue which is important to him and gives a rewarding outcome, the need for consistency may well cause our subject to change his belief that striking is morally wrong to one in which striking is morally acceptable. A series of such changes might well cause him to take a different attitude to unions in general,

- 
1. C.A. Insko and J. Schopler, 'Triadic Consistency: A Statement of Affective - Cognitive - Conative Consistency', in K. Thomas (ed.), Attitudes and Behaviour, Penguin, 1971.

This has some similarity to Kelly's description of construct systems, though he put more emphasis on their flexibility and possible incompatibility with each other.

D. Bannister and P. Fransella op. cit., pp. 22-37.



and we might well find that he then no longer conformed to our clerical stereotype of self-image.

None of our firms had a history of industrial activity. All were fairly recently unionised and one of the unions concerned was heavily dependent on management. It is likely that this lack of direct experience of industrial action makes possible the retention of anti-union self-images in both clerical and manual workers who are in fact union members. One act, that of joining the union, has not been sufficient to change core structures such as self-image.

The focus of this present research has been the meaning to the individual, and to groups of individuals, of the work situation when seen in terms of self and other-image. Kelly's repertory grid analysis was used to give a picture of the richness of such personal images, though this richness made the resulting data hard to process. The research methodology was independent in its initial stages<sup>1</sup> of the 'society image' tradition of Lockwood, and the results were used to give some indication of the appropriateness of the society image models. A large degree of concurrence between personal image and society image was found, but both were incongruent with the fact that the subjects

---

1. The data gathering stage and the principle components analysis were completely independent of Lockwood's models of society. At the content analysis, however, the researcher must have been influenced by his knowledge of the literature. Note the approximately 70% agreement in the content analysis with psychologist colleagues who will have been less familiar with sociological literature.

were union members, assuming the researcher to be correct about the rationality of those subjects. Some psychological bases for the existence of this incongruence were suggested, following consistency theories of the psychological literature.

This problem of interpretation occurs because we are concerned with meaning. We are compelled to attribute rationality to persons in order to understand them as observers. Hopefully we have used the same rationality as our subjects. Where we see incongruence we are forced to introduce secondary elaborations (e.g. the subject compartmentalises the conflicting beliefs) to account for apparent irrationality.

If our concern was with behaviour only we would feel less keenly the problem of meaning. For specific behaviour, we have found, can be quite unrelated to attitude or orientation. Where our subjects were required to join a union as a condition of employment they joined the union and retained their anti-union self-images. Situational factors were a necessary and sufficient explanation of the particular behaviour of those joining a union, for members. Fishbein put it like this:

'That is, viewing the attitude - behaviour relationship within the framework of a multi-attitude object - multi-method approach, it becomes clear that the most important determinants of behaviour may be other variables than an individual's beliefs about, attitude toward, or general behavioural intentions toward, a given object. Indeed, this approach clearly indicates that behaviour toward an object may be completely determined by situational or individual difference variables, rather than any variable associated with the stimulus object *per se*. In other words, this approach points out that behaviour toward a given object is a function of many variables, of which attitude toward the object is only one.'<sup>1</sup>

---

1. H. Fishbein op. cit., p. 81.

were union members, assuming the researcher to be correct about the rationality of those subjects. Some psychological bases for the existence of this incongruence were suggested, following consistency theories of the psychological literature.

This problem of interpretation occurs because we are concerned with meaning. We are compelled to attribute rationality to persons in order to understand them as observers. Hopefully we have used the same rationality as our subjects. Where we see incongruence we are forced to introduce secondary elaborations (e.g. the subject compartmentalises the conflicting beliefs) to account for apparent irrationality.

If our concern was with behaviour only we would feel less keenly the problem of meaning. For specific behaviour, we have found, can be quite unrelated to attitude or orientation. Where our subjects were required to join a union as a condition of employment they joined the union and retained their anti-union self-images. Situational factors were a necessary and sufficient explanation of the particular behaviour of those joining a union, for members. Fishbein put it like this:

'That is, viewing the attitude - behaviour relationship within the framework of a multi-attitude object - multi-method approach, it becomes clear that the most important determinants of behaviour may be other variables than an individual's beliefs about, attitude toward, or general behavioural intentions toward, a given object. Indeed, this approach clearly indicates that behaviour toward an object may be completely determined by situational or individual difference variables, rather than any variable associated with the stimulus object per se. In other words, this approach points out that behaviour toward a given object is a function of many variables, of which attitude toward the object is only one.'<sup>1</sup>

---

1. H. Fishbein op. cit., p. 84.

Prediction of behaviour is thus a very complicated business. Psychological measures from the most sophisticated attitude scaling to the simplest opinion polling may be equally wide of the mark. For both attitude and behavioural intentions are measures abstracted from the situation where action will in fact take place. Behaviour will be the product not only of the orientation which the actor brings to the situation, but also of the pressures upon that actor within the situation itself.

An understanding and possible prediction of behaviour, therefore, requires the reconciliation of psychological and sociological factors. Concentration upon meaning has let the author of this research, himself a sociologist, into a relative neglect of sociological or contextual factors. In further researching this area the author would attempt to more closely link psychological measures of self-image with appropriate and specific behaviours set in their sociological context. Samples would be more carefully structured to ensure useable numbers of subjects for comparative analysis. Closer attention would be paid to the organisations - both firms and unions - on whose activities individual adjustment depends. Particularly, the author would hope to study in detail the process of recruitment to the union as it occurred in the work place.

It is hoped that when the methodology of this research has been established and published resources will be available for a larger and more detailed study. Attention to a wide range of analysis will prevent the labelling of behaviour as unrealistic or irrational. When all factors are known specific behaviours of individuals are bound to be rational in the sense of being the best attempt of those persons

to follow a path through the complexities of their psychological and sociological existence.

APPENDIX A

STUDY OF CLERICAL WORKERS' ROLE CONSTRUCTS

Hello. My name is Alan Brown, and I am doing research for a degree at Warwick University. The information I am collecting will be used for my research and is confidential to me. I am not connected in any way with the firm or the union. Your helping me is completely voluntary. Is this OK?

I am going to show you cards which each have the description of a person on them. These are the ten descriptions (shows list).<sup>1</sup> Each card will have one of them typed upon it. I would like you to think of a particular person to fit each description. In some cases this is straightforward (indicates family area of list). In other cases you will have to choose somebody (indicates work situation area of list). Perhaps you don't know anybody at all for some of these descriptions (indicates Industrial Relations area of list). In that case I would like you to think of the sort of person that it seems to you would fit the bill. I would like you to think of a different person for each of these descriptions, and for you to always think of the same person whenever you see the same description.

I will give you these cards three at a time, like this. Now I would like you to tell me:

'How are any two of these people similar?'

Think about their personalities, the sort of things they might do, or wouldn't do - the sort of people they are. Anything that occurs to you. (Subject gives pairing and characteristic)

---

1. Appendix D.

'What seems to you to be the opposite of this (may specify)?'

(Gives subject rating scale)<sup>1</sup>. I would like you to imagine that here (Points to 9) we have people who are . . . (similarity characteristic). And here (points to 1) we have people who are . . . (opposite characteristic). I am going to show you these cards one by one and I would like you to give each one a number from 1 to 9 according to how . . . (names similarity and points to 9) or . . . (names opposite and points to 1) he is. (Shows cards one by one).

'Where on the scale would you place this person?'

This, then, is what we are going to do, several times more, starting with different combinations of cards. Is this OK?

Thank you very much for your help.

---

1. Appendix C

APPENDIX B

UNION MEMBER? / NON-MEMBER  
MALE / FEMALE

JOB :  
SUBJECT CODE :  
COMPANY CODE :  
DATE :

CLERICAL WORKERS' ROLE CONSTRUCTS

SELF	FATHER	MOTHER	H/W./B.F./G.F.	BOSS	FRIEND AT WORK	SHOP-FLOOR WORKER	UNION-MEMBER	UNION REPRESENTATIVE	STRIKER	CONSTRUCT	RESEMBLANCES	DIFFERENCES
1	2	3	4	5	6	7	8	9	10	1		
0	0		0						0	1		
0	0									2		
0			0				0			3		
0				0		0				4		
0					0				0	5		
0				0				0		6		
0		0					0			7		
0							0		0	8		



APPENDIX C

RATING SCALE

ROLE DESCRIPTIONS

1. Self

2. Father

3. Mother

4. Siblings/step-siblings/relatives

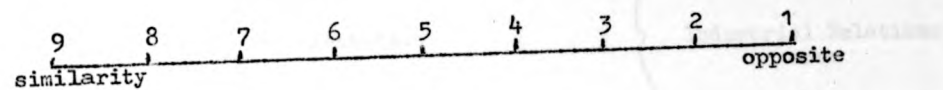
5. Other

6. Friend or acquaintance

7. Non-family member

Family Area

Non-family Area



APPENDIX D

ROLE DESCRIPTIONS

- |     |                                   |   |                              |
|-----|-----------------------------------|---|------------------------------|
| 1.  | Self                              | } | Family Area                  |
| 2.  | Father                            |   |                              |
| 3.  | Mother                            |   |                              |
| 4.  | Husband/Wife/Boyfriend/Girlfriend |   |                              |
| 5.  | Boss                              | } | Work situation area          |
| 6.  | Friend at work                    |   |                              |
| 7.  | Shop-floor worker                 |   |                              |
| 8.  | Union-member                      | } | Industrial Relations<br>area |
| 9.  | Union representative              |   |                              |
| 10. | Striker                           |   |                              |

Key to Appendices E and F

Wm	Workmindedness
P	Potency
Eg	Egocentrism
H	Happiness
Um	Unionmindedness
Ev	Evaluation
id	identity with self
-	not classifiable

APPENDIX E

REPERTORY GRIDS USED FOR RELIABILITY  
TEST

Subject 49A

Constructs

always looking for an easy way out  
dislikes reading  
always on strike  
unfriendly  
hard hearted

Classification

P	face up to problems
-	enjoys reading
Um	no time for strikes
Eg	friendly/sociable
Eg	kind hearted

Elements

union representative  
striker

self  
husband/boyfriend

Subject 10

Constructs

volatile, bad tempered  
intolerant  
different tastes to self  
  
sophisticated - believing in  
things going on today, not what  
is in the past  
unsympathetic  
unhelpful

Classification

P	similar temperament to self/placid
P	tolerant
id	same tastes in everyday things as self
P	sentimental, nostalgic type
P	soft - sympathetic
Eg	like to help people

Elements

boss  
striker

self  
mother  
friend

Subject 14A

Constructs

happy go lucky attitude to life  
 same opinion as self about most things  
 same religious belief as self  
 have an understanding at work and co-operate  
 peaceful/placid  
 never been bothered with unions  
 don't argue much  
 satisfied with things as they are

Classification

H	serious attitude
id	different opinions to self about most things
id	different religious beliefs to self
Wm	have no understanding or co-operation
P	violent
Um	interested in union affairs
P	always arguing
H	always looking for a complaint to make

Elements

self  
 mother  
 husband/boyfriend

union representative  
 striker

Subject 19A

Constructs

violent  
 don't think much of family life  
 couldn't care less whether they please others or not  
 unhelpful to others  
 not bothered/uninterested at work  
 different tastes to self  
 inefficient  
 no respect for superiors

Classification

P	peace loving
-	like the family life
Eg	eager to please
Eg	happy to help others
Wm	conscientious at work
id	similar tastes to self
Wm	like to be efficient
P	have respect for superiors

Elements

shop floor worker  
striker

self  
father  
mother  
husband/boyfriend

Subject 19P

Constructs

knows about unions  
does not understand  
subject (self)  
believes in strikes  
no things in common with  
subject  
incompatible with subject

Classification

Um	doesn't know about unions
id	understands subject
Um	does not believe in strikes
id	things in common with subject
id	gets along with subject

Elements

striker

self  
mother

Subject 27B

Constructs

happy go lucky  
not much interested in  
union business  
don't care too much  
about work  
friendly  
humble  
would only strike if she  
had to

Classification

H	serious
Um	interested in union business
Wm	always bothered about work
Eg	unfriendly
P	big-headed
Um	would strike for any reason

Elements

self  
mother  
wife/girlfriend

boss  
union representative  
striker

Subject 08B

Constructs

artistic  
non-violent  
not bothered with  
unions  
honest  
have same sense of  
humour as self  
uncomplaining  
not trouble-makers

Classification

-	not artistic
P	violent
Um	always concerned with union affairs
Ev	dishonest - crafty
id	different sense of humour to self
P	always complaining
P	trouble-makers

Elements

self  
father  
mother  
wife/girlfriend

union member  
striker

Subject 22B

Constructs

likes to shout  
too concerned with  
troubles to enjoy work  
always arguing and  
causing bother  
couldn't care less about  
doing a good job  
always in trouble  
tight - stingy

Classification

P	quiet
H	can enjoy work
P	have no real interest in arguing about work
Wc	proud of the work we do
P	do as we are asked and stay out of trouble
Eg	generous

Elements

union member  
striker

self  
mother  
wife/girlfriend

Subject 8P

Constructs

likely to be in union  
quick tempered  
does not mind striking  
different temperament  
to subject  
does not need help from  
a third party  
different sort of work  
to subject

Classification

Um	unlikely to be in union
P	easy going/worrier
Um	would not like to strike
id	similar temperament to subject
Um	needs help from a third party
id	same sort of work as subject

Elements

shopfloor worker  
striker

self  
boss

Subject 55A

Constructs

precise and accurate  
hard worker  
like to get on with the  
job in hand  
reasonably satisfied  
with pay and conditions  
like to be punctual for  
meetings  
reasonably intelligent

Classification

P	vague
Wm	lazy worker
Wm	take years to complete a simple task
Wm	unsatisfied with pay and conditions
-	always late
-	a bit dim

Elements

self  
father  
boss

union member  
striker



Subject 1

Constructs

follows others like  
sheep (weak-willed)  
immoral  
would strike for any  
reason  
miserable type  
dishonest  
likes noise and din

Classification

P	make up your own mind (strong-willed)
Ev	moralistic
Um	would strike only for a good reason
H	have a sense of humour
Ev	honest
P	likes peace and quiet

Elements

shopfloor worker  
striker

self  
father

Subject 15B

Constructs

always bothered about  
other people's business  
dishonest  
wouldn't fight for  
country  
don't appreciate  
value of money

Classification

Eg	mind your own business
Ev	honest
Eg	would fight for country
-	appreciate the value of money

Elements

striker

self  
wife/girlfriend

Subject 1

Constructs

follows others like  
sheep (weak-willed)  
immoral  
would strike for any  
reason  
miserable type  
dishonest  
likes noise and din

Elements

shopfloor worker  
striker

Classification

P	make up your own mind (strong-willed)
Ev	moralistic
Um	would strike only for a good reason
H	have a sense of humour
Ev	honest
P	likes peace and quiet

self  
father

Subject 15B

Constructs

always bothered about  
other people's business  
dishonest  
wouldn't fight for  
country  
don't appreciate  
value of money

Elements

striker

Classification

Eg	mind your own business
Ev	honest
Eg	would fight for country
-	appreciate the value of money

self  
wife/girlfriend

Subject 14

Constructs

Classification

agressive	P	thoughtful
prepared to stand up for their rights	P	shy
knows what everyone wants and does his best to get it for them	Eg	doesn't know what others want and can't help
finds fault	P	overlooks faults
don't care that they are being noticed	Eg	shy - thinks everybody is looking at them
doesn't seem to have the same sort of friendliness	-	friendly
disagreeable - always questions things	id	likes the same sort of things - agreeable

Elements

union member	self
union representative	husband/boyfriend
striker	

Subject 8

Constructs

Classification

like same things as self/similar temperament	id	clash on temperaments
against unions	Um	would join a union
enjoy doing a lot of the same things as self	id	not doing anything enjoyable
admin work - running things together	Wm	not working together
unlikely to strike	Um	likely to strike
not being in favour of being a union member	Um	in favour of being a union member
unlikely to be a member of a union	Una	likely to be a member of a union

Elements

self	striker
husband/boyfriend	

Subject 12B

Constructs

don't like strikes  
 enjoy meeting people  
 work hard for living  
 happy go lucky  
 not interested in  
 union affairs  
 peaceful people

Classification

Um	like strikes
Eg	don't have a lot of friends
Wm	take it easy - get a lot
H	serious minded
Um	interested in union affairs
P	violent types

Elements

self  
 mother

union member  
 striker

Subject 13P

Constructs

in charge of  
 something  
 enjoy themselves  
 quietly  
 different generation/  
 age to subject  
 different interests  
 to subject  
 tells others what  
 to do

Classification

P	listens to others
Eg	out to enjoy themselves
id	same generation/ age as subject
id	same interests as subject
P	just have to do what told

Elements

boss  
 union member  
 union representative

self  
 husband/boyfriend  
 friend

Subject 29A

Constructs

get on with the job  
keen to help  
cool tempered  
non-militant  
unselfish

Classification

Wm	waste time
Eg	unhelpful
P	temperamental
P	militant - minded
Eg	selfish

Elements

self  
mother

striker

Subject 17A

Constructs

brash  
violent  
make hasty decisions  
  
bored with work  
different tastes to  
self  
interested in unions

Classification

P	quiet
P	non-violent
P	consider all aspects before making a decision
Wm	find work interesting
id	same tastes as self
Um	not intetested in unions

Elements

Striker

self  
husband/boyfriend

Subject 20

Constructs

admire skill in sport  
similar outside interests to self  
believe the unions try to get a fair deal for their workers  
believe that workers should have more responsibility  
different methods of solving disputes

Classification

	admire sport for other reasons
id	dissimilar outside interests to self
UM	believe that unions get more strength for themselves
P	not bothered about responsibility for workers
P	apathetic (no methods for solving disputes)

Elements

self  
union representative

mother  
wife/girlfriend

Subject 51A

Constructs

unconcerned with the welfare of others  
socialist views  
joined because they wanted to  
never keep their word  
willing to strike for anything  
no sense of humour  
'cold' type

Classification

Eg	care for others
Um	conservative views
Um	joined the union because they had to
Ev	keep their word
Um	unwilling to strike
H	have a sense of humour
Eg	'warm' type

Elements

union representative  
striker

self  
boss

APPENDIX FExamples of Content Analysis Classifications Given to One JudgeSubject 71AConstructsClassification

very frank	Es	a little secretive
too eager to skive off work	Wm	do a fair days work for a fair days pay
have no sense of humour	H	have a good sense of humour
different outlook on life to self	id	same outlook on life to self
agree with all strikes	Um	do not agree with all strikes
devious/sly	Ev	very straightforward

Elements

union representative	self
striker	father

Subject 43AConstructsClassification

same likes and dislikes as self	id	different likes and dislikes to self
sense of integrity	Ev	no sense of integrity
easy to please	P	difficult to please
conscientious worker	Wm	unconscientious
avoid violence	P	indulge in violence
Conservative thinker	Um	Socialist
serious minded	H	frivolous

Elements

self	union representative
father	striker
mother	

Subject 39A

Constructs

excited manner  
always on lookout  
for easy way out  
concerned with  
union affairs  
dishonest  
unpopular  
never think of the  
problems of others  
not bothered with  
religion  
willing to strike

Classification

P	calm manner
Ev	never try to get something for nothing
Um	never much concerned with union affairs
Ev	honest
Eg	popular
Eg	try to help others with their problems
-	religious
Um	not willing to strike

Elements

shop floor workers  
striker

self  
father  
mother  
wife/girlfriend

Subject 7A

Constructs

opposed to  
meaningless strikes  
placid temperament  
same tastes as self  
likes to get on with  
work in hand  
animal lovers  
think before acting

Classification

Um	support silly strikes
P	easily excited
id	different tastes to self
Um	lazy/skiver
-	doesn't like animals
P	make rash decisions

Elements

self  
mother

union member  
striker



APPENDIX G

ALTERNATIVE ANALYTICAL TECHNIQUES

When the content analysis of the principal components of the subject's repertory grids had been accomplished it seemed to the researcher that the pattern of responses approximated closely (as indeed it did) to what was subsequently called the 'clerical stereotype' of high workmindedness, low potency, low egocentrism, high happiness, low unionmindedness and high evaluation. It seemed worthwhile to see if these items constituted a scale as defined by Guttman.<sup>1</sup>

A Guttman scale is a special kind of index which has the property of being able to predict with some accuracy the pattern of a subject's responses from his total score on the scale. In order that it may do this the scale is required to be undimensional and cumulative. Nie, Bent and Hull<sup>2</sup> define undimensionality as that 'the component items must all measure movement toward or away from the same single underlying object', and say that 'Operationally, a cumulative scale implies that the component items can be ordered by degree of difficulty and that respondents who reply positively to a difficult item will always respond positively to less difficult items and vice versa.'

1. L. Guttman, 'The Cornell Technique for Scale and Intensity Analysis', Educational and Psychological Measurement, 1947.
2. H. Nie, D. Bent and C.H. Hull, Statistical Package for the Social Sciences, McGraw-Hill, 1970, p. 197.

Using the SPSS program for Guttman scale it was found that high coefficients of reproducibility could be obtained for the application of the content analysis variables to groups of elements or characters by many of the sample/subsamples. This coefficient estimates the extent to which the subject's response pattern can be predicted by a knowledge of his total score. The coefficient of reproducibility can be maximised by manipulation of the variable cutting points. These cutting points relate to the fact that part of the Guttman scaling process is the allocation to the subject of pass or fail on each of the items. The item score which constitutes pass/fail can be varied until the analysis yields its highest coefficient of reproducibility. 0.9 (out of 1.0) is normally taken to indicate a valid scale, and we had no difficulty in attaining this.

There are, however, certain other conditions to be satisfied. Edwards explains like this:

If a coefficient of reproducibility of .90 or greater is obtained with any of the successive score matrices, this constitutes evidence for the scaleability of the set of statements. But this is not a sufficient condition, for the simple reason that the reproducibility of any single statement can never be less than the frequency present in the modal category. For example, if we had a statement with only two categories of response and found that .9 of the 100 subjects fell in one of the categories, this statement would have as its minimum reproducibility 90 per cent.<sup>1</sup>

1. In our case, that category of the two on either side of the cutting point which shows the highest frequency of response.
2. A. Edwards, Techniques of Attitude Scale Construction, Appleton-Century-Crofts, New York, 1957, p. 191.

Hence the further measure called minimum marginal reproducibility, which is calculated from the modal frequencies. It indicates the extent to which we can predict the subject's response pattern from the pattern of responses of the sample as a whole, and without reference to the score of the individual. A high minimum marginal reproducibility, therefore, demonstrates that the scale itself is not discriminating amongst the subjects.

Unfortunately, whilst our Guttman Scale analysis provided high coefficients of reproducibility it also produced high minimum marginal reproducibilities. In the SPSS package the difference between these two measures is given, and is called the per cent improvement. Ours were always low, indicating that using our content analysis variables as a cumulative Guttman scale was adding little to their predictive ability. Finally, Nie, Bent and Hull present the SPSS user with the coefficient of scalability, obtained by dividing the per cent improvement by the difference between one and the minimum marginal reproducibility. Of this they say 'The coefficient of scalability also varies from 0 to 1. and should be well above .6 if the scale is truly undimensional and cumulative.'<sup>1</sup> Ours did not reach .6.

This is all very technical, but the reason our data did not satisfy the requirements for Guttman Scale is in essence quite simple. There is not enough variation in the data. The clerical stereotype is approximated closely by virtually all the subjects. Hence one does not need an individual score to predict an individual's response. It can

---

1. Nie, Bent and Hull, op. cit., p. 201.

be predicted by reference to the group's espousal of the clerical stereotype.

If the researcher had at the outset better understood the principles of Guttman scaling this outcome could have been anticipated. As it was a considerable amount of effort was expended only to find that Guttman scaling was inappropriate. No doubt an index not requiring the variables to be ordered and cumulative could be constructed and justified. The analysis reported in the main text would suggest that this is so. It was considered that such an index would have limited usefulness at that stage of the research for the scores would not indicate which of the variables were espoused and it was precisely this matter of the use of the variables which was at the centre of interest. After having pulled the principal components apart by the content analysis there would have been no point in immediately lumping them together again in such a crude fashion. Now that the individual variables are better understood there is a case for re-examining the possibility of an index.

After investigating Guttman scaling the researcher pursued the goal of summarising the structure of subjects' use of the six content analysis categories into the field of contingency testing. The contingency coefficient seemed to hold promise. Siegel says of it:

The contingency coefficient  $C$  is a measure of the extent of association or relation between two sets of attributes. It is uniquely useful when we have only categorical (nominal scale) information about one or both sets of these attributes. That is, it may be used when the information about the attributes consists of an unordered series of frequencies.<sup>1</sup>

---

1. S. Siegel, 'Nonparametric Statistics for the Behavioural Sciences', McGraw-Hill, 1956, p. 196.

The contingency coefficient is calculated in a similar manner to chi-square. The latter determines only if two samples could have come from the same population, and is used to test such hypotheses. It does not measure degree of association. The contingency coefficient does estimate degree of association, and seemed at first to be a good way of comparing subsamples and character or element groups on the way they used the content analysis categories.

The first limitation discovered in practice was that only two subsamples, or two element groups could be compared at a time. If they were all introduced into the calculation a contingency coefficient could be generated and its statistical significance checked (against the same critical values as chi-square). But such a coefficient could not be interpreted, for the subsamples and element groups are not frequency categories of variables. The relationship of one subsample to another and one element group to another is completely problematic. So too, at that stage of the research, was the relationship of one content analysis category to another.<sup>1</sup> If only one dimension to the

---

1. In order to handle more than one variable at a time it was necessary to use only the frequency for one end (high) of each variable continuum. In an attempt to compare like with like adjusted frequencies, showing subjects scoring high as a percentage of the total scoring both high and low, were used. As will be seen from the text this did not actually change the fact that in making these kinds of comparisons across variables we were seeking to compare crude magnitudes, the significance of which was internal to each variable, whilst the contingency coefficient was distinguishing between distributions the significance of which is relative to each axis of the data matrix.

matrix had been problematic at any one time it could have been said that a given outcome was related in some fashion to the categorisations made. This is precisely what the researcher tried next to do. We related different character groups for the same subsample, and the same character groups for different subsamples. Again the resulting contingency coefficient could not be interpreted. The measure was just not appropriate to the data, or to put it another way, the data could not be cast into a form where the contingency coefficient could be legitimately applied. For the researcher had not realised the significance of certain key words in Siegel's statement quoted earlier. Firstly, there can be only two sets handled at one time. Secondly, these have to be sets of frequencies having a relationship one with another by virtue of being scores on the same variable dimension. Whilst it is true, as Siegel says<sup>1</sup>, that the contingency coefficient is the same whatever the ordering or place in the matrix of frequencies, it is dependent on distribution. The measure, for example, shows two sets as being alike where one is of a much greater magnitude in every one of its cells, but where the two are similar in their relationship of cell to cell (i.e. there is the same proportional  $\pi_i$  or distribution of scores on each content analysis category for each sample or set). It was at this stage that we gave up the search for a measure of scores on all content analysis categories at once. For our experience here seemed to indicate that in trying to do this we were relating frequencies to each other which were not really related. This brought us to our present position. These frequencies had a relationship to the frequencies for the other end of each content analysis variable

---

1. G. Siegel *op. cit.*, p. 196.

variable dimension, and provided that we looked at no more than two variables at a time we could use the common nonparametric statistical techniques to test particular hypotheses.

It was in this way that we came to use a statistical technique which is arguably not altogether appropriate (see p. 50 ) on statistical grounds, and which is very long-winded in its application. The mode of analysis can clearly be improved. We had reached a stage in this round of research where so much time had been spent fruitlessly that the conservative strategy of using a known and predictable instrument, despite its shortcomings, seemed preferable to looking further for analytical techniques which might in the end turn out to be inappropriate. Advice taken from colleagues suggests that, when further analysis is undertaken, the newly developed techniques of profile analysis, cluster analysis, or discriminate function analysis<sup>1</sup>, may prove to hold the answers to our analytical problems.

- 
1. B. Everitt, Cluster Analysis, Heinemann, 1974.  
R. Blackith and R. Reyment, Multivariate Morphometrics, Academic Press, London, 1971.  
J. Overall and C.J. Klett, Applied Multivariate Analysis, McGraw-Hill, 1972.

ABBREVIATIONS USED IN APPENDICES H TO M

CMU	Clerical male union member
CMN	Clerical male non-union member
CFU	Clerical female union member
CFN	Clerical female non-union member
MMU	Manual male union member
MFU	Manual female union member
IR	Industrial relations characters



APPENDIX B

Tests for I Significance of variables

Table 1.

Variable	Sample Elements	ALL SELF	
		O	E
work-mindedness	low	3	27.5
	high	52	27.5

missing = 45

Chi-square/binomial test = 43.66 with 1 degree of freedom  
Significant - at better than .01

Table 2.

Variable	Sample Elements	ALL SELF	
		O	E
impotence	low	19	44
	high	69	44

missing = 12

Chi-square/binomial test = 23.41 with 1 degree of freedom  
Significant - at better than .01

Table

Variable	Sample Elements	ALL SELF	
		O	E
selflessness	low	6	29.5
	high	55	29.5

missing = 41

Chi-square/binomial test = 37.44 with 1 degree of freedom  
Significant - at better than .01

Table 4.

Variable	Sample Elements	ALL SELF	
		O	E
happiness	low	1	15
	high	29	15

missing = 70

Chi-square/binomial test = 26.13 with 1 degree of freedom  
Significant - at better than .01

Table 5.

Variable	Sample Elements	ALL SELF	
		O	E
non-union-mindedness	low	9	37
	high	65	37

missing = 26

Chi-square/binomial test = 42.38 with 1 degree of freedom  
Significant - at better than .01

Table 6.

Variable	Sample Elements	ALL SELF	
		O	E
evaluation	low	0	13
	high	26	13

missing = 74

Chi-square/binomial test = 26.00 with 1 degree of freedom  
Significant - at better than .01

Table 7.

Variable	Sample Elements	ALL IR	
		O	E
workmindedness	low	52	27.5
	high	3	27.5

missing = 45

Chi-square/binomial test = 43.66 with 1 degree of freedom  
Significant - at better than .01

Table 8.

Variable	Sample Elements	ALL IR	
		O	E
impotence	low	75	42.5
	high	10	42.5

missing = 15

Chi-square/binomial test = 49.71 with 1 degree of freedom  
Significant - at better than .01

Table 9.

Variable	Sample Elements	ALL IR	
		O	E
selflessness	low	46	28
	high	10	28

missing = 44

Chi-square/binomial test = 23.14 with 1 degree of freedom  
Significant - at better than .01

Table 10.

Variable	Sample Elements	ALL IR	
		O	E
happiness	low	29	15
	high	1	15

missing = 70

Chi-square/binomial test = 26.13 with 1 degree of freedom  
Significant - at better than .01

Table 11.

Variable	Sample Elements	ALL IR	
		O	E
non-unionmindedness	low	70	35.5
	high	1	35.5

missing = 29

Chi-square/binomial test = 67.06 with 1 degree of freedom  
Significant - at better than .01

Table 12.

Variable	Sample Elements	ALL IR	
		O	E
evaluation	low	26	13
	high	0	13

missing = 74

Chi-square/binomial test = 26.00 with 1 degree of freedom  
Significant - at better than .01

Table 13.

Variable	Sample Elements	ALL FAMILY	
		O	E
workmindedness	low	1	24.5
	high	48	24.5

missing = 51

Chi-square/binomial test = 45.08 with 1 degree of freedom  
Significant - at better than .01

Table 14.

Variable	Sample Elements	ALL FAMILY	
		O	E
impotence	low	11	38
	high	65	38

missing = 24

Chi-square/binomial test = 38.37 with 1 degree of freedom  
Significant - at better than .01

Table 15.

Variable	Sample Elements	ALL FAMILY	
		O	E
selflessness	low	9	24
	high	39	24

missing = 52

Chi-square/binomial test = 18.75 with 1 degree of freedom  
Significant - at better than .01

Table 16.

Variable	Sample Elements	ALL FAMILY	
		O	E
happiness	low	1	12.5
	high	24	12.5

missing = 75

Chi-square/binomial test = 21.16 with 1 degree of freedom  
Significant - at better than .01

Table 17.

Variable	Sample Elements	ALL FAMILY	
		O	E
non-unionmindedness	low	2	31.5
	high	61	31.5

missing = 37

Chi-square/binomial test = 55.25 with 1 degree of freedom  
Significant - at better than .01

Table 18.

Variable	Sample Elements	ALL FAMILY	
		O	E
evaluation	low	0	10
	high	20	10

missing = 80

Chi-square/binomial test = 20.00 with 1 degree of freedom  
Significant - at better than .01

Table 19.

Variable	Sample Elements	ALL WORKFELLOWS	
		O	E
workmindedness	low	3	6.5
	high	10	6.5

missing = 87

Chi-square/binomial test = 3.77 with 1 degree of freedom  
Significant - no

Table 20.

Variable	Sample Elements	ALL WORKFELLOWS	
		O	E
impotence	low	12	13
	high	14	13

missing = 74

Chi-square/binomial test = 0.15 with 1 degree of freedom  
Significant - no

Table 21.

Variable	Sample Elements	ALL WORKFELLOWS	
		O	E
selflessness	low	11	8.5
	high	6	8.5

missing = 83

Chi-square/binomial test = 1.47 with 1 degree of freedom  
Significant - no

Table 22.

Variable	Sample Elements	ALL WORKFELLOWS	
		O	E
happiness	low	4	-
	high	2	-

missing = 94

Chi-square/binomial test = 0.688 with 1 degree of freedom  
Significant - no in two-tailed test

Table 23.

Variable	Sample Elements	ALL WORKFELLOWS	
		O	E
non-union-mindedness	low	7	11
	high	15	11

missing = 78

Chi-square/binomial test = 2.91 with 1 degree of freedom  
Significant - no

Table 24.

Variable	Sample Elements	ALL WORKFELLOWS	
		O	E
evaluation	low	1	-
	high	3	-

missing = 96

Chi-square/binomial test = - with degree of freedom  
Significant - no



Table 25.

Variable	Sample Elements	CLERICAL SELF	
		O	E
workmindedness	low	0	11.5
	high	23	11.5

missing = 25

Chi-square/binomial test = 23.00 with 1 degree of freedom  
Significant - at better than .01

Table 26.

Variable	Sample Elements	CLERICAL SELF	
		O	E
impotence	low	10	25.5
	high	41	25.5

missing = 7

Chi-square/binomial test = 18.84 with 1 degree of freedom  
Significant - at better than .01

Table 27.

Variable	Sample Elements	CLERICAL SELF	
		O	E
selflessness	low	4	13.5
	high	23	13.5

missing = 31

Chi-square/binomial test = 13.37 with 1 degree of freedom  
Significant - at better than .01

Table 28.

Variable	Sample Elements	CLERICAL SELF	
		O	E
happiness	low	1	8.5
	high	16	8.5

missing = 41

Chi-square/binomial test = 13.24 with 1 degree of freedom  
Significant - at better than .01

Table 29.

Variable	Sample Elements	CLERICAL SELF	
		O	E
non-union-mindedness	low	2	22
	high	42	22

missing = 14

Chi-square/binomial test = 36.36 with 1 degree of freedom  
Significant - at better than .01

Table 30.

Variable	Sample Elements	CLERICAL SELF	
		O	E
evaluation	low	0	7
	high	14	7

missing = 44

Chi-square/binomial test = 14.00 with 1 degree of freedom  
Significant - at better than .01

Table 31.

Variable	Sample Elements	CLERICAL IR	
		O	E
workmindedness	low	33	16.5
	high	0	16.5

missing = 25

Chi-square/binomial test = 33.00 with 1 degree of freedom  
Significant - at better than .01

Table 32.

Variable	Sample Elements	CLERICAL IR	
		O	E
impotence	low	44	25
	high	6	25

missing = 8

Chi-square/binomial test = 28.88 with 1 degree of freedom  
Significant - at better than .01

Table 33.

Variable	Sample Elements	CLERICAL IR	
		O	E
selflessness	low	22	13
	high	4	13

missing = 32

Chi-square/binomial test = 12.46 with 1 degree of freedom  
Significant - at better than .01

Table 34.

Variable	Sample Elements	CLERICAL IR	
		O	E
happiness	low	16	8.5
	high	1	8.5

missing = 41

Chi-square/binomial test = 13.24 with 1 degree of freedom  
Significant - at better than .01

Table 35.

Variable	Sample Elements	CLERICAL IR	
		O	E
non-unionmindedness	low	43	21.5
	high	0	21.5

missing = 15

Chi-square/binomial test = 43.00 with 1 degree of freedom  
Significant - at better than .01

Table 36.

Variable	Sample Elements	CLERICAL IR	
		O	E
evaluation	low	14	7
	high	0	7

missing = 44

Chi-square/binomial test = 14.00 with 1 degree of freedom  
Significant - at better than .01

Table 37.

Variable	Sample Elements	CLERICAL FAMILY	
		O	E
workmindedness	low	0	15
	high	30	15

missing = 28

Chi-square/binomial test = 30.00 with 1 degree of freedom  
Significant - at better than .01

Table 38.

Variable	Sample Elements	CLERICAL FAMILY	
		O	E
impotence	low	7	23.5
	high	40	23.5

missing = 11

Chi-square/binomial test = 23.17 with 1 degree of freedom  
Significant - at better than .01

Table 39.

Variable	Sample Elements	CLERICAL FAMILY	
		O	E
selflessness	low	4	12
	high	20	12

missing = 34

Chi-square/binomial test = 10.67 with 1 degree of freedom  
Significant - at better than .01

Table 40.

Variable	Sample Elements	CLERICAL FAMILY	
		O	E
happiness	low	1	7
	high	13	7

missing = 44

Chi-square/binomial test = 10.29 with 1 degree of freedom  
Significant - at better than .01

Table 41.

Variable	Sample Elements	CLERICAL FAMILY	
		O	E
non-unionmindedness	low	2	19
	high	36	19

missing = 20

Chi-square/binomial test = 30.42 with 1 degree of freedom  
Significant - at better than .01

Table 42.

Variable	Sample Elements	CLERICAL FAMILY	
		O	E
evaluation	low	0	5
	high	10	5

missing = 48

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant - at better than .01

Table 43.

Variable	Sample Elements	CLERICAL WORKFELLOWS	
		O	E
workmindedness	low	2	-
	high	5	-

missing = 51

Chi-square/binomial test = .227 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 44.

Variable	Sample Elements	CLERICAL WORKFELLOWS	
		O	E
impotence	low	6	6.5
	high	7	6.5

missing = 45

Chi-square/binomial test = 0.08 with 1 degree of freedom  
Significant ..no

Table 45.

Variable	Sample Elements	CLERICAL WORKFELLOWS	
		O	E
selflessness	low	3	-
	high	4	-

missing = 51

Chi-square/binomial test = .5 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 46.

Variable	Sample Elements	CLERICAL WORKFELLOWS	
		O	E
happiness	low	2	-
	high	2	-

missing = 54

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 47.

Variable	Sample Elements	CLERICAL WORKFELLOWS	
		O	E
non-uniformedness	low	4	6
	high	8	6

missing = 46

Chi-square/binomial test = 1.33 with 1 degree of freedom  
Significant .. no

Table 48.

Variable	Sample Elements	CLERICAL WORKFELLOWS	
		O	E
evaluation	low	1	-
	high	3	-

missing = 54

Chi-square/binomial test = - with degree of freedom  
Significant - no



Table 49.		CMU SELF	
Variable	Sample Elements	O	E
workmindedness	low	0	-
	high	5	-

missing = 5

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 50.		CMU SELF	
Variable	Sample Elements	O	E
impotence	low	2	-
	high	6	-

missing = 2

Chi-square/binomial test = 0.344 with 1 degree of freedom  
Significant - no in one-tailed test

Table 51.		CMU SELF	
Variable	Sample Elements	O	E
selflessness	low	0	-
	high	2	-

missing = 7

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 52.

Variable	Sample Elements	CMU SELF	
		O	E
happiness	low	1	-
	high	3	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 53.

Variable	Sample Elements	CMU SELF	
		O	E
non-union-mindedness	low	1	-
	high	8	-

missing = 1

Chi-square/binomial test = 0.035 with 1 degree of freedom  
Significant - at .05 in one-tailed test

Table 54.

Variable	Sample Elements	CMU SELF	
		O	E
evaluation	low	0	-
	high	5	-

missing = 5

Chi-square/binomial test = .031 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 55.

Variable	Sample Elements	CMU IR	
		O	E
workmindedness	low	5	-
	high	0	-

missing = 5

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 in one-tailed test

Table 56.

Variable	Sample Elements	CMU IR	
		O	E
impotence	low	6	-
	high	1	-

missing = 3

Chi-square/binomial test = 0.062 with 1 degree of freedom  
Significant - no in one-tailed test

Table 57.

Variable	Sample Elements	CMU IR	
		O	E
selflessness	low	1	-
	high	1	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 55.

Variable	Sample Elements	CMU IR	
		O	E
workmindedness	low	5	-
	high	0	-

missing = 5

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 in one-tailed test

Table 56.

Variable	Sample Elements	CMU IR	
		O	E
impotence	low	6	-
	high	1	-

missing = 3

Chi-square/binomial test = 0.062 with 1 degree of freedom  
Significant - no in one-tailed test

Table 57.

Variable	Sample Elements	CMU IR	
		O	E
selflessness	low	1	-
	high	1	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 58.

Variable	Sample Elements	CMU IR	
		O	E
happiness	low	3	-
	high	1	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 59.

Variable	Sample Elements	CMU IR	
		O	E
non-unionmindedness	low	8	5
	high	2	5

missing = 0

Chi-square/binomial test = 3.60 with 1 degree of freedom  
Significant - no

Table 60.

Variable	Sample Elements	CMU IR	
		O	E
evaluation	low	5	-
	high	0	-

missing = 5

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 61.

Variable	Sample Elements	CMU FAMILY	
		O	E
workmindedness	low	0	-
	high	5	-

missing = 5

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 62.

Variable	Sample Elements	CMU FAMILY	
		O	E
impotence	low	2	-
	high	6	-

missing = 2

Chi-square/binomial test = 0.145 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 63.

Variable	Sample Elements	CMU FAMILY	
		O	E
selflessness	low	1	-
	high	2	-

missing = 7

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 64.

Variable	Sample Elements	CMU FAMILY	
		O	E
happiness	low	1	-
	high	3	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 65.

Variable	Sample Elements	CMU FAMILY	
		O	E
non-unionmindedness	low	1	-
	high	7	-

missing = 2

Chi-square/binomial test = 0.035 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 66.

Variable	Sample Elements	CMU FAMILY	
		O	E
evaluation	low	0	-
	high	4	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 67	Sample Elements	CMU WORKFELLOWS	
		O	E
Variable			
workmindedness	low	0	-
	high	2	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no

\* Table 68 at end of APPENDIX H

Table 69.	Sample Elements	CMU WORKFELLOWS	
		O	E
Variable			
selflessness	low	0	-
	high	1	-

missing = 9

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 70.	Sample Elements	CMU WORKFELLOWS	
		O	E
Variable			
happiness	low	1	-
	high	0	-

missing = 9

Chi-square/binomial test = - with degree of freedom  
Significant - no



Table 71.

Variable	Sample Elements	CMU WORKFELLOWS	
		O	E
non-unionmindedness	low	2	-
	high	2	-

missing = 6

Chi-square/binomial test = - with degree of freedom

Significant - no

Table 72.

Variable	Sample Elements	CMU WORKFELLOWS	
		O	E
evaluation	low	0	-
	high	1	-

missing = 9

Chi-square/binomial test = - with degree of freedom

Significant -- no

Table 73.

Variable	Sample Elements	CMU SELF	
		O	E
workmindedness	low	0	12
	high	24	12

missing = 13

Chi-square/binomial test = 24 with 1 degree of freedom

Significant - at better than .01

Table 74.

Variable	Sample Elements	CFU SELF	
		O	E
impotence	low	4	16.5
	high	29	16.5

missing = 4

Chi-square/binomial test = 18.94 with 1 degree of freedom  
Significant - at better than .01

Table 75.

Variable	Sample Elements	CFU SELF	
		O	E
selflessness	low	1	9
	high	17	9

missing = 19

Chi-square/binomial test = 14.22 with 1 degree of freedom  
Significant - at better than .01

Table 76

Variable	Sample Elements	CFU SELF	
		O	E
happiness	low	0	6.5
	high	13	6.5

missing = 24

Chi-square/binomial test = 13.00 with 1 degree of freedom  
Significant - at better than .01

Table 77.

Variable	Sample Elements	CFU SELF	
		O	E
non-unionmindedness	low	1	13.5
	high	26	13.5

missing = 10

Chi-square/binomial test = 23.15 with 1 degree of freedom  
Significant - at better than .01

Table 78.

Variable	Sample Elements	CFU SELF	
		O	E
evaluation	low	0	-
	high	6	-

missing = 31

Chi-square/binomial test = 0.016 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 79.

Variable	Sample Elements	CFU IR	
		O	E
workmindedness	low	24	12
	high	0	12

missing = 13

Chi-square/binomial test = 24.00 with 1 degree of freedom  
Significant - at better than .01

Table 80.

Variable	Sample Elements	CFU IR	
		O	E
impotence	low	31	16.5
	high	2	16.5

missing = 4

Chi-square/binomial test = 25.49 with 1 degree of freedom  
Significant - at better than .01

Table 81.

Variable	Sample Elements	CFU IR	
		O	E
selflessness	low	17	9
	high	1	9

missing = 19

Chi-square/binomial test = 14.22 with 1 degree of freedom  
Significant - at better than .01

Table 82.

Variable	Sample Elements	CFU IR	
		O	E
happiness	low	13	6.5
	high	0	6.5

missing = 24

Chi-square/binomial test = 13.00 with 1 degree of freedom  
Significant - at better than .01

Table 83.

Variable	Sample Elements	CFU IR	
		O	E
non-unionmindedness	low	27	13.5
	high	0	13.5

missing = 10

Chi-square/binomial test = 27.00 with 1 degree of freedom  
Significant - at better than .01

Table 84.

Variable	Sample Elements	CFU IR	
		O	E
evaluation	low	6	-
	high	0	-

missing = 31

Chi-square/binomial test = 0.016 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 85.

Variable	Sample Elements	CFU FAMILY	
		O	E
workmindedness	low	0	10.5
	high	21	10.5

missing = 16

Chi-square/binomial test = 21.00 with 1 degree of freedom  
Significant - at better than .01

Table 86.

Variable	Sample Elements	CFU FAMILY	
		O	E
impotence	low	2	14.5
	high	27	14.5

missing = 8

Chi-square/binomial test = 21.55 with 1 degree of freedom  
Significant - at better than .01

Table 87.

Variable	Sample Elements	CFU FAMILY	
		O	E
selflessness	low	1	7.5
	high	14	7.5

missing = 22

Chi-square/binomial test = 11.27 with 1 degree of freedom  
Significant - at better than .01

Table 88.

Variable	Sample Elements	CFU FAMILY	
		O	E
happiness	low	0	5
	high	10	5

missing = 27

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant - at better than .01

Table 89.

Variable	Sample Elements	CFU FAMILY	
		O	E
non-unionmindedness	low	1	11
	high	21	11

missing = 15

Chi-square/binomial test = 18.18 with 1 degree of freedom  
Significant - at better than .01

Table 90.

Variable	Sample Elements	CFU FAMILY	
		O	E
evaluation	low	0	-
	high	3	-

missing = 34

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 91.

Variable	Sample Elements	CFU WORKFELLOWS	
		O	E
workmindedness	low	1	-
	high	3	-

missing = 33

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 92.	Sample Elements	CFU WORKFELLOWS	
		O	E
Variable			
impotence	low	2	-
	high	5	-

missing = 30

Chi-square/binomial test = 0.227 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 93.	Sample Elements	CFU WORKFELLOWS	
		O	E
Variable			
selflessness	low	2	-
	high	2	-

missing = 33

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 94.	Sample Elements	CFU WORKFELLOWS	
		O	E
Variable			
happiness	low	1	-
	high	2	-

missing = 34

Chi-square/binomial test = - with degree of freedom  
Significant - no



Table 95.

Variable	Sample Elements	CFU WORKFELLOWS	
		O	E
non-unionmindedness	low	1	-
	high	6	-

missing = 30

Chi-square/binomial test = 0.062 with 1 degree of freedom  
Significant - no in one-tailed test

Table 96.

Variable	Sample Elements	CFU WORKFELLOWS	
		O	E
evaluation	low	1	-
	high	2	-

missing = 34

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 97.

Variable	Sample Elements	CFN SELF	
		O	E
workmindedness	low	0	-
	high	3	-

missing = 5

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 98.

Variable	Sample Elements	CFN SELF	
		O	E
impotence	low	1	-
	high	6	-

missing = 1

Chi-square/binomial test = 0.062 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 99.

Variable	Sample Elements	CFN SELF	
		O	E
selflessness	low	2	-
	high	3	-

missing = 3

Chi-square/binomial test = 0.5 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 100.

Variable	Sample Elements	CFN SELF	
		O	E
happiness	low	0	-
	high	0	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 101.

Variable	Sample Elements	CFN SELF	
		O	E
non-unionmindedness	low	0	-
	high	5	-

missing = 3

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 102.

Variable	Sample Elements	CFN SELF	
		O	E
evaluation	low	0	-
	high	2	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 103.

Variable	Sample Elements	CFN IR	
		O	E
workmindedness	low	3	-
	high	0	-

missing = 5

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 104.		CFN IR	
Variable	Sample Elements		
		O	E
impotence	low	6	-
	high	1	-

missing = 1

Chi-square/binomial test = 0.062 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 105.		CFN IR	
Variable	Sample Elements		
		O	E
selflessness	low	3	-
	high	2	-

missing = 3

Chi-square/binomial test = 0.5 with 1 degree of freedom  
in one-tailed test  
Significant - no

Table 106.		CFN IR	
Variable	Sample Elements		
		O	E
happiness	low	0	-
	high	0	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 107.

Variable	Sample Elements	CFN IR	
		O	E
non-unionmindedness	low	5	-
	high	0	-

missing = 3

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 108.

Variable	Sample Elements	CFN IR	
		O	E
evaluation	low	2	-
	high	0	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 109.

Variable	Sample Elements	CFN FAMILY	
		O	E
workmindedness	low	0	-
	high	3	-

missing = 5

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 110.

Variable	Sample Elements	CFN FAMILY	
		O	E
impotence	low	1	-
	high	6	-

missing = 1

Chi-square/binomial test = 0.062 with 1 degree of freedom  
Significant - no in one-tailed test

Table 111.

Variable	Sample Elements	CFN FAMILY	
		O	E
selflessness	low	2	-
	high	3	-

missing = 3

Chi-square/binomial test = 0.5 with 1 degree of freedom  
Significant - no in one-tailed test

Table 112.

Variable	Sample Elements	CFN FAMILY	
		O	E
happiness	low	0	-
	high	0	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 113.		CFN FAMILY	
Variable	Sample Elements	O	E
non-unionmindedness	low	0	-
	high	5	-

missing = 3

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 level in one-tailed test

Table 114.		CFN FAMILY	
Variable	Sample Elements	O	E
evaluation	low	0	-
	high	2	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 115.		CFN WORKFELLOWS	
Variable	Sample Elements	O	E
workmindedness	low	1	-
	high	0	-

missing = 7

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 116.

Variable	Sample Elements	CFN WORKFELLOWS	
		O	E
impotence	low	2	-
	high	0	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 117.

Variable	Sample Elements	CFN WORKFELLOWS	
		O	E
selflessness	low	1	-
	high	1	-

missing = 6

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 118.

Variable	Sample Elements	CFN WORKFELLOWS	
		O	E
happiness	low	0	-
	high	0	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no



Table 119.

Variable	Sample Elements	CFN WORKFELLOWS	
		O	E
non-unionmindedness	low	1	-
	high	0	-

missing = 7

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 120.

Variable	Sample Elements	CFN WORKFELLOWS	
		O	E
evaluation	low	0	-
	high	0	-

missing = 8

Chi-square/binomial test = - with degree of freedom  
Significant - no

Table 121.

Variable	Sample Elements	MANUAL SELF	
		O	E
workmindedness	low	3	11
	high	19	11

missing = 20

Chi-square/binomial test = 11.64 with 1 degree of freedom  
Significant - at better than .01

Table 122.

Variable	Sample Elements	MANUAL SELF	
		O	E
impotence	low	9	13.5
	high	28.	13.5

missing = 5

Chi-square/binomial test = 31.15 with 1 degree of freedom  
Significant - at better than .01

Table 123.

Variable	Sample Elements	MANUAL SELF	
		O	E
selflessness	low	2	16
	high	30	16

missing = 10

Chi-square/binomial test = 24.5 with 1 degree of freedom  
Significant - .01

Table 124.

Variable	Sample Elements	MANUAL SELF	
		O	E
happiness	low	0	6.5
	high	13	6.5

missing = 29

Chi-square/binomial test = 13.00 with 1 degree of freedom  
Significant - .01

Table 125.

Variable	Sample Elements	MANUAL SELF	
		O	E
non-unionmindedness	low	7	15
	high	23	15

missing = 12

Chi-square/binomial test = 8.53 with 1 degree of freedom  
Significant - at better than .01

Table 126.

Variable	Sample Elements	MANUAL SELF	
		O	E
evaluation	low	0	6
	high	12	6

missing = 30

Chi-square/binomial test = 12.00 with 1 degree of freedom  
Significant - .01

Table 127.

Variable	Sample Elements	MANUAL IR	
		O	E
workmindedness	low	19	11
	high	3	11

missing = 20

Chi-square/binomial test = 11.64 with 1 degree of freedom  
Significant - .01

Table 128.

Variable	Sample Elements	MANUAL IR	
		O	E
impotence	low	31	17.5
	high	4	17.5

missing = 7

Chi-square/binomial test = 20.83 with 1 degree of freedom  
Significant - at better than .01

Table 129.

Variable	Sample Elements	MANUAL IR	
		O	E
selflessness	low	24	15
	high	6	15

missing = 12

Chi-square/binomial test = 10.80 with 1 degree of freedom  
Significant - at better than .01

Table 130.

Variable	Sample Elements	MANUAL IR	
		O	E
happiness	low	13	6.5
	high	0	6.5

missing = 29

Chi-square/binomial test = 13.00 with 1 degree of freedom  
Significant - at better than .01

Table 131.

Variable	Sample Elements	MANUAL IR	
		O	E
non-unionmindedness	low	27	14
	high	1	14

missing = 14

Chi-square/binomial test = 24.14 with 1 degree of freedom  
Significant - at better than .01

Table 132.

Variable	Sample Elements	MANUAL IR	
		O	E
evaluation	low	12	6
	high	0	6

missing = 30

Chi-square/binomial test = 12.00 with 1 degree of freedom  
Significant - at better than .01

Table 133.

Variable	Sample Elements	MANUAL FAMILY	
		O	E
workmindedness	low	1	9.5
	high	18	9.5

missing = 23

Chi-square/binomial test = 15.21 with 1 degree of freedom  
Significant - at better than .01

Table 134.

Variable	Sample Elements	MANUAL FAMILY	
		O	E
impotence	low	4	14.5
	high	25	14.5

missing = 13

Chi-square/binomial test = 15.21 with 1 degree of freedom  
Significant - at better than .01

Table 135.

Variable	Sample Elements	MANUAL FAMILY	
		O	E
selflessness	low	5	12
	high	19	12

missing = 18

Chi-square/binomial test = 8.17 with 1 degree of freedom  
Significant - at better than .01

Table 136.

Variable	Sample Elements	MANUAL FAMILY	
		O	E
happiness	low	0	5.5
	high	11	5.5

missing = 31

Chi-square/binomial test = 11.00 with 1 degree of freedom  
Significant - at better than .01

Table 137.

Variable	Sample Elements	MANUAL FAMILY	
		O	E
non-unionmindedness	low	0	12.5
	high	25	12.5

missing = 17

Chi-square/binomial test = 25.00 with 1 degree of freedom  
Significant at better than .01

Table 138

Variable	Sample Elements	MANUAL FAMILY	
		O	E
evaluation	low	0	5
	high	10	5

missing = 32

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant at better than .01

Table 139.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
workmindedness	low	1	-
	high	5	-

missing = 36

Chi-square/binomial test = 0.218 with 1 degree of freedom  
in two-tailed test  
Significant - no

Table 140.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
impotence	low	6	6.5
	high	7	6.5

missing = 29

Chi-square/binomial test = 0.08 with 1 degree of freedom  
Significant - no

Table 141.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
selflessness	low	8	5
	high	2	5

missing = 32

Chi-square/binomial test = 3.60 with 1 degree of freedom  
Significant - no

Table 142.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
happiness	low	2	-
	high	0	-

missing = 40

Chi-square/binomial test = - with degree of freedom  
Significant - no



Table 140.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
impotence	low	6	6.5
	high	7	6.5

missing = 29

Chi-square/binomial test = 0.08 with 1 degree of freedom

Significant - no

Table 141.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
selflessness	low	8	5
	high	2	5

missing = 32

Chi-square/binomial test = 3.60 with 1 degree of freedom

Significant - no

Table 142.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
happiness	low	2	-
	high	0	-

missing = 40

Chi-square/binomial test = - with degree of freedom

Significant - no

Table 143.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
non-unionmindedness	low	3	5
	high	7	5

missing = 32

Chi-square/binomial test = 1.60 with 1 degree of freedom  
Significant - no

Table 144.

Variable	Sample Elements	MANUAL WORKFELLOWS	
		O	E
evaluation	low	0	-
	high	0	-

missing =

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 145.

Variable	Sample Elements	MMU SELF	
		O	E
workmindedness	low	3	6
	high	9	6

missing = 16

Chi-square/binomial test = 3.00 with 1 degree of freedom  
Significant - no

Table 146.

Variable	Sample Elements	MMU SELF	
		O	E
workmindedness	low	8	12
	high	16	12

missing = 4

Chi-square/binomial test = 2.67 with 1 degree of freedom  
Significant - no

Table 147.

Variable	Sample Elements	MMU SELF	
		O	E
selflessness	low	0	11
	high	22	11

missing = 6

Chi-square/binomial test = 22.00 with 1 degree of freedom  
Significant - at better than .01

Table 148.

Variable	Sample Elements	MMU SELF	
		O	E
happiness	low	0	-
	high	8	-

missing = 20

Chi-square/binomial test = 0.008 with 1 degree of freedom  
Significant - at .01 in two-tailed test

Table 149.

Variable	Sample Elements	MMU SELF	
		O	E
non-unionmindedness	low	7	10
	high	14	11

missing = 7

Chi-square/binomial test = 1.64 with 1 degree of freedom  
Significant - no

Table 150.

Variable	Sample Elements	MMU SELF	
		O	E
evaluation	low	0	-
	high	9	-

missing = 19

Chi-square/binomial test = 0.002 with 1 degree of freedom  
Significant - at .01 in one-tailed test

Table 151.

Variable	Sample Elements	MMU IR	
		O	E
workmindedness	low	9	6
	high	3	6

missing = 16

Chi-square/binomial test = 3.00 with 1 degree of freedom  
Significant - no

Table 152.

Variable	Sample Elements	MMU IR	
		O	E
impotence	low	21	11.5
	high	2	11.5

missing = 5

Chi-square/binomial test = 15.70 with 1 degree of freedom  
Significant - at better than .01

Table 153.

Variable	Sample Elements	MMU IR	
		O	E
selflessness	low	16	10
	high	4	10

missing = 8

Chi-square/binomial test = 7.20 with 1 degree of freedom  
Significant - at better than .01

Table 154.

Variable	Sample Elements	MMU IR	
		O	E
happiness	low	8	-
	high	0	-

missing = 20

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant - at .01 in one-tailed test

Table 155.

Variable	Sample Elements	MMU IR	
		O	E
non-unionmindedness	low	19	10
	high	1	10

missing = 8

Chi-square/binomial test = 16.20 with 1 degree of freedom  
Significant - at better than .01

Table 156.

Variable	Sample Elements	MMU IR	
		O	E
evaluation	low	9	-
	high	0	-

missing = 19

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant - at .01 in two-tailed test

Table 157.

Variable	Sample Elements	MMU FAMILY	
		O	E
workmindedness	low	1	5
	high	9	5

missing = 18

Chi-square/binomial test = 6.40 with 1 degree of freedom  
Significant - .05

Table 158.

Variable	Sample Elements	MMU FAMILY	
		O	E
impotence	low	2	8.5
	high	15	8.5

missing = 11

Chi-square/binomial test = 9.94 with 1 degree of freedom  
Significant - at better than .01

Table 159.

Variable	Sample Elements	MMU FAMILY	
		O	E
selflessness	low	4	7.5
	high	11	7.5

missing = 13

Chi-square/binomial test = 3.27 with 1 degree of freedom  
Significant - no

Table 160.

Variable	Sample Elements	MMU FAMILY	
		O	E
happiness	low	0	-
	high	7	-

missing = 21

Chi-square/binomial test = .016 with 1 degree of freedom  
Significant - .05 in two-tailed test

Table 161.

Variable	Sample Elements	MMU FAMILY	
		O	E
non-unionmindedness	low	0	8
	high	16	8

missing = 12

Chi-square/binomial test = 16.00 with 1 degree of freedom  
Significant - at better than .01

Table 162.

Variable	Sample Elements	MMU FAMILY	
		O	E
evaluation	low	0	-
	high	7	-

missing = 21

Chi-square/binomial test = 0.008 with 1 degree of freedom  
Significant - .01 in one-tailed test

Table 163.

Variable	Sample Elements	MMU WORKFELLOWS	
		O	E
workmindedness	low	0	-
	high	3	-

missing = 25

Chi-square/binomial test = - with degree of freedom  
Significant -



Table 164.		MMU WORKFELLOWS	
Variable	Sample Elements	O	E
impotence	low	4	-
	high	5	-

missing = 19

Chi-square/binomial test = 1.0 with 1 degree of freedom  
in two-tailed test  
Significant - no

Table 165.		MMU WORKFELLOWS	
Variable	Sample Elements	O	E
selflessness	low	7	-
	high	0	-

missing = 21

Chi-square/binomial test = 0.008 with 1 degree of freedom  
Significant - at .01 in one-tailed test

Table 166.		MMU WORKFELLOWS	
Variable	Sample Elements	O	E
happiness	low	1	-
	high	0	-

missing = 27

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 167.		MMU WORKFELLOWS	
Variable	Sample Elements	O	E
non-unionmindedness	low	2	-
	high	6	-

missing = 20

Chi-square/binomial test = 0.29 with 1 degree of freedom  
in two-tailed test  
Significant - no

Table 168.		MMU WORKFELLOWS	
Variable	Sample Elements	O	E
evaluation	low	0	-
	high	0	-

missing = 28

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 169.		MFU SELF	
Variable	Sample Elements	O	E
workmindedness	low	0	5
	high	10	5

missing = 4

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant - at better than .01

Table 170.

Variable	Sample Elements	MFU SELF	
		O	E
impotence	low	1	6.5
	high	12	6.5

missing = 1

Chi-square/binomial test = 9.31 with 1 degree of freedom  
Significant - at better than .01

Table 171.

Variable	Sample Elements	MFU SELF	
		O	E
selflessness	low	2	5
	high	8	5

missing = 4

Chi-square/binomial test = 3.60 with 1 degree of freedom  
Significant - no

Table 172.

Variable	Sample Elements	MFU SELF	
		O	E
happiness	low	0	-
	high	5	-

missing = 9

Chi-square/binomial test = 0.062 with 1 degree of freedom  
Significant - no in two-tailed test

Table 173.

Variable	Sample Elements	MFU SELF	
		O	E
non-unionmindedness	low	0	-
	high	9	-

missing = 4

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant - at .01 in two-tailed test

Table 174.

Variable	Sample Elements	MFU SELF	
		O	E
evaluation	low	0	-
	high	3	-

missing = 11

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 175.

Variable	Sample Elements	MFU IR	
		O	E
workmindedness	low	10	5
	high	0	5

missing = 4

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant - at better than .01

Table 176.

Variable	Sample Elements	MFU IR	
		O	E
impotence	low	10	6
	high	2	6

missing = 2

Chi-square/binomial test = 5.33 with 1 degree of freedom  
Significant - at .05

Table 177.

Variable	Sample Elements	MFU IR	
		O	E
selflessness	low	8	5
	high	2	5

missing = 4

Chi-square/binomial test = 3.60 with 1 degree of freedom  
Significant - no

Table 178.

Variable	Sample Elements	MFU IR	
		O	E
happiness	low	5	-
	high	0	-

missing = 9

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant - at .05 in one-tailed test

Table 179.

Variable	Sample Elements	MFU IR	
		O	E
non-unionmindedness	low	8	-
	high	0	-

missing = 6

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant - at .01 in one-tailed test

Table 180.

Variable	Sample Elements	MFU IR	
		O	E
evaluation	low	3	-
	high	0	-

missing = 11

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 181.

Variable	Sample Elements	MFU FAMILY	
		O	E
workmindedness	low	0	-
	high	9	-

missing = 5

Chi-square/binomial test = .004 with 1 degree of freedom  
Significant - at .01 in two-tailed test

Table 182.

Variable	Sample Elements	MFU FAMILY	
		O	E
impotence	low	2	6
	high	10	6

missing = 2

Chi-square/binomial test = 5.33 with 1 degree of freedom  
Significant - at .05

Table 183.

Variable	Sample Elements	MFU FAMILY	
		O	E
selflossness	low	1	-
	high	8	-

missing = 5

Chi-square/binomial test = 0.04 with 1 degree of freedom  
Significant - at .05 in two-tailed test

Table 184.

Variable	Sample Elements	MFU FAMILY	
		O	E
happiness	low	0	-
	high	4	-

missing = 10

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 185.

Variable	Sample Elements	MFU FAMILY	
		O	E
non-unionmindedness	low	0	-
	high	9	-

missing = 5

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant - at .01 in two-tailed test

Table 186.

Variable	Sample Elements	MFU FAMILY	
		O	E
evaluation	low	0	-
	high	3	-

missing = 11

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 187.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
workmindedness	low	1	-
	high	2	-

missing = 11

Chi-square/binomial test = - with degree of freedom  
Significant -



Table 188.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
impotence	low	2	-
	high	2	-

missing = 10

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 189.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
selflessness	low	1	-
	high	2	-

missing = 11

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 190.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
happiness	low	2	-
	high	0	-

missing = 13

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 191.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
non-unionmindedness	low	2	0
	high	0	-

missing = 12

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 192.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
evaluation	low	0	-
	high	0	-

missing = 14

Chi-square/binomial test = - with degree of freedom  
Significant -

\* Table 68.

Variable	Sample Elements	CMU WORKFELLOWS	
		O	E
impotence	low	2	-
	high	2	-

missing = 6

Chi-square/binomial test = with degree of freedom  
Significant - no

APPENDIX J

Tests for II A selective comparison of variables a) within element group

Table 193.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY WORKMINDED	
		O	E
impotence	low	5	23
	high	41	23

missing = 51

Chi-square/binomial test = 28.17 with 1 degree of freedom  
Significant - at better than .01

Table 194.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY WORKMINDED	
		O	E
selflessness	low	2	15.5
	high	29	15.5

missing = 67

Chi-square/binomial test = 23.52 with 1 degree of freedom  
Significant at better than .01

Table 195.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF highly workminded	
		O	E
happiness	low	1	9
	high	17	9

missing = 81

Chi-square/binomial test = 14.22 with 1 degree of freedom  
Significant at better than .01

Table 191.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
non-unionmindedness	low	2	0
	high	0	-

missing = 12

Chi-square/binomial test = - with degree of freedom  
Significant -

Table 192.

Variable	Sample Elements	MFU WORKFELLOWS	
		O	E
evaluation	low	0	-
	high	0	-

missing = 14

Chi-square/binomial test = - with degree of freedom  
Significant -

\* Table 168.

Variable	Sample Elements	CMU WORKFELLOWS	
		O	E
impotence	low	2	-
	high	2	-

missing = 6

Chi-square/binomial test = with degree of freedom  
Significant - no

APPENDIX J

Tests for II A selective comparison of variables a) within element group

Table 193.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY WORKMINDED	
		O	E
impotence	low	5	23
	high	41	23

missing = 51

Chi-square/binomial test = 28.17 with 1 degree of freedom  
Significant - at better than .01

Table 194.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY WORKMINDED	
		O	E
selflessness	low	2	15.5
	high	29	15.5

missing = 67

Chi-square/binomial test = 23.52 with 1 degree of freedom  
Significant at better than .01

Table 195.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF highly workminded	
		O	E
happiness	low	1	9
	high	17	9

missing = 81

Chi-square/binomial test = 14.22 with 1 degree of freedom  
Significant at better than .01

Table 196.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY WORKMINDED	
		O	E
non-union- mindedness	low	1	20.5
	high	40	20.5

missing = 57

Chi-square/~~binomial test~~ = 37.10 with 1 degree of freedom  
Significant - at better than .01

Table 197.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY WORKMINDED	
		O	E
evaluation	low	0	8
	high	16	8

missing = 84

Chi-square/~~binomial test~~ = 16.00 with 1 degree of freedom  
Significant at better than .01

Table 198.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY IMPOTENT	
		O	E
selflessness	low	4	19.5
	high	35	19.5

missing = 49

Chi-square/~~binomial test~~ = 24.64 with 1 degree of freedom  
Significant at better than .01

Table 199.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL SELF HIGHLY IMPOTENT	
		O	E
happiness	low	1	11
	high	21	11

missing = 74

Chi-square/binomial test = 18.18 with 1 degree of freedom  
Significant - at better than .01

Table 200.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY IMPOTENT	
		O	E
non-union- mindedness	low	3	24.5
	high	46	24.5

missing = 35

Chi-square/binomial test = 37.73 with 1 degree of freedom  
Significant at better than .01

Table 201.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY IMPOTENT	
		O	E
evaluation	low	0	7
	high	14	7

missing = 83

Chi-square/binomial test = 14.00 with 1 degree of freedom  
Significant at better than .01

Table 202.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY SELFLESS	
		O	E
happiness	low	0	8
	high	16	8

missing = 82

Chi-square/~~binomial test~~ = 16.00 with 1 degree of freedom  
Significant - at better than .01

Table 203.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY SELFLESS	
		O	E
non-union- mindedness	low	6	18
	high	30	18

missing = 60

Chi-square/~~binomial test~~ = 16.00 with 1 degree of freedom  
Significant at better than .01

Table 204.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF highly selfless	
		O	E
evaluation	low	0	8
	high	16	8

missing = 83

Chi-square/~~binomial test~~ = 16.00 with 1 degree of freedom  
Significant at better than .01



Table 205.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY HAPPY	
		O	E
non-union- mindedness	low	0	9.5
	high	19	9.5

missing = 80

Chi-square/~~binomial test~~ = 19.00 with 1 degree of freedom  
Significant - at better than .01

Table 206.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY HAPPY	
		O	E
evaluation	low	0	-
	high	9	-

missing = 90

~~Chi-square~~/binomial test = 0.002 with 1 degree of freedom  
Significant at better than .01 in one-tailed test

Table 207.

Sample Elements Variable	Sample Elements Variable ALL/SELF	ALL/SELF HIGHLY NON-UNIONMINDED	
		O	E
evaluation	low	0	10
	high	20	10

missing = 80

Chi-square/~~binomial test~~ = 20.00 with 1 degree of freedom  
Significant at better than .01

Table 208.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON WORKMINDEDNESS	
		O	E
impotent	low	42	23
	high	4	23

missing = 51

Chi-square/binomial test = 31.39 with 1 degree of freedom  
Significant - at better than .01

Table 209.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON WORKMINDEDNESS	
		O	E
selflessness	low	29	15.5
	high	2	15.5

missing = 67

Chi-square/binomial test = 23.52 with 1 degree of freedom  
Significant at better than .01

Table 210.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON WORKMINDEDNESS	
		O	E
happiness	low	17	9
	high	1	9

missing = 81

Chi-square/binomial test = 14.22 with 1 degree of freedom  
Significant at better than .01

Table 211.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON WORKMINDEDNESS	
		O	E
non-union- mindedness	low	41	20.5
	high	0	20.5

missing = 57

Chi-square/~~binomial test~~ = 41 with 1 degree of freedom  
Significant - at better than .01

Table 212.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON WORKMINDEDNESS	
		O	E
evaluation	low	16	8
	high	0	8

missing = 84

Chi-square/~~binomial test~~ = 16 with 1 degree of freedom  
Significant at better than .01

Table 213.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON IMPOTENCE	
		O	E
selflessness	low	33	20.5
	high	8	20.5

missing = 51

Chi-square/~~binomial test~~ = 15.24 with 1 degree of freedom  
Significant at better than .01

Table 214.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON IMPOTENCE	
		O	E
happiness	low	22	11.5
	high	1	11.5

missing = 74

Chi-square/binomial test = 19.17 with 1 degree of freedom  
Significant - at better than .01

Table 215.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON IMPOTENCE	
		O	E
non-union- mindedness	low	54	27.5
	high	1	27.5

missing = 38

Chi-square/binomial test = 51.07 with 1 degree of freedom  
Significant at better than .01

Table 216.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON IMPOTENCE	
		O	E
evaluation	low	16	8
	high	0	8

missing = 83

Chi-square/binomial test = 16.00 with 1 degree of freedom  
Significant at better than .01

Table 217

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON SELFLESSNESS	
		O	E
happiness	low	16	8
	high	0	8

missing = 82

Chi-square/binomial test = 16.00 with 1 degree of freedom  
Significant - at better than .01

Table 218.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON SELFLESSNESS	
		O	E
non-union- mindedness	low	29	15
	high	1	15

missing = 62

Chi-square/binomial test = 26.15 with 1 degree of freedom  
Significant at better than .01

Table 219.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON SELFLESSNESS	
		O	E
evaluation	low	15	7.5
	high	0	7.5

missing = 84

Chi-square/binomial test = 15.00 with 1 degree of freedom  
Significant at better than .01

Table 220.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON HAPPINESS	
		O	E
non-union-mindedness	low	19	9.5
	high	0	9.5

missing = 80

Chi-square/binomial test = 19.00 with 1 degree of freedom  
Significant - at better than .01

Table 221.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON HAPPINESS	
		O	E
evaluation	low	9	-
	high	0	-

missing = 90

Chi-square/binomial test = 0.002 with 1 degree of freedom  
Significant at better than .01 in one-tailed test

Table 222.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/IR LOW ON NON-UNION-MINDEDNESS	
		O	E
evaluation	low	20	10
	high	0	10

missing = 80

Chi-square/binomial test = 20.00 with 1 degree of freedom  
Significant at better than .01

Table 223.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY WORKMINDED	
		O	E
impotence	low	4	21.5
	high	39	21.5

missing = 56

Chi-square/~~binomial test~~ = 28.49 with 1 degree of freedom  
Significant - at better than .01

Table 224.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY WORKMINDED	
		O	E
selflessness	low	3	14
	high	25	14

missing = 71

Chi-square/~~binomial test~~ = 17.29 with 1 degree of freedom  
Significant at better than .01

Table 225.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY WORKMINDED	
		O	E
happiness	low	1	7.5
	high	14	7.5

missing = 84

Chi-square/~~binomial test~~ = 11.27 with 1 degree of freedom  
Significant at better than .01

Table 226.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY WORKMINDED	
		O	E
non-union-mindedness	low	0	18.5
	high	37	18.5

missing = 62

Chi-square/~~binomial test~~ = 37.00 with 1 degree of freedom  
Significant - at better than .01

Table 227.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY WORKMINDED	
		O	E
evaluation	low	0	7
	high	14	7

missing = 86.

Chi-square/~~binomial test~~ = 14.00 with 1 degree of freedom  
Significant at better than .01

Table 228.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY IMPOTENT	
		O	E
selflessness	low	7	17.5
	high	28	17.5

missing = 58

Chi-square/~~binomial test~~ = 12.60 with 1 degree of freedom  
Significantat better than .01



Table 229.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY IMPOTENT	
		O	E
happiness	low	1	9.5
	high	18	9.5

missing = 78

Chi-square/binomial test = 15.21 with 1 degree of freedom  
Significant - at better than .01

Table 230.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY IMPOTENT	
		O	E
non-union- mindedness	low	2	23.5
	high	45	23.5

missing = 43

Chi-square/binomial test = 39.34 with 1 degree of freedom  
Significant at better than .01

Table 231.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY IMPOTENT	
		O	E
evaluation	low	0	6.5
	high	13	6.5

missing = 85

Chi-square/binomial test = 13.00 with 1 degree of freedom  
Significant at better than .01

Table 232.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY SELFLESS	
		O	E
happiness	low	0	6
	high	12	6

missing = 87

Chi-square/binomial test = 12.00 with 1 degree of freedom  
 Significant - at better than .01

Table 233.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY SELFLESS	
		O	E
non-union- mindedness	low	1	13.5
	high	26	13.5

missing = 67

Chi-square/binomial test = 23.15 with 1 degree of freedom  
 Significant at better than .01

Table 234.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY SELFLESS	
		O	E
evaluation	low	0	6
	high	12	6

missing = 87

Chi-square/binomial test = 12.00 with 1 degree of freedom  
 Significant at better than .01

Table 235.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY HAPPY	
		O	E
non-union-mindedness	low	1	8
	high	15	8

missing = 83

Chi-square/binomial test = 12.25 with 1 degree of freedom  
Significant - at better than .01

Table 236.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY highly happy	
		O	E
evaluation	low	0	-
	high	6	-

missing = 93

Chi-square/binomial test = 0.16 with 1 degree of freedom  
in one-tailed test  
Significant no

Table 237.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/FAMILY HIGHLY NON-UNION-MINDED	
		O	E
evaluation	low	0	8
	high	16	8

missing = 84

Chi-square/binomial test = 16.00 with 1 degree of freedom  
Significant at better than .01

Table 238.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY WORKMINDED	
		O	E
impotence	low	4	14.5
	high	25	14.5

missing = 29

Chi-square/binomial test = 15.21 with 1 degree of freedom  
Significant - at better than .01

Table 239.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY WORKMINDED	
		O	E
selflessness	low	1	7.5
	high	14	7.5

missing = 43

Chi-square/binomial test = 11.27 with 1 degree of freedom  
Significant at better than .01

Table 240.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY WORKMINDED	
		O	E
happiness	low	1	5.5
	high	10	5.5

missing = 47

Chi-square/binomial test = 7.36 with 1 degree of freedom  
Significant at better than .01

Table 241.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY WORKMINDED	
		O	E
non-union- mindedness	low	1	13
	high	25	13

missing = 32

Chi-square/binomial test = 22.15 with 1 degree of freedom  
Significant - at better than .01

Table 242.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY WORKMINDED	
		O	E
evaluation	low	0	4.5
	high	9	4.5

missing =

Chi-square/binomial test = 0.002 with 1 degree of freedom  
Significant at better than .01 in one-tailed test

Table 243.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY IMPOTENT	
		O	E
selflessness	low	3	9.5
	high	16	9.5

missing = 34

Chi-square/binomial test = 8.89 with 1 degree of freedom  
Significant at better than .01

Table 244.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY IMPOTENT	
		O	E
happiness	low	1	6
	high	11	6

missing = 44

Chi-square/binomial test = 8.33 with 1 degree of freedom  
Significant at better than .01

Table 245.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY IMPOTENT	
		O	E
non-union- mindedness	low	2	15
	high	28	15

missing = 20

Chi-square/binomial test = 22.53 with 1 degree of freedom  
Significant at better than .01

Table 246.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY IMPOTENT	
		O	E
evaluation	low	0	-
	high	6	-

missing = 49

Chi-square/binomial test = 0.016 with 1 degree of freedom  
Significant at .05 in one-tail test

Table 247.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY SELFLESS	
		O	E
happiness	low	0	-
	high	6	-

missing = 51

XXXXXXXXXX  
Chi-square/binomial test = 0.016 with 1 degree of freedom  
Significant - at .05 in one-tail test

Table 248.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY SELFLESS	
		O	E
non-union- mindedness	low	1	8
	high	15	8

missing = 40

Chi-square/binomial test = 12.25 with 1 degree of freedom  
Significant at better than .01

Table 249.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY SELFLESS	
		O	E
evaluation	low	0	-
	high	7	-

missing = 50

XXXXXXXXXX  
Chi-square/binomial test = 0.008 with 1 degree of freedom  
Significant .01 in one-tail test

Table 250.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY HAPPY	
		O	E
non-union- mindedness	low	0	5.5
	high	11	5.5

missing = 46

Chi-square/~~binomial test~~ = 11.00 with 1 degree of freedom  
Significant - at better than .01

Table 251.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY HAPPY	
		O	E
evaluation	low	0	-
	high	5	-

missing = 52

~~Chi-square~~/~~binomial test~~ = 0.031 with 1 degree of freedom  
Significant at .05 in one-tail test

Table 252.

Sample Elements Variable	Sample Elements Variable CLERICAL/SELF	CLERICAL/SELF HIGHLY NON-UNIONMINDED	
		O	E
evaluation	low	0	6
	high	12	6

missing = 46

Chi-square/~~binomial test~~ = 12.00 with 1 degree of freedom  
Significant at better than .01



Table 253.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON WORKMINDEDNESS	
		O	E
impotent	low	27	14.5
	high	2	14.5

missing = 29

Chi-square/~~binomial test~~ = 21.55 with 1 degree of freedom  
Significant - at better than .01

Table 254.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON WORKMINDEDNESS	
		O	E
selflessness	low	14	7.5
	high	1	7.5

missing = 43

Chi-square/~~binomial test~~ = 11.27 with 1 degree of freedom  
Significant at better than .01

Table 255.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON WORKMINDEDNESS	
		O	E
happiness	low	10	5.5
	high	1	5.5

missing = 47

Chi-square/~~binomial test~~ = 7.36 with 1 degree of freedom  
Significant at better than .01

Table 256.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON WORKMINDEDNESS	
		O	E
non-union- mindedness	low	26	13
	high	0	13

missing = 32

Chi-square/binomial test = 26.00 with 1 degree of freedom  
Significant - at better than .01

Table 257.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON WORKMINDEDNESS	
		O	E
evaluation	low	9	-
	high	0	-

missing = 49

Chi-square/binomial test = 0.002 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 258.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON IMPOTENCE	
		O	E
selflessness	low	16	9.5
	high	3	9.5

missing = 35

Chi-square/binomial test = 8.89 with 1 degree of freedom  
Significant at better than .01

Table 259.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON IMPOTENCE	
		O	E
happiness	low	13	7
	high	1	7

missing = 44

Chi-square/binomial test = 10.29 with 1 degree of freedom  
Significant - at better than .01

Table 260.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON IMPOTENCE	
		O	E
non-union- mindedness	low	32	16
	high	0	16

missing = 21

Chi-square/binomial test = 32.00 with 1 degree of freedom  
Significant at better than .01

Table 261.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON IMPOTENCE	
		O	E
evaluation	low	8	-
	high	0	-

missing = 49

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 262.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON SELFLESSNESS	
		O	E
happiness	low	6	3
	high	0	3

missing = 51

~~Chi-square~~/binomial test = 0.016 with 1 degree of freedom  
Significant - at .05 in one-tail test

Table 263.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON SELFLESSNESS	
		O	E
non-union- mindedness	low	15	7.5
	high	0	7.5

missing = 41

Chi-square/binomial test = 15.00 with 1 degree of freedom  
Significant at better than .01

Table 264.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON SELFLESSNESS	
		O	E
evaluation	low	7	-
	high	0	-

missing = 50

~~Chi-square~~/binomial test = 0.008 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 265.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON HAPPINESS	
		O	E
non-union-mindedness	low	11	5.5
	high	0	5.5

missing = 46

Chi-square/~~binomial~~ test = 10.00 with 1 degree of freedom  
Significant - qt better than .01

Table 266.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON HAPPINESS	
		O	E
evaluation	low	5	-
	high	0	-

missing = 52

~~Chi-square~~/binomial test = 0.031 with 1 degree of freedom  
Significant at .05 in one-tail test

Table 267.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/IR LOW ON NON-UNIONMIND- EDNESS	
		O	E
evaluation	low	12	6
	high	0	6

missing = 46

Chi-square/~~binomial~~ test = 12.00 with 1 degree of freedom  
Significant at better than .01

Table 268.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY WORKMINDED	
		O	E
impotence	low	2	13.5
	high	25	13.5

missing = 31

Chi-square/binomial test = 19.59 with 1 degree of freedom  
Significant - at better than .01

Table 269.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY WORKMINDED	
		O	E
Selflessness	low	1	6.5
	high	12	6.5

missing = 45

Chi-square/binomial test = 9.31 with 1 degree of freedom  
Significant at better than .01

Table 270.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY WORKMINDED	
		O	E
happiness	low	1	-
	high	8	-

missing = 49

Chi-square/binomial test = 0.035 with 1 degree of freedom  
Significant at .05 in one-tail test

Table 271.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY WORKMINDED	
		O	E
non-union- mindedness	low	0	11.5
	high	23	11.5

missing =

Chi-square/~~binomial test~~ = 23.00 with 1 degree of freedom  
Significant - at better than .01

Table 272.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY WORKMINDED	
		O	E
evaluation	low	0	-
	high	7	-

missing = 51

~~Chi-square~~/binomial test = 0.008 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 273.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY IMPOTENT	
		O	E
selflessness	low	3	9
	high	15	9

missing = 36

Chi-square/~~binomial test~~ = 8.00 with 1 degree of freedom  
Significant at better than .01

Table 274.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY IMPOTENT	
		O	E
happiness	low	1	5.5
	high	10	5.5

missing = 46

Chi-square/binomial test = 7.36 with 1 degree of freedom  
Significant - at better than .01

Table 275.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY IMPOTENT	
		O	E
non-union- mindedness	low	2	14.5
	high	27	14.5

missing = 23

Chi-square/binomial test = 21.55 with 1 degree of freedom  
Significant at better than .01

Table 276.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY IMPOTENT	
		O	E
evaluation	low	0	-
	high	6	-

missing = 50

Chi-square/binomial test = 0.016 with 1 degree of freedom  
Significant at .05 in one-tail test



Table 277.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY SELFLESS	
		O	E
happiness	low	0	-
	high	3	-

missing =

Chi-square/binomial test = with degree of freedom  
Significant -

Table 278.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY SELFLESS	
		O	E
non-union- mindedness	low	1	6.5
	high	12	6.5

missing = 43

Chi-square/binomial test = 9.31 with 1 degree of freedom  
Significant at better than .01

Table 279.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY SELFLESS	
		O	E
evaluation	low	0	-
	high	5	-

missing = 52

Chi-square/binomial test = 0.031 with 1 degree of freedom  
Significant at .05 in one-tail test

Table 280.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY HAPPY	
		O	E
non-union- mindedness	low	1	-
	high	7	-

missing = 49

Chi-square/binomial test = 0.062 with 1 degree of freedom  
in one-tail test  
Significant - no

Table 281.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY HAPPY	
		O	E
evaluation	low	0	-
	high	3	-

missing =

Chi-square/binomial test = with degree of freedom  
Significant

Table 282.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/FAMILY HIGHLY NON-UNIONMINDED	
		O	E
evaluation	low	0	-
	high	8	-

missing = 50

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 283.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY WORKMINDED	
		O	E
impotence	low	1	8.5
	high	16	8.5

missing = 22

Chi-square/binomial test = 13.24 with 1 degree of freedom  
Significant - at better than .01

Table 284.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY WORKMINDED	
		O	E
selflessness	low	1	8
	high	15	8

missing = 24

Chi-square/binomial test = 12.25 with 1 degree of freedom  
Significant at better than .01

Table 285.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY WORKMINDED	
		O	E
happiness	low	0	-
	high	7	-

missing =

Chi-square/binomial test = 0.008 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 286.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY WORKMINDED	
		O	E
non-union- mindedness	low	0	7.5
	high	15	7.5

missing = 25

Chi-square/binomial test = 15.00 with 1 degree of freedom  
Significant - at better than .01

Table 287.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY WORKMINDED	
		O	E
evaluation	low	0	-
	high	7	-

missing =

Chi-square/binomial test = 0.003 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 288.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY IMPOTENT	
		O	E
selflessness	low	1	10
	high	19	10

missing = 15

Chi-square/binomial test = 16.20 with 1 degree of freedom  
Significant at better than .01

Table 289.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY IMPOTENT	
		O	E
happiness	low	0	5
	high	10	5

missing = 30

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant at better than .01

Table 290.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY IMPOTENT	
		O	E
non-union- mindedness	low	1	9.5
	high	18	9.5

missing = 15

Chi-square/binomial test = 15.21 with 1 degree of freedom  
Significant at better than .01

Table 291.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY IMPOTENT	
		O	E
evaluation	low	0	-
	high	8	-

missing =

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 292.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY SELFLESS	
		O	E
happiness	low	0	5
	high	10	5

missing = 31

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant - at better than .01

Table 293.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY SELFLESS	
		O	E
non-union- mindedness	low	5	10
	high	15	10

missing = 20

Chi-square/binomial test = 5.00 with 1 degree of freedom  
Significant at better than .05

Table 294.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY SELFLESS	
		O	E
evaluation	low	0	-
	high	9	-

missing = 33

Chi-square/binomial test = 0.002 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 292.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY SELFLESS	
		O	E
happiness	low	0	5
	high	10	5

missing = 31

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant - at better than .01

Table 293.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY SELFLESS	
		O	E
non-union- mindedness	low	5	10
	high	15	10

missing = 20

Chi-square/binomial test = 5.00 with 1 degree of freedom  
Significant at better than .05

Table 294.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY SELFLESS	
		O	E
evaluation	low	0	-
	high	9	-

missing = 33

Chi-square/binomial test = 0.002 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 295.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY HAPPY	
		O	E
non-union- mindedness	low	0	-
	high	8	-

missing = 34

~~Chi-square~~/binomial test = 0.004 with 1 degree of freedom  
Significant - at better than .01 in one-tail test

Table 296.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY HAPPY	
		O	E
evaluation	low	0	-
	high	4	-

missing = 38

~~Chi-square~~/binomial test = with degree of freedom  
Significant

Table 297.

Sample Elements Variable	Sample Elements Variable MANUAL/SELF	MANUAL/SELF HIGHLY-NON-UNIONMINDED	
		O	E
evaluation	low	0	-
	high	8	-

missing = 34

~~Chi-square~~/binomial test = 0.004 with 1 degree of freedom  
Significant at better than .01 in one-tail test



Table 298.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON WORKMINDEDNESS	
		O	E
impotence	low	15	8.5
	high	2	8.5

missing = 22

Chi-square/binomial test = 9.94 with 1 degree of freedom  
 Significant - at better than .01

Table 299.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON WORKMINDEDNESS	
		O	E
selflessness	low	15	8
	high	1	8

missing = 24

Chi-square/binomial test = 12.25 with 1 degree of freedom  
 Significant at better than .01

Table 300.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON WORKMINDEDNESS	
		O	E
happiness	low	7	-
	high	0	-

missing = 34

Chi-square/binomial test = 0.008 with 1 degree of freedom  
 Significant at .01 in one-tail test

Table 301.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON WORKMINDEDNESS	
		O	E
non-union- mindedness	low	15	7.5
	high	0	7.5

missing = 25

Chi-square/binomial test = 15.00 with 1 degree of freedom  
Significant at better than .01

Table 302.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON WORKMINDEDNESS	
		O	E
evaluation	low	7	-
	high	0	-

missing = 35

Chi-square/binomial test = 0.008 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 303.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON IMPOTENCE	
		O	E
selflessness	low	17	11
	high	5	11

missing = 16

Chi-square/binomial test = 6.55 with 1 degree of freedom  
Significant at .05

Table 304.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON IMPOTENCE	
		O	E
happiness	low	9	-
	high	0	-

missing = 30

~~Chi-square~~/binomial test = 0.002 with 1 degree of freedom  
Significant - at better than .01 in one-tail test

Table 305.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON IMPOTENCE	
		O	E
non-union- mindedness	low	22	11.5
	high	1	11.5

missing = 17

Chi-square/~~binomial test~~ = 19.17 with 1 degree of freedom  
Significant at better than .01

Table 306.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON IMPOTENCE	
		O	E
evaluation	low	8	-
	high	0	-

missing = 34

~~Chi-square~~/binomial test = 0.004 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 307.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON SELFLESSNESS	
		O	E
happiness	low	10	5
	high	0	5

missing = 31

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant - at better than .01

Table 308.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON SELFLESSNESS	
		O	E
non-union- mindedness	low	14	7.5
	high	1	7.5

missing = 21

Chi-square/binomial test = 11.27 with 1 degree of freedom  
Significant at better than .01

Table 309.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON SELFLESSNESS	
		O	E
evaluation	low	8	-
	high	0	-

missing = 34

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 310.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON HAPPINESS	
		O	E
non-union- mindedness	low	8	-
	high	0	-

missing = 34

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant - at better than .01 in one-tail test

Table 311.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON HAPPINESS	
		O	E
evaluation	low	4	-
	high	0	-

missing = 38

Chi-square/binomial test = with degree of freedom  
Significant

Table 312.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/IR LOW ON NON-UNION- MINDEDNESS	
		O	E
evaluation	low	8	-
	high	0	-

missing = 34

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant at better than .01 in one-tail test

Table 313.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY WORKMINDED	
		O	E
impotence	low	2	8
	high	14	8

missing = 25

Chi-square/binomial test = 9.00 with 1 degree of freedom  
Significant - at .01

Table 314.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY WORKMINDED	
		O	E
selflessness	low	2	7.5
	high	13	7.5

missing = 26

Chi-square/binomial test = 8.07 with 1 degree of freedom  
Significant at .01

Table 315.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY WORKMINDED	
		O	E
happiness	low	0	-
	high	6	-

missing = 35

Chi-square/binomial test = 0.016 with 1 degree of freedom  
Significant at .05 in one-tail test

Table 316.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY WORKMINDED	
		O	E
non-union- mindedness	low	0	7
	high	14	7

missing = 27

Chi-square/~~binomial test~~ = 14.00 with 1 degree of freedom  
Significant - at better than .01

Table 317.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY WORKMINDED	
		O	E
evaluation	low	0	-
	high	7	-

missing = 35

~~Chi-square~~/binomial test = 0.008 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 318.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY IMPOTENT	
		O	E
selflessness	low	4	8.5
	high	13	8.5

missing = 22

Chi-square/~~binomial test~~ = 4.76 with 1 degree of freedom  
Significant at .05

Table 319.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY IMPOTENT	
		O	E
happiness	low	0	-
	high	8	-

missing = 32

~~Chi-square~~/binomial test = 0.004 with 1 degree of freedom  
Significant - at better than .01 in one-tail test

Table 320.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY IMPOTENT	
		O	E
non-union- mindedness	low	0	9
	high	18	9

missing = 20

~~Chi-square~~/binomial test = 18.00 with 1 degree of freedom  
Significant at better than .01

Table 321.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY IMPOTENT	
		O	E
evaluation	low	0	-
	high	7	-

missing = 35

~~Chi-square~~/binomial test = 0.008 with 1 degree of freedom  
Significant at .01 in one-tail test



Table 322

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY SELFLESS	
		O	E
happiness	low	0	-
	high	9	-

missing = 33

~~Chi-square~~/binomial test = 0.002 with 1 degree of freedom  
Significant - at better than .01 in one-tail test

Table 323.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY SELFLESS	
		O	E
non-union- mindedness	low	0	7
	high	14	7

missing = 24

Chi-square/binomial test = 14.00 with 1 degree of freedom  
Significant at better than .01

Table 324.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY SELFLESS	
		O	E
evaluation	low	0	-
	high	7	-

missing = 35

~~Chi-square~~/binomial test = 0.008 with 1 degree of freedom  
Significant at .01 in one-tail test

Table 325.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY HAPPY	
		O	E
non-union- mindedness	low	0	-
	high	8	-

missing = 34

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant -- at better than .01 in one-tail test

Table 326.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY HAPPY	
		O	E
evaluation	low	0	-
	high	3	-

missing = 39

Chi-square/binomial test = with degree of freedom  
Significant

Table 327.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/FAMILY HIGHLY NON-UNION- MINDED	
		O	E
evaluation	low	0	-
	high	8	-

missing = 34

Chi-square/binomial test = 0.004 with 1 degree of freedom  
Significant at better than .01 in one-tail test

## APPENDIX K

Tests for II A selective comparison of variables b) between element groups

Table 328.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/SELF HIGHLY WORKMINDED	
		O	E
workmindedness	low	52	26
	high	0	26

missing = 45

Chi-square/~~binomial test~~ = 52.00 with 1 degree of freedom  
 Significant at better than .01

Table 329.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/SELF HIGHLY WORKMINDED	
		O	E
workmindedness	low	0	23.5
	high	47	23.5

missing = 51

Chi-square/~~binomial test~~ = 17 with 1 degree of freedom  
 Significant at better than .01

Table 330.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/SELF HIGHLY IMPOTENT	
		O	E
impotence	low	65	33
	high	1	33

missing = 15

Chi-square/~~binomial test~~ = 62.06 with 1 degree of freedom  
 Significant at better than .01

Table 331.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/SELF HIGHLY IMPOTENT	
		O	E
impotence	low	2	30
	high	58	30

missing = 24

Chi-square/~~binomial test~~ = 52.27 with 1 degree of freedom  
Significant - at better than .01

Table 332.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/SELF HIGHLY SELFLESS	
		O	E
selflessness	low	46	25
	high	4	25

missing = 44

Chi-square/~~binomial test~~ = 35.28 with 1 degree of freedom  
Significant at better than .01

Table 333.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/SELF HIGHLY SELFLESS	
		O	E
selflessness	low	4	21
	high	38	21

missing = 52

Chi-square/~~binomial test~~ = 27.52 with 1 degree of freedom  
Significant at better than .01

Table 334.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/SELF HIGHLY HAPPY	
		O	E
happiness	low	29	14.5
	high	0	14.5

missing = 70

Chi-square/binomial test = 29.00 with 1 degree of freedom  
Significant - at better than .01

Table 335.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/SELF HIGHLY HAPPY	
		O	E
happiness	low	0	12
	high	24	12

missing = 75

Chi-square/binomial test = 24.00 with 1 degree of freedom  
Significant at better than .01

Table 336.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/SELF HIGHLY NON-UNION- MINDED	
		O	E
non-union- mindedness	low	63	32
	high	1	32

missing = 29

Chi-square/binomial test = 60.06 with 1 degree of freedom  
Significant at better than .01

Table 337.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/SELF HIGHLY-IRON-UNION MINDED	
		O	E
non-union- mindedness	low	1	28
	high	55	28

missing = 37

Chi-square/binomial test = 52.07 with 1 degree of freedom  
Significant - at better than .01

Table 338.

Sample Elements Variable	Sample Elements Variable ALL/IR	ALL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	26	13
	high	0	13

missing = 74

Chi-square/binomial test = 26.00 with 1 degree of freedom  
Significant at better than .01

Table 339.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	0	10
	high	20	10

missing = 80

Chi-square/binomial test = 20.00 with 1 degree of freedom  
Significant at better than .01

Table 340.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/IR LOW ON WORKMINDEDNESS	
		O	E
workmindedness	low	0	23.5
	high	47	23.5

missing = 51

Chi-square/binomial test = 47.00 with 1 degree of freedom  
Significant at better than .01

Table 341.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/IR LOW ON IMPOTENCE	
		O	E
impotence	low	2	32
	high	62	32

missing = 27

Chi-square/binomial test = 56.25 with 1 degree of freedom  
Significant at better than .01

Table 342.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/IR LOW ON SELFLESSNESS	
		O	E
selflessness	low	1	18.5
	high	36	18.5

missing = 55

Chi-square/binomial test = 33.11 with 1 degree of freedom  
Significant at better than .01

Table 343.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/IR LOW ON HAPPINESS	
		O	E
happiness	low	0	12
	high	24	12

missing = 75

Chi-square/binomial test = 24.00 with 1 degree of freedom  
Significant - at better than .01

Table 344.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/IR LOW ON NON-UNION- MINDEDNESS	
		O	E
non-union- mindedness	low	1	30
	high	59	30

missing = 40

Chi-square/binomial test = 56.07 with 1 degree of freedom  
Significant at better than .01

Table 345.

Sample Elements Variable	Sample Elements Variable ALL/FAMILY	ALL/IR LOW ON EVALUATION	
		O	E
evaluation	low	0	10
	high	20	10

missing = 80

Chi-square/binomial test = 20.00 with 1 degree of freedom  
Significant at better than .01



Table 346.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/SELF HIGH ON WORKMINDEDNESS	
		O	E
workmindedness	low	33	16.5
	high	0	16.5

missing = 25

Chi-square/binomial test = 33.00 with 1 degree of freedom  
Significant - at better than .01

Table 347.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON WORKMINDEDNESS	
		O	E
workmindedness	low	0	15
	high	30	15

missing = 28

Chi-square/binomial test = 30.00 with 1 degree of freedom  
Significant at better than .01

Table 348.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/SELF HIGH ON IMPOTENCE	
		O	E
impotence	low	40	20
	high	0	20

missing = 8

Chi-square/binomial test = 40.00 with 1 degree of freedom  
Significant at better than .01

Table 349.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON IMPOTENCE	
		O	E
impotence	low	0	19
	high	38	19

missing = 11

Chi-square/binomial test = 38.00 with 1 degree of freedom  
Significant - at better than .01

Table 350.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/SELF HIGH ON SELFLESSNESS	
		O	E
selflessness	low	22	11
	high	0	11

missing = 32

Chi-square/binomial test = 22.00 with 1 degree of freedom  
Significant at better than .01

Table 351.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON SELFLESSNESS	
		O	E
selflessness	low	0	10
	high	20	10

missing = 34

Chi-square/binomial test = 20.00 with 1 degree of freedom  
Significant at better than .01

Table 352.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/SELF HIGH ON HAPPINESS	
		O	E
happiness	low	16	8
	high	0	8

missing = 41

Chi-square/~~binomial test~~ = 16.00 with 1 degree of freedom  
Significant - at better than .01

Table 353.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON HAPPINESS	
		O	E
happiness	low	0	6.5
	high	13	6.5

missing = 44

Chi-square/~~binomial test~~ = 13.00 with 1 degree of freedom  
Significant at better than .01

Table 354

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/SELF HIGH ON NON-UNION- MINDEDNESS	
		O	E
non-union- mindedness	low	42	21
	high	0	21

missing = 15

Chi-square/~~binomial test~~ = 42.00 with 1 degree of freedom  
Significant at better than .01

Table 355.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON NON-UNION-MINDEDNESS	
		O	E
non-union-mindedness	low	1	18
	high	35	18

missing = 20

Chi-square/binomial test = 32.11 with 1 degree of freedom  
Significant - at better than .01

Table 356.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	14	7
	high	0	7

missing = 44

Chi-square/binomial test = 14.00 with 1 degree of freedom  
Significant at better than .01

Table 357.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	0	5
	high	10	5

missing = 48

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant at better than .01

Table 355.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON NON-UNION- MINDEDNESS	
		O	E
non-union- mindedness	low	1	18
	high	35	18

missing = 20

Chi-square/~~binomial test~~ = 32.11 with 1 degree of freedom  
Significant - at better than .01

Table 356.

Sample Elements Variable	Sample Elements Variable CLERICAL/IR	CLERICAL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	14	7
	high	0	7

missing = 44

Chi-square/~~binomial test~~ = 14.00 with 1 degree of freedom  
Significant at better than .01

Table 357.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	0	5
	high	10	5

missing = 48

Chi-square/~~binomial test~~ = 10.00 with 1 degree of freedom  
Significant at better than .01

Table 358.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/IR LOW ON WORKMINDEDNESS	
		O	E
workmindedness	low	0	15
	high	30	15

missing = 28

Chi-square/binomial test = 30.00 with 1 degree of freedom  
Significant at better than .01

Table 359.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/IR LOW ON IMPOTENCE	
		O	E
impotence	low	1	20
	high	39	20

missing = 12

Chi-square/binomial test = 36.10 with 1 degree of freedom  
Significant at better than .01

Table 360.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/IR LOW ON SELFLESSNESS	
		O	E
selflessness	low	0	9.5
	high	19	9.5

missing = 35

Chi-square/binomial test = 19.00 with 1 degree of freedom  
Significant at better than .01

Table 361.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/IR LOW ON HAPPINESS	
		O	E
happiness	low	0	6.5
	high	13	6.5

missing = 44

Chi-square/binomial test = 13.00 with 1 degree of freedom  
Significant - at better than .01

Table 362.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/IR LOW ON NON-UNION- MINDEDNESS	
		O	E
non-union- mindedness	low	1	18.5
	high	36	18.5

missing = 21

Chi-square/binomial test = 33.11 with 1 degree of freedom  
Significant at better than .01

Table 363.

Sample Elements Variable	Sample Elements Variable CLERICAL/FAMILY	CLERICAL/IR LOW ON EVALUATION	
		O	E
evaluation	low	0	5
	high	10	5

missing = 48

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant at better than .01

Table 364.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/SELF HIGH ON WORKMINDEDNESS	
		O	E
workmindedness	low	19	9.5
	high	0	9.5

missing = 20

Chi-square/binomial test = 19.00 with 1 degree of freedom  
Significant - at better than .01

Table 365.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/SELF HIGH ON WORKMINDEDNESS	
		O	E
workmindedness	low	0	8.5
	high	17	8.5

missing = 23

Chi-square/binomial test = 17.00 with 1 degree of freedom  
Significant at better than .01

Table 366.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/SELF HIGH ON IMPOTENCE	
		O	E
impotence	low	25	13
	high	1	13

missing = 7

Chi-square/binomial test = 22.15 with 1 degree of freedom  
Significant at better than .01



Table 367.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/SELF HIGH ON IMPOTENCE	
		O	E
impotence	low	2	11
	high	20	11

missing = 13

Chi-square/binomial test = 14.73 with 1 degree of freedom  
Significant - at better than .01

Table 368.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/SELF HIGH ON SELFLESSNESS	
		O	E
selflessness	low	24	14
	high	4	14

missing = 12

Chi-square/binomial test = 14.29 with 1 degree of freedom  
Significant at better than .01

Table 369.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/SELF HIGH ON SELFLESSNESS	
		O	E
selflessness	low	4	11
	high	18	11

missing = 18

Chi-square/binomial test = 8.91 with 1 degree of freedom  
Significant at better than .01

Table 370.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/SELF HIGH ON HAPPINESS	
		O	E
happiness	low	13	6.5
	high	0	6.5

missing = 29

Chi-square/binomial test = 13.00 with 1 degree of freedom  
Significant - at better than .01

Table 371.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/SELF HIGH ON HAPPINESS	
		O	E
happiness	low	0	5.5
	high	11	5.5

missing = 31

Chi-square/binomial test = 11.00 with 1 degree of freedom  
Significant at better than .01

Table 372.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/SELF HIGH ON NON-UNION- MINDEDNESS	
		O	E
non-union- mindedness	low	21	11
	high	1	11

missing = 14

Chi-square/binomial test = 18.18 with 1 degree of freedom  
Significant at better than .01

Table 373.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/SELF HIGH ON NON-UNION- MINDEDNESS	
		O	E
non-union- mindedness	low	0	10
	high	20	10

missing = 17

Chi-square/~~binomial test~~ = 20.00 with 1 degree of freedom  
Significant - at better than .01

Table 374.

Sample Elements Variable	Sample Elements Variable MANUAL/IR	MANUAL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	12	6
	high	0	6

missing = 30

Chi-square/~~binomial test~~ = 12.00 with 1 degree of freedom  
Significant at better than .01

Table 375.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/SELF HIGH ON EVALUATION	
		O	E
evaluation	low	0	5
	high	10	5

missing = 32

Chi-square/~~binomial test~~ = 10.00 with 1 degree of freedom  
Significant at better than .01

Table 376.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/IR LOW ON WORKMINDEDNESS	
		O	E
workmindedness	low	0	8.5
	high	17	8.5

missing = 23

Chi-square/binomial test = 17.00 with 1 degree of freedom  
Significant - at better than .01

Table 377.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/IR LOW ON IMPOTENCE	
		O	E
impotence	low	1	12
	high	23	12

missing = 15

Chi-square/binomial test = 20.17 with 1 degree of freedom  
Significant at better than .01

Table 378.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/IR LOW ON SELFLESSNESS	
		O	E
selflessness	low	1	9
	high	17	9

missing = 20

Chi-square/binomial test = 14.22 with 1 degree of freedom  
Significant at better than .01

Table 379.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/IR LOW ON HAPPINESS	
		O	E
happiness	low	11	5.5
	high	0	5.5

missing = 31

Chi-square/binomial test = 11.00 with 1 degree of freedom  
Significant - at better than .01

Table 380.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/IR LOW ON NON-UNION- MINDENESS	
		O	E
non-union- mindedness	low	0	11.5
	high	23	11.5

missing = 19

Chi-square/binomial test = 23.00 with 1 degree of freedom  
Significant at better than .01

Table 381.

Sample Elements Variable	Sample Elements Variable MANUAL/FAMILY	MANUAL/IR LOW ON EVALUATION	
		O	E
evaluation	low	0	5
	high	10	5

missing = 32

Chi-square/binomial test = 10.00 with 1 degree of freedom  
Significant at better than .01

# APPENDIX L

Tests for III A comparison of automobiles

Table 27a

Sample	Elements Sample	SSE	
		CLASSICAL	EMERALD
low		0	3
high		23	73

standing = 25/20

...automobiles tested at 2400 with 10 - degrees of freedom  
... = 10

APPENDIX L

Tests for III A comparison of subsamples

Table 382.

Variable	Elements Sample	SELF	
		CLERICAL	MANUAL
workmindedness	low	0	3
	high	33	19

missing = 25/20

Chi-square/Fisher's Exact = 2.48 with 1 degree of freedom  
Significant - no

Table 383.

Variable	Elements Sample	SELF	
		CLERICAL	MANUAL
impotence	low	10	9
	high	41	28

missing = 7/5

Chi-square/Fisher's Exact = 0.07 with 1 degree of freedom  
Significant - no

Table 384.

Variable	Elements Sample	SELF	
		CLERICAL	MANUAL
selflessness	low	4	2
	high	23	30

missing = 31/10

Chi-square/Fisher's Exact = 0.43 with 1 degree of freedom  
Significant - no

Table 385.

Variable	Elements Sample	SELF	
		CLERICAL	MANUAL
happiness	low	1	0
	high	16	13

missing = 41/29

Chi-square/Fisher's Exact = 0.02 with 1 degree of freedom  
Significant - no

Table 386.

Variable	Elements Sample	SELF	
		CLERICAL	MANUAL
non-union- mindedness	low	2	7
	high	42	23

missing = 14/12

Chi-square/Fisher's Exact = 4.27 with 1 degree of freedom  
Significant - at .05

Table 387.

Variable	Elements Sample	SELF	
		CLERICAL	MANUAL
evaluation	low	0	0
	high	14	12

missing = 44/30

Chi-square/Fisher's Exact = with degree of freedom  
Significant -



Table 388.

Variable	Elements Sample	IR	
		CLERICAL	MANUAL
workmindedness	low	33	19
	high	0	3

missing = 25/20

Chi-square/Fisher's Exact = 2.48 with 1 degree of freedom  
Significant - no

Table 389.

Variable	Elements Sample	IR	
		CLERICAL	MANUAL
impotence	low	44	31
	high	6	4

missing = 8/7

Chi-square/Fisher's Exact = 0.04 with 1 degree of freedom  
Significant - no

Table 390.

Variable	Elements Sample	IR	
		CLERICAL	MANUAL
selflessness	low	22	24
	high	4	6

missing = 32/12

Chi-square/Fisher's Exact = 0.01 with 1 degree of freedom  
Significant - no

Table 391.

Variable	Elements Sample	IR	
		CLERICAL	MANUAL
happiness	low	16	13
	high	1	0

missing = 41/29

Chi-square/Fisher's Exact = 0.02 with 1 degree of freedom  
Significant - no

Table 392.

Variable	Elements Sample	IR	
		CLERICAL	MANUAL
non-union- mindedness	low	43	27
	high	0	1

missing = 15/14

Chi-square/Fisher's Exact = 0.05 with 1 degree of freedom  
Significant - no

Table 393.

Variable	Elements Sample	IR	
		CLERICAL	MANUAL
evaluation	low	14	12
	high	0	0

missing = 44/30

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 397.

Variable	Elements Sample	FAMILY	
		CLERICAL	MANUAL
happiness	low	1	0
	high	13	11

missing = 44/31

Chi-square/Fisher's Exact = 0.02 with 1 degree of freedom  
Significant - no

Table 398.

Variable	Elements Sample	FAMILY	
		CLERICAL	MANUAL
non-union- mindedness	low	2	0
	high	36	25

missing = 20/17

Chi-square/Fisher's Exact = 0.19 with 1 degree of freedom  
Significant - no

Table 399.

Variable	Elements Sample	FAMILY	
		CLERICAL	MANUAL
evaluation	low	0	0
	high	10	10

missing = 48/32

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 400.

Variable	Elements Sample	WORKFELLOWS	
		CLERICAL	MANUAL
workmindedness	low	2	1
	high	5	5

missing = 51/36

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 401.

Variable	Elements Sample	WORKFELLOWS	
		CLERICAL	MANUAL
impotence	low	6	6
	high	7	7

missing = 45/29

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 402.

Variable	Elements Sample	WORKFELLOWS	
		CLERICAL	MANUAL
selflessness	low	3	8
	high	4	2

missing = 51/32

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 403.

Variable	Elements Sample	WORKFELLOWS	
		CLERICAL	MANUAL
happiness	low	2	2
	high	2	0

missing = 54/40

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 404.

Variable	Elements Sample	WORKFELLOWS	
		CLERICAL	MANUAL
non-union- mindedness	low	4	3
	high	8	7

missing = 46/42

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 405.

Variable	Elements Sample	WORKFELLOWS	
		CLERICAL	MANUAL
evaluation	low	1	0
	high	3	0

missing = 54/42

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 406.

Variable	Elements Sample	SELF	
		CMU	MMU
workmindedness	low	0	3
	high	5	9

missing = 5/16

Chi-square/Fisher's Exact = with degrees of freedom  
Significant - no significant difference

Table 407.

Variable	Elements Sample	SELF	
		CMU	MMU
impotence	low	2	8
	high	6	16

missing = 2/4

Chi-square/Fisher's Exact = 0.00 with degree of freedom  
Significant - no

Table 408.

Variable	Elements Sample	SELF	
		CMU	MMU
selflessness	low	1	0
	high	2	22

missing = 7/6

Chi-square/Fisher's Exact = 1.42 with 1 degree of freedom  
Significant - no

Table 409.

Variable	Elements Sample	SELF	
		CMU	MMU
happiness	low	1	0
	high	3	8

missing = 6/20

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 410.

Variable	Elements Sample	SELF	
		CMU	MMU
non-union- mindedness	low	1	7
	high	8	14

missing = 1/7

Chi-square/Fisher's Exact = 0.66 with 1 degree of freedom  
Significant - no

Table 411.

Variable	Elements Sample	SELF	
		CMU	MMU
evaluation	low	0	0
	high	5	9

missing = 5/19

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant -

Table 412.

Variable	Elements Sample	IR	
		CMU	MMU
workmindedness	low	5	9
	high	0	3

missing = 5/16

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 413.

Variable	Elements Sample	IR	
		CMU	MMU
impotence	low	6	21
	high	1	2

missing = 3/5

Chi-square/Fisher's Exact = 0.08 with 1 degree of freedom  
Significant - no

Table 414.

Variable	Elements Sample	IR	
		CMU	MMU
selflessness	low	1	16
	high	1	4

missing = 8/8

Chi-square/Fisher's Exact = 0.00 with 1 degree of freedom  
Significant - no



Table 415.

Variable	Elements Sample	IR	
		CMU	MMU
happiness	low	3	8
	high	1	0

missing = 6/20

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 416.

Variable	Elements Sample	IR	
		CMU	MMU
non-union- mindedness	low	8	19
	high	0	1

missing = 2/8

Chi-square/Fisher's Exact = 0.23 with 1 degree of freedom  
Significant - no

Table 417.

Variable	Elements Sample	IR	
		CMU	MMU
evaluation	low	5	9
	high	0	0

missing = 5/19

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 418.

Variable	Elements Sample	FAMILY	
		CMU	MMU
workmindedness	low	0	1
	high	5	9

missing = 5/18

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 419.

Variable	Elements Sample	FAMILY	
		CMU	MMU
impotence	low	2	2
	high	6	15

missing = 2/11

Chi-square/Fisher's Exact = 0.07 with 1 degree of freedom  
Significant - no

Table 420.

Variable	Elements Sample	FAMILY	
		CMU	MMU
selflessness	low	1	4
	high	2	11

missing = 7/13

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 421.

Variable	Elements Sample	FAMILY	
		CMU	MMU
happiness	low	1	0
	high	3	7

missing = 6/21

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 422.

Variable	Elements Sample	FAMILY	
		CMU	MMU
non-union- mindedness	low	1	0
	high	7	16

missing = 2/12

Chi-square/Fisher's Exact = 0.13 with 1 degree of freedom  
Significant - no

Table 423.

Variable	Elements Sample	FAMILY	
		CMU	MMU
evaluation	low	0	0
	high	4	7

missing = 6/21

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 424.

Variable	Elements Sample	WORKFELLOWS	
		CMU	MMU
workmindedness	low	0	0
	high	2	3

missing = 8/25

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 425.

Variable	Elements Sample	WORKFELLOWS	
		CMU	MMU
impotence	low	2	4
	high	2	5

missing = 6/19

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 426.

Variable	Elements Sample	WORKFELLOWS	
		CMU	MMU
selflessness	low	0	7
	high	1	0

missing = 9/21

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 427.

Variable	Elements Sample	WORKFELLOWS	
		CMU	MMU
happiness	low	1	1
	high	0	0

missing = 9/27

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 428.

Variable	Elements Sample	WORKFELLOWS	
		CMU	MMU
non-union- mindedness	low	2	2
	high	2	6

missing = 6/20

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 429.

Variable	Elements Sample	WORKFELLOWS	
		CMU	MMU
evaluation	low	0	0
	high	1	0

missing = 9/28

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 430.

Variable	Elements Sample	SELF	
		CFU	MFU
workmindedness	low	0	0
	high	24	10

missing = 13/4

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 431.

Variable	Elements Sample	SELF	
		CFU	MFU
impotence	low	4	1
	high	29	12

missing = 4/1

Chi-square/Fisher's Exact = 0.01 with 1 degree of freedom  
Significant - no

Table 432.

Variable	Elements Sample	SELF	
		CFU	MFU
selflessness	low	1	2
	high	17	8

missing = 19/4

Chi-square/Fisher's Exact = 0.30 with 1 degree of freedom  
Significant .. no

Table 433.

Variable	Elements Sample	SELF	
		CFU	MFU
happiness	low	0	0
	high	13	5

missing = 24/9

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 434.

Variable	Elements Sample	SELF	
		CFU	MFU
non-union- mindedness	low	1	0
	high	26	9

missing = 10/5

Chi-square/Fisher's Exact = 0.34 with 1 degree of freedom  
Significant - no

Table 435.

Variable	Elements Sample	SELF	
		CFU	MFU
evaluation	low	0	0
	high	6	3

missing = 31/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 436.

Variable	Elements Sample	IR	
		CFU	MFU
workmindedness	low	24	10
	high	0	0

missing = 13/4

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 437.

Variable	Elements Sample	IR	
		CFU	MFU
impotence	low	31	10
	high	2	2

missing = 4/2

Chi-square/Fisher's Exact = 0.26 with 1 degree of freedom  
Significant - no

Table 438.

Variable	Elements Sample	IR	
		CFU	MFU
selflessness	low	17	8
	high	1	2

missing = 19/4

Chi-square/Fisher's Exact = 0.30 with 1 degree of freedom  
Significant - no



Table 439.

Variable	Elements Sample	IR	
		CFU	MFU
happiness	low	13	5
	high	0	0

missing = 24/9

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 440.

Variable	Elements Sample	IR	
		CFU	MFU
non-union- mindedness	low	27	8
	high	0	0

missing = 10/6

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 441.

Variable	Elements Sample	IR	
		CFU	MFU
evaluation	low	6	3
	high	0	0

missing = 31/11

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 442.

Variable	Elements Sample	FAMILY	
		CFU	MFU
workmindedness	low	0	0
	high	21	9

missing = 16/5

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 443.

Variable	Elements Sample	FAMILY	
		CFU	MFU
impotence	low	2	2
	high	27	10

missing = 8/2

Chi-square/Fisher's Exact = 0.15 with 1 degree of freedom  
Significant - no

Table 444.

Variable	Elements Sample	FAMILY	
		CFU	MFU
selflessness	low	1	1
	high	14	8

missing = 22/5

Chi-square/Fisher's Exact = 0.15 with 1 degree of freedom  
Significant - no

Table 445.

Variable	Elements Sample	FAMILY	
		CFU	MFU
happiness	low	0	0
	high	10	4

missing = 27/10

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 446.

Variable	Elements Sample	FAMILY	
		CFU	MFU
non-union- mindedness	low	1	0
	high	21	9

missing = 15/5

Chi-square/Fisher's Exact = 0.22 with 1 degree of freedom  
Significant - no

Table 447.

Variable	Elements Sample	FAMILY	
		CFU	MFU
evaluation	low	0	0
	high	3	3

missing = 34/11

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 448.

Variable	Elements Sample	WORKFELLOWS	
		CFU	MFU
workmindedness	low	1	1
	high	3	2

missing = 33/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 449.

Variable	Elements Sample	WORKFELLOWS	
		CFU	MFU
impotence	low	2	2
	high	5	2

missing = 30/10

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 450.

Variable	Elements Sample	WORKFELLOWS	
		CFU	MFU
selflessness	low	2	1
	high	2	2

missing = 33/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 451.

Variable	Elements Sample	WORKFELLOWS	
		CFU	MFU
happiness	low	1	1
	high	2	0

missing = 34/13

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 452.

Variable	Elements Sample	WORKFELLOWS	
		CFU	MFU
non-union- mindedness	low	1	2
	high	6	0

missing = 30/12

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 453.

Variable	Elements Sample	WORKFELLOWS	
		CFU	MFU
evaluation	low	1	0
	high	2	0

missing = 34/14

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 454.

Variable	Elements Sample	SELF	
		MALE	FEMALE
workmindedness	low	3	0
	high	15	37

missing = 23/22

Chi-square/Fisher's Exact = 3.69 with 1 degree of freedom  
Significant - no

Table 455.

Variable	Elements Sample	SELF	
		MALE	FEMALE
impotence	low	13	6
	high	22	47

missing = 6/5

Chi-square/Fisher's Exact = 6.85 with 1 degree of freedom  
Significant - at .01

Table 456.

Variable	Elements Sample	SELF	
		MALE	FEMALE
selflessness	low	1	5
	high	25	28

missing = 15/26

Chi-square/Fisher's Exact = 0.99 with 1 degree of freedom  
Significant - no

Table 457.

Variable	Elements Sample	SELF	
		MALE	FEMALE
happiness	low	1	0
	high	11	18

missing = 29/41

Chi-square/Fisher's Exact = 0.04 with 1 degree of freedom

Significant - no

Table 458.

Variable	Elements Sample	SELF	
		MALE	FEMALE
non-union- mindedness	low	8	1
	high	25	40

missing = 8/18

Chi-square/Fisher's Exact = 6.22 with 1 degree of freedom

Significant - at .05

Table 459.

Variable	Elements Sample	SELF	
		MALE	FEMALE
evaluation	low	0	0
	high	15	11

missing = 26/48

Chi-square/Fisher's Exact = with degree of freedom

Significant -

Table 460.

Variable	Elements Sample	IR	
		MALE	FEMALE
workmindedness	low	15	37
	high	3	0

missing = 23/22

Chi-square/Fisher's Exact = 3.69 with 1 degree of freedom  
Significant - no

Table 461.

Variable	Elements Sample	IR	
		MALE	FEMALE
impotence	low	28	47
	high	5	5

missing = 8/7

Chi-square/Fisher's Exact = 0.18 with 1 degree of freedom  
Significant - no

Table 462.

Variable	Elements Sample	IR	
		MALE	FEMALE
selflessness	low	18	28
	high	5	5

missing = 18/26

Chi-square/Fisher's Exact = 0.08 with 1 degree of freedom  
Significant - no



Table 463.

Variable	Elements Sample	IR	
		MALE	FEMALE
happiness	low	11	18
	high	1	0

missing = 29/41

Chi-square/Fisher's Exact = 0.04 with 1 degree of freedom  
Significant - no

Table 464.

Variable	Elements Sample	IR	
		MALE	FEMALE
non-union- mindedness	low	30	40
	high	1	0

missing = 10/19

Chi-square/Fisher's Exact = 0.02 with 1 degree of freedom  
Significant - no

Table 465.

Variable	Elements Sample	IR	
		MALE	FEMALE
evaluation	low	15	11
	high	0	0

missing = 26/48

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 466.

Variable	Elements Sample	FAMILY	
		MALE	FEMALE
workmindedness	low	1	0
	high	15	33

missing = 25/26

Chi-square/Fisher's Exact = 0.14 with 1 degree of freedom  
Significant - no

Table 467.

Variable	Elements Sample	FAMILY	
		MALE	FEMALE
impotence	low	6	5
	high	22	43

missing = 13/11

Chi-square/Fisher's Exact = 0.96 with 1 degree of freedom  
Significant - no

Table 468.

Variable	Elements Sample	FAMILY	
		MALE	FEMALE
selflessness	low	5	4
	high	14	25

missing = 22/30

Chi-square/Fisher's Exact = 0.50 with 1 degree of freedom  
Significant - no

Table 469.

Variable	Elements Sample	FAMILY	
		MALE	FEMALE
happiness	low	1	0
	high	10	14

missing = 30/45

Chi-square/Fisher's Exact = 0.02 with 1 degree of freedom  
Significant - no

Table 470.

Variable	Elements Sample	FAMILY	
		MALE	FEMALE
non-union- mindedness	low	1	1
	high	26	35

missing = 14/23

Chi-square/Fisher's Exact = 0.27 with 1 degree of freedom  
Significant - no

Table 471.

Variable	Elements Sample	FAMILY	
		MALE	FEMALE
evaluation	low	0	0
	high	12	8

missing = 29/51

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 472.

Variable	Elements Sample	WORKFELLOWS	
		MALE	FEMALE
workmindedness	low	0	3
	high	5	5

missing = 36/51

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 473.

Variable	Elements Sample	WORKFELLOWS	
		MALE	FEMALE
impotence	low	6	6
	high	7	7

missing = 28/46

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 474.

Variable	Elements Sample	WORKFELLOWS	
		MALE	FEMALE
selflessness	low	7	4
	high	1	5

missing = 33/50

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 475.

Variable	Elements Sample	WORKFELLOWS	
		MALE	FEMALE
happiness	low	2	2
	high	0	2

missing = 39/55

Chi-square/Fisher's Exact = with degrees of freedom  
Significant - no significant difference

Table 476.

Variable	Elements Sample	WORKFELLOWS	
		MALE	FEMALE
non-union- mindedness	low	4	3
	high	8	7

missing = 29/49

Chi-square/Fisher's Exact = 0.09 with 1 degree of freedom  
Significant - no

Table 477.

Variable	Elements Sample	WORKFELLOWS	
		MALE	FEMALE
evaluation	low	0	1
	high	1	2

missing = 40/56

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 478.

Variable	Elements Sample	SELF	
		CMU	CFU
workmindedness	low	0	0
	high	5	24

missing = 5/13

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 479.

Variable	Elements Sample	SELF	
		CMU	CFU
impotence	low	2	4
	high	6	29

missing = 2/4

Chi-square/Fisher's Exact = 0.14 with 1 degree of freedom  
Significant - no

Table 480.

Variable	Elements Sample	SELF	
		CMU	CFU
selflessness	low	1	1
	high	2	17

missing = 7/19

Chi-square/Fisher's Exact = 0.21 with 1 degree of freedom  
Significant - no

Table 481.

Variable	Elements Sample	SELF	
		CMU	CFU
happiness	low	1	0
	high	3	13

missing = 6/24

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 482.

Variable	Elements Sample	SELF	
		CMU	CFU
non-union- mindedness	low	1	1
	high	8	26

missing = 1/10

Chi-square/Fisher's Exact = 0.00 with degree of freedom  
Significant - no

Table 483.

Variable	Elements Sample	SELF	
		CMU	CFU
evaluation	low	0	0
	high	5	6

missing = 5/31

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 484.

Variable	Elements Sample	IR	
		CMU	CFU
workmindedness	low	5	24
	high	0	0

missing = 5/13

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 485.

Variable	Elements Sample	IR	
		CMU	CFU
impotence	low	6	31
	high	1	2

missing = 3/4

Chi-square/Fisher's Exact = 0.00 with degree of freedom  
Significant - no

Table 486.

Variable	Elements Sample	IR	
		CMU	CFU
selflessness	low	1	17
	high	1	1

missing = 8/19

Chi-square/Fisher's Exact = 0.56 with 1 degree of freedom  
Significant - no



Table 487.

Variable	Elements Sample	IR	
		CMU	CFU
happiness	low	3	13
	high	1	0

missing = 6/24

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 488.

Variable	Elements Sample	IR	
		CMU	CFU
non-union- mindedness	low	8	27
	high	0	0

missing = 2/10

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 489.

Variable	Elements Sample	IR	
		CMU	CFU
evaluation	low	5	6
	high	0	0

missing = 5/31

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 490.

Variable	Elements Sample	FAMILY	
		CMU	CFU
workmindedness	low	0	0
	high	5	21

missing = 5/16

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 491.

Variable	Elements Sample	FAMILY	
		CMU	CFU
impotence	low	2	2
	high	6	27

missing = 2/8

Chi-square/Fisher's Exact = 0.67 with 1 degree of freedom  
Significant - no

Table 492.

Variable	Elements Sample	FAMILY	
		CMU	CFU
selflessness	low	1	1
	high	2	14

missing = 7/22

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 493.

Variable	Elements Sample	FAMILY	
		CMU	CFU
happiness	low	1	0
	high	3	10

missing = 6/27

Chi-square/Fisher's Exact = with degrees of freedom  
Significant - no significant difference

Table 494.

Variable	Elements Sample	FAMILY	
		CMU	CFU
non-union- mindedness	low	1	1
	high	7	21

missing = 2/15

Chi-square/Fisher's Exact = 0.00 with degree of freedom  
Significant - no

Table 495.

Variable	Elements Sample	FAMILY	
		CMU	CFU
evaluation	low	0	0
	high	4	3

missing = 6/34

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 496.

Variable	Elements Sample	WORKFELLOWS	
		CMU	CFU
workmindedness	low	0	1
	high	2	3

missing = 8/33

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 497.

Variable	Elements Sample	WORKFELLOWS	
		CMU	CFU
impotence	low	2	2
	high	2	5

missing = 6/30

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 498.

Variable	Elements Sample	WORKFELLOWS	
		CMU	CFU
selflessness	low	0	2
	high	1	2

missing = 9/33

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 499.

Variable	Elements Sample	WORKFELLOWS	
		CMU	CFU
happiness	low	1	1
	high	0	2

missing = 9/34

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 500.

Variable	Elements Sample	WORKFELLOWS	
		CMU	CFU
non-union- mindedness	low	2	1
	high	2	6

missing = 6/30

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 501.

Variable	Elements Sample	WORKFELLOWS	
		CMU	CFU
evaluation	low	0	1
	high	1	2

missing = 9/34

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 502.

Variable	Elements Sample	SELF	
		MMU	MFU
workmindedness	low	3	0
	high	9	10

missing = 16/4

Chi-square/Fisher's Exact = 1.16 with 1 degree of freedom  
Significant - no

Table 503.

Variable	Elements Sample	SELF	
		MMU	MFU
impotence	low	8	1
	high	16	12

missing = 4/1

Chi-square/Fisher's Exact = 1.78 with 1 degree of freedom  
Significant - no

Table 504.

Variable	Elements Sample	SELF	
		MMU	MFU
selflessness	low	0	2
	high	22	8

missing = 6/4

Chi-square/Fisher's Exact = 1.82 with 1 degree of freedom  
Significant - no

Table 505.

Variable	Elements Sample	SELF	
		MMU	MFU
happiness	low	0	0
	high	8	5

missing = 20/9

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no

Table 506.

Variable	Elements Sample	SELF	
		MMU	MFU
non-union- mindedness	low	7	0
	high	14	9

missing = 7/5

Chi-square/Fisher's Exact = 2.27 with 1 degree of freedom  
Significant - no

Table 507.

Variable	Elements Sample	SELF	
		MMU	MFU
evaluation	low	0	0
	high	9	3

missing = 19/11

Chi-square/Fisher's Exact = with degree of freedom  
no significant difference  
Significant -

Table 508.

Variable	Elements Sample	IR	
		MMU	MFU
workmindedness	low	9	10
	high	3	0

missing = 16/4

Chi-square/Fisher's Exact = 1.16 with 1 degree of freedom  
Significant - no

Table 509.

Variable	Elements Sample	IR	
		MMU	MFU
impotence	low	21	10
	high	2	2

missing = 5/2

Chi-square/Fisher's Exact = 0.02 with 1 degree of freedom  
Significant - no

Table 510.

Variable	Elements Sample	IR	
		MMU	MFU
selflessness	low	16	8
	high	4	2

missing = 8/4

Chi-square/Fisher's Exact = 0.23 with 1 degree of freedom  
Significant - no



Table 511.

Variable	Elements Sample	IR	
		MMU	MFU
happiness	low	8	5
	high	0	0

missing = 20/9

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 512.

Variable	Elements Sample	IR	
		MMU	MFU
non-union- mindedness	low	19	8
	high	1	0

missing = 8/6

Chi-square/Fisher's Exact = 0.23 with 1 degree of freedom  
Significant - no

Table 513.

Variable	Elements Sample	IR	
		MMU	MFU
evaluation	low	9	3
	high	0	0

missing = 19/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 514.

Variable	Elements Sample	FAMILY	
		MMU	MFU
workmindedness	low	1	0
	high	9	9

missing = 18/5

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 515.

Variable	Elements Sample	FAMILY	
		MMU	MFU
impotence	low	2	2
	high	15	10

missing = 11/2

Chi-square/Fisher's Exact = 0.03 with 1 degree of freedom  
Significant - no

Table 516.

Variable	Elements Sample	FAMILY	
		MMU	MFU
selflessness	low	4	1
	high	11	8

missing = 13/5

Chi-square/Fisher's Exact = 0.15 with 1 degree of freedom  
Significant - no

Table 517.

Variable	Elements Sample	FAMILY	
		MMU	MFU
happiness	low	0	0
	high	7	4

missing = 21/10

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 518.

Variable	Elements Sample	FAMILY	
		MMU	MFU
non-union- mindedness	low	0	0
	high	16	9

missing = 12/5

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 519.

Variable	Elements Sample	FAMILY	
		MMU	MFU
evaluation	low	0	0
	high	7	3

missing = 21/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

**Table 520.**

Variable	Elements Sample	WORKFELLOWS	
		MMU	MFU
workmindedness	low	0	1
	high	3	2

missing = 25/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

**Table 521.**

Variable	Elements Sample	WORKFELLOWS	
		MMU	MFU
impotence	low	4	2
	high	5	2

missing = 19/10

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

**Table 522.**

Variable	Elements Sample	WORKFELLOWS	
		MMU	MFU
selflessness	low	7	1
	high	0	2

missing = 21/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 523.

Variable	Elements Sample	WORKFELLOWS	
		MMU	MFU
happiness	low	1	1
	high	0	0

missing = 27/13

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 524.

Variable	Elements Sample	WORKFELLOWS	
		MMU	MFU
non-union- mindedness	low	2	2
	high	6	0

missing = 20/12

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 525.

Variable	Elements Sample	WORKFELLOWS	
		MMU	MFU
evaluation	low	0	0
	high	0	0

missing = 28/14

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 526.

Variable	Elements Sample	SELF	
		UNION MEMBER	NON-UNION MEMBER
workmindedness	low	3	0
	high	48	4

missing = 38/7

Chi-square/Fisher's Exact = 0.42 with 1 degree of freedom  
Significant - no

Table 527.

Variable	Elements Sample	SELF	
		UNION MEMBER	NON-UNION MEMBER
impotence	low	15	4
	high	63	6

missing = 11/1

Chi-square/Fisher's Exact = 1.20 with 1 degree of freedom  
Significant - no

Table 528.

Variable	Elements Sample	SELF	
		UNION MEMBER	NON-UNION MEMBER
selflessness	low	4	2
	high	49	4

missing = 36/5

Chi-square/Fisher's Exact = 1.61 with 1 degree of freedom  
Significant - no

Table 529.

Variable	Elements Sample	SELF	
		UNION MEMBER	NON-UNION MEMBER
happiness	low	1	0
	high	29	0

missing = 59/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 530.

Variable	Elements Sample	SELF	
		UNION MEMBER	NON-UNION MEMBER
non-union- mindedness	low	9	0
	high	57	8

missing = 23/3

Chi-square/Fisher's Exact = 0.29 with 1 degree of freedom  
Significant - no

Table 531.

Variable	Elements Sample	SELF	
		UNION MEMBER	NON-UNION MEMBER
evaluation	low	0	0
	high	23	3

missing = 66/8

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 532.

Variable	Elements Sample	IR	
		UNION MEMBER	NON-UNION MEMBER
workmindedness	low	48	4
	high	3	0

missing = 38/7

Chi-square/Fisher's Exact = 0.42 with 1 degree of freedom  
Significant - no

Table 533.

Variable	Elements Sample	IR	
		UNION MEMBER	NON-UNION MEMBER
impotence	low	68	7
	high	7	3

missing = 14/1

Chi-square/Fisher's Exact = 1.91 with 1 degree of freedom  
Significant - no

Table 534.

Variable	Elements Sample	IR	
		UNION MEMBER	NON-UNION MEMBER
selflessness	low	42	4
	high	8	2

missing = 39/5

Chi-square/Fisher's Exact = 0.23 with 1 degree of freedom  
Significant - no



Table 535.

Variable	Elements Sample	IR	
		UNION MEMBER	NON-UNION MEMBER
happiness	low	29	0
	high	1	0

missing = 59/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 536.

Variable	Elements Sample	IR	
		UNION MEMBER	NON-UNION MEMBER
non-union- mindedness	low	62	8
	high	1	0

missing = 26/3

Chi-square/Fisher's Exact = 1.52 with 1 degree of freedom  
Significant - no

Table 537.

Variable	Elements Sample	IR	
		UNION MEMBER	NON-UNION MEMBER
evaluation	low	23	3
	high	0	0

missing = 66/8

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 538.

Variable	Elements Sample	FAMILY	
		UNION MEMBER	NON-UNION MEMBER
workmindedness	low	1	0
	high	44	4

missing = 44/7

Chi-square/Fisher's Exact = 2.38 with 1 degree of freedom  
Significant - no

Table 539.

Variable	Elements Sample	FAMILY	
		UNION MEMBER	NON-UNION MEMBER
impotence	low	8	3
	high	58	7

missing = 23/1

Chi-square/Fisher's Exact = 1.03 with 1 degree of freedom  
Significant - no

Table 540.

Variable	Elements Sample	FAMILY	
		UNION MEMBER	NON-UNION MEMBER
selflessness	low	7	2
	high	35	4

missing = 47/5

Chi-square/Fisher's Exact = 0.18 with 1 degree of freedom  
Significant - no

Table 541.

Variable	Elements Sample	FAMILY	
		UNION MEMBER	NON-UNION MEMBER
happiness	low	1	0
	high	24	0

missing = 64/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 542.

Variable	Elements Sample	FAMILY	
		UNION MEMBER	NON-UNION MEMBER
non-union- mindedness	low	2	0
	high	53	8

missing = 34/3

Chi-square/Fisher's Exact = 0.28 with 1 degree of freedom  
Significant - no

Table 543.

Variable	Elements Sample	FAMILY	
		UNION MEMBER	NON-UNION MEMBER
evaluation	low	0	0
	high	17	3

missing = 72/8

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 544.

Variable	Elements Sample	WORKFELLOWS	
		UNION MEMBER	NON-UNION MEMBER
workmindedness	low	2	1
	high	10	0

missing = 77/10

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 545.

Variable	Elements Sample	WORKFELLOWS	
		UNION MEMBER	NON-UNION MEMBER
impotence	low	10	2
	high	14	0

missing = 65/9

Chi-square/Fisher's Exact = 0.73 with 1 degree of freedom  
Significant - no

Table 546.

Variable	Elements Sample	WORKFELLOWS	
		UNION MEMBER	NON-UNION MEMBER
selflessness	low	10	1
	high	5	1

missing = 74/9

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 547.

Variable	Elements Sample	WORKFELLOWS	
		UNION MEMBER	NON-UNION MEMBER
happiness	low	4	0
	high	2	0

missing = 83/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 548.

Variable	Elements Sample	WORKFELLOWS	
		UNION MEMBER	NON-UNION MEMBER
non-union- mindedness	low	6	1
	high	15	0

missing = 68/10

Chi-square/Fisher's Exact = 0.16 with 1 degree of freedom  
Significant - no

Table 549.

Variable	Elements Sample	WORKFELLOWS	
		UNION MEMBER	NON-UNION MEMBER
evaluation	low	1	0
	high	3	0

missing = 85/11

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 550.

Variable	Elements Sample	SELF	
		CFU	CFN
workmindedness	low	0	0
	high	24	3

missing = 13/5

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 551.

Variable	Elements Sample	SELF	
		CFU	CFN
impotence	low	4	1
	high	29	6

missing = 4/1

Chi-square/Fisher's Exact = 0.22 with 1 degree of freedom  
Significant - no

Table 552.

Variable	Elements Sample	SELF	
		CFU	CFN
selflessness	low	1	2
	high	17	3

missing = 19/3

Chi-square/Fisher's Exact = 1.62 with 1 degree of freedom  
Significant - no

Table 553.

Variable	Elements Sample	SELF	
		CFU	CFN
happiness	low	0	0
	high	13	0

missing = 24/8

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 554.

Variable	Elements Sample	SELF	
		CFU	CFN
non-union- mindedness	low	1	0
	high	26	5

missing = 10/3

Chi-square/Fisher's Exact = 0.93 with 1 degree of freedom  
Significant - no

Table 555.

Variable	Elements Sample	SELF	
		CFU	CFN
evaluation	low	0	0
	high	6	2

missing = 31/6

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 556.

Variable	Elements Sample	IR	
		CFU	CFN
workmindedness	low	24	3
	high	0.	0

missing = 13/5

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 557.

Variable	Elements Sample	IR	
		CFU	CFN
impotence	low	31	6
	high	2	1

missing = 4/1

Chi-square/Fisher's Exact = 0.00 with degree of freedom  
Significant - no

Table 558.

Variable	Elements Sample	IR	
		CFU	CFN
selflessness	low	17	3
	high	1	2

missing = 19/3

Chi-square/Fisher's Exact = 1.62 with 1 degree of freedom  
Significant - no



Table 559.

Variable	Elements Sample	IR	
		CFU	CFN
happiness	low	13	0
	high	0	0

missing = 24/8

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 560.

Variable	Elements Sample	IR	
		CFU	CFN
non-union mindedness	low	27	5
	high	0	0

missing = 10/3

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 561.

Variable	Elements Sample	IR	
		CFU	CFN
evaluation	low	6	2
	high	0	0

missing = 31/6

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 562.

Variable	Elements Sample	FAMILY	
		CFU	CFN
workmindedness	low	0	0
	high	21	3

missing = 16/5

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 563.

Variable	Elements Sample	FAMILY	
		CFU	CFN
impotence	low	2	1
	high	27	6

missing = 8/1

Chi-square/Fisher's Exact = 0.02 with 1 degree of freedom  
Significant - no

Table 564.

Variable	Elements Sample	FAMILY	
		CFU	CFN
selflessness	low	1	2
	high	14	3

missing = 22/3

Chi-square/Fisher's Exact = 1.13 with 1 degree of freedom  
Significant - no

Table 565.

Variable	Elements Sample	FAMILY	
		CFU	CFN
happiness	low	0	0
	high	10	0

missing = 27/8

Chi-square/Fisher's Exact = with degrees of freedom  
Significant -

Table 566.

Variable	Elements Sample	FAMILY	
		CFU	CFN
non-union- mindedness	low	1	0
	high	21	5

missing = 15/3

Chi-square/Fisher's Exact = 0.68 with 1 degree of freedom  
Significant - no

Table 567.

Variable	Elements Sample	FAMILY	
		CFU	CFN
evaluation	low	0	0
	high	3	2

missing = 34/6

Chi-square/Fisher's Exact = with degree of freedom  
Significant - with no significant difference

Table 568.

Variable	Elements Sample	WORKFELLOWS	
		CFU	CFN
workmindedness	low	1	1
	high	3	0

missing = 33/7

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 569.

Variable	Elements Sample	WORKFELLOWS	
		CFU	CFN
impotence	low	2	2
	high	5	0

missing = 30/6

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 570.

Variable	Elements Sample	WORKFELLOWS	
		CFU	CFN
selflessness	low	2	1
	high	2	1

missing = 33/6

~~Chi-square~~/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 571.

Variable	Elements Sample	WORKFELLOWS	
		CFU	CFN
happiness	low	1	0
	high	2	0

missing = 34/8

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

Table 572.

Variable	Elements Sample	WORKFELLOWS	
		CFU	CFN
non-union- mindedness	low	1	1
	high	6	0

missing = 30/7

Chi-square/Fisher's Exact = with degree of freedom  
Significant - no significant difference

Table 573.

Variable	Elements Sample	WORKFELLOWS	
		CFU	CFN
evaluation	low	1	0
	high	2	0

missing = 34/8

Chi-square/Fisher's Exact = with degree of freedom  
Significant -

APPENDIX M

Data for IV Characteristics of Sample a) description

Table 574.

Sample	ALL	N=100		
Occupation	Manual	42	Clerical	58
Union-membership	Member	89	Non-member	11
Sex	Female	59	Male	41
Service adj. Freq. not given 11	Short	52 58%	Long	37 42%
Age adj. Freq.	Young	61 69%	Old	28 31%

key: adj. Freq. = adjusted Frequency (%)

Table 575.

Sample	CLERICAL	N=58		
Occupation	Manual		Clerical	✓
Union-membership	Member	47 81%	Non-member	11 19%
Sex	Female	45 78%	Male	13 22%
Service adj. Freq. not given 11	Short	28 60%	Long	19 40%
Age adj. Freq. not given 11	Young	30 64%	Old	17 36%

Key: adj. Freq. = adjusted Frequency (%)

Table 576.

Sample	MANUAL	N=42		
Occupation	Manual	✓	Clerical	
Union-membership	Member	42 100%	Non-member	0
Sex	Female	14 33%	Male	28 67%
Service	Short	24 57%	Long	18 43%
Age	Young	31 74%	Old	11 26%

Table 577.

Sample	MALE	N=41			CMU CMF RMU
Occupation	Manual	28 68%	Clerical	13 32%	
Union-membership	Member	38 93%	Non-member	3 7%	
Sex	Female		Male	✓	
Service adj. Freq. not given 2	Short	19 49%	Long	20 51%	
Age adj. Freq. not given 2	Young	28 70%	Old	11 28%	

Key: adj. Freq. = adjusted Frequency (%)

Table 578.

Sample	FEMALE	N= 59		CFU CFU
Occupation	Manual	14 24%	Clerical	45 76%
Union-membership	Member	51 86%	Non-member	8 14%
Sex	Female	✓	Male	
Service adj. Freq. not given 9	Short	33 66%		17 34%
Age adj. Freq.	Young	33 66%	Old	17 34%

key: adj. Freq. = adjusted Frequency (%)

Table 579.

Sample	UNION MEMBER	N=89		CHU CFU LEU
Occupation	Manual	42 47%	Clerical	47 53%
Union-membership	Member	✓	Non-member	
Sex	Female	51 57%	Male	38 43%
Service adj. Freq. not given 9	Short	47 59%	Long	33 41%
Age adj. Freq.	Young	55 69%	Old	25 31%

Key: adj. Freq. = adjusted Frequency (%)



Table 580.

Sample	UNION NON-MEMBER	N= 11		CHN CFN
Occupation	Manual	0	Clerical	11 100%
Union-membership	Member		Non-member	✓
Sex	Female	8 73%	Male	3 27%
Service adj. Freq. not given 2.	Short	5 56%	Long	4 44%
Age adj. Freq. not given 2.	Young	6 67%	Old	3 33%

key: adj. Freq. = adjusted Frequency (%)

Table 581.

Sample	CHN	N= 10		
Occupation	Manual		Clerical	✓
Union-membership	Member	✓	Non-member	
Sex	Female		Male	✓
Service adj. Freq. not given 2	Short	5 50%	Long	5 63%
Age adj. Freq. not given 2	Young	5 63%	Old	3 38%

Key: adj. Freq. = adjusted Frequency (%)

Table 582.

Sample	CMN N=3			
Occupation	Manual		Clerical	✓
Union-membership	Member		Non-member	✓
Sex	Female		Male	✓
Service	Short	1 33%	Long	2 67%
Age	Young	1 33%	Old	2 67%

Table 583.

Sample	CFU N=37			
Occupation	Manual		Clerical	✓
Union-membership	Member	✓	Non-member	
Sex	Female	✓	Male	
Service adj. Freq. not given 7	Short	20 67%	Long	10 33%
Age adj. Freq. not given 7	Young	19 63%	Old	11 37%

Key: adj. Freq. = adjusted Frequency (%)

Table 584.

Sample	CFN N=8			
Occupation	Manual		Clerical	✓
Union-membership	Member		Non-member	✓
Sex	Female	✓	Male	
Service adj. Freq. not given 2	Short	4 67%		2 33%
Age adj. Freq. not given 2	Young	5 83%	Old	1 17%

key: adj. Freq. = adjusted Frequency (%)

Table 585.

Sample	ISU N=28			
Occupation	Manual	✓	Clerical	
Union-membership	Member	✓	Non-member	✓
Sex	Female		Male	
Service adj. Freq.	Short	15 54%	Long	13 46%
Age	Young	22 79%	Old	6 21%

Key: adj. Freq. = adjusted Frequency (%)

Table 586.

Sample	MFU N=14			
Occupation	Manual	✓	Clerical	
Union-membership	Member	✓	Non-member	
Sex	Female	✓	Male	
Service	Short	9 64%		5 36%
Age	Young	9 64%	Old	5 36%

Table

Sample				
Occupation	Manual		Clerical	
Union-membership	Member		Non-member	
Sex	Female		Male	
Service adj. Freq.	Short		Long	
Age adj. Freq.	Young		Old	

Key: adj. Freq. = adjusted Frequency (%)

Data for IV Characteristics of Sample b) Selected Comparisons

Table 587.

Characteristic	Sample	ALL	
		O	E
occupation	manual	42	50
	clerical	58	50

Chi-square/Fisher Exact test = 2.56 with 1 degree of freedom  
Significant - no

Table 588.

Characteristic	Sample	ALL	
		O	E
union membership	non-member	11	50
	member	89	50

Chi-square/Fisher Exact test = 60.84 with 1 degree of freedom  
Significant - at better than .01

Table 589.

Characteristic	Sample	ALL	
		O	E
sex	male	41	50
	female	59	50

Chi-square/Fisher Exact test = 3.24 with 1 degree of freedom  
Significant - no

Table 590.

Characteristic	Sample	ALL	
		O	E
service	short	52	44.5
	long	37	44.5

Chi-square/~~Fisher Exact test~~ = 2.53 with 1 degree of freedom  
Significant - no

Table 591.

Characteristic	Sample	ALL	
		O	E
age	young	61	44.5
	old	28	44.5

Chi-square/~~Fisher Exact test~~ = 12.24 with 1 degree of freedom  
Significant - at better than .01

Table 592.

Characteristic	Sample	CLERICAL	MANUAL
		O	E
union membership	non-member	11	0
	member	47	42

Chi-square/~~Fisher Exact test~~ = 7.12 with 1 degree of freedom  
Significant - at .01

Table 593.

Characteristic	Sample	CLERICAL	MANUAL
		O	E
sex	male	13	28
	female	45	14

Chi-square/Fisher Exact test = 17.93 with 1 degree of freedom  
Significant - at better than .01

Table 594.

Characteristic	Sample	CLERICAL	MANUAL
		O	E
service	short	28	24
	long	19	18

Chi-square/Fisher Exact test = 0.00 with 1 degree of freedom  
Significant - no

Table 595.

Characteristic	Sample	CLERICAL	MANUAL
		O	E
age	young	30	31
	old	17	11

Chi-square/Fisher Exact test = 0.61 with 1 degree of freedom  
Significant - no

Table 596.

Characteristic	Sample	MALE	FEMALE
		O	E
union membership	non-member	3	8
	member	38	51

Chi-square/Fisher Exact test = 0.43 with 1 degree of freedom  
Significant - no

Table 597.

Characteristic	Sample	MALE	FEMALE
		O	E
service	short	19	33
	long	20	17

Chi-square/Fisher Exact test = 2.03 with 1 degree of freedom  
Significant - no

Table 598.

Characteristic	Sample	MALE	FEMALE
		O	E
age	young	28	33
	old	11	17

Chi-square/Fisher Exact test = 0.13 with 1 degree of freedom  
Significant - no



APPENDIX N

NOTES ON THE ADMINISTRATION OF THE REPERTORY GRID

Subjects are usually tense and concerned to answer in the 'correct' way. Some ask at frequent intervals 'Is this the sort of thing that you want?' Others may try to repeat the same construct for various role elements and finally dry up altogether, saying, 'No I cannot think of any way in which two of these people are similar'. This is obviously not true, and represents a breakdown of the interview procedure.

Various devices may be used to put the subject at ease. An informal manner may help. At various points it may be appropriate to tell the subject not to put too much thought into it - that great precision is not really important. This may be particularly the case when it comes to grading the role elements on the construct, when it seems to often become enormously important to the subject that he be completely accurate and fair.

For the purpose of analysis it is desirable that all role elements be used. Therefore, if a subject says that he has not got one of these persons e.g. husband/wife/boyfriend/girlfriend, or that his father has been dead twenty years, the interviewer must ask something like :-

'Would you mind imagining the sort of person he/she would be if you did have a .....?'

or

'Would you mind imagining how your father would be if he was still alive?'

If the subject declines to operationalise a role being used in a sort, that sort must be abandoned. If the subject declines to operationalise a role being graded, a grade of 5 must be given (Mother may frequently be seen as unconnected to work matters, and thus not gradeable).

A typical interview starts off with the subject in difficulty with knowing how to respond. It is appropriate to stress at this point that the whole purpose of the procedure is to find out what the subject thinks, and not to put words into his mouth. Nevertheless, the interviewer should answer any questions put to him as best he can. An exception to this would be the request for a quasi-psychiatric interpretation of the emerging repertory grid, which should be refused.

Most subjects find the middle sorts relatively easy to construe. Towards the end of the interview most have used up the obvious constructs within the relevant area as they have chosen to define it. It then becomes difficult to think of 'new' constructs. If the subject takes more than four or five minutes over a sort it is unlikely that he is going to suggest a construct and that sort should be abandoned. It is not worth returning to it as the subject is not likely to subsequently suggest a construct for that sort. There is a great deal that the interviewer can do to 'unfreeze' such a subject. The instructions can be repeated in different ways, although usually the instructions are not at issue. The basic question can be put in reverse form :-

'How are any two of these people different from the third ?'  
In many cases the subject will make some comment on the role elements, and the interviewer can help the subject make clear what he means and how it relates to these people. The subject may be 'trying on' a construct for acceptability and needs reassurance that it is valid.

#### DECISION RULES :

These may be expanded as necessary, but once arrived at should be observed and not changed.

1. Sample boundaries. Conventional definitions of 'clerical' workers and 'manual' workers are followed. Thus clerical workers do paper work of a routine nature, without exercising supervisory responsibility. They will normally work in offices although certain persons, such as storemen, may exercise clerical functions on the shop floor. Manual workers do manual operations upon the product, or directly ancilliary to the product. Their work may or may not be routine in nature, but again involves no supervisory responsibility. It will normally be done in the production area ('shop floor') or areas directly ancilliary to the production area although certain jobs, such as maintenance and decoration, will be done in offices.
2. Repeated constructs. The method demands a different construct for each sort. If the subject repeats a construct he should be asked :-

'Is there another way in which any two of these people are similar ?'

Having made a pairing in his mind the subject is unlikely to

subsequently change that pairing, but if he continues to have difficulty suggesting the construct the fact that he can still choose any two of the three elements can be made plain to him. If on several occasions the interviewer has to ask the subject for a different construct it should be made clear to the subject that it is not being denied that these are important ways in which the elements are similar, but that research method simply demands different 'similarities' each time.

It is not always clear whether a construct is the same as a previous one or not. Bannister and Mair suggest ways of testing this, and their methods can be used. Basic to the use of grid analysis in this project is the assumption that verbal labels can be taken at their face value. If the interviewer suspects that the same construct is being repeated under different labels by the subject he can investigate this. The subject may need help in getting on to a new 'track'. But it should not be surprising if many constructs used by the subject are similar and generate similar element gradings. These will be constructs that together form a 'principal component' which will be objectively arrived at by the statistical analysis.

3. Opposites. When asked for the opposite of the similarity the subject may well say, 'not .....', i.e. negative case of the characteristic. In many cases this is common currency and should be accepted e.g. the opposite to 'similar interests to myself' is 'different interests to myself'. In other cases the negative case may be ambiguous in relation to every-day usage, e.g. not sophisticated may mean simple, naive, unwordly, forthright, plain spoken etc. In still other cases the opposite given may be on a different conceptual level to the similarity e.g. to 'liking to go out and meet people' may be given the opposite 'different interests to myself'. In all these cases the subject should be asked :-

'What do you mean by.....?'

4. Constructs too general/too particular. There are further types of construct which are not accepted, not because they are in any real sense invalid, but because the requirements of the project are that they be not accepted. Constructs which are too general e.g. 'they are both women and the other is a man', are not accepted. If the subject then has difficulty in finding an alternative construct

he can be asked :-

'How does it seem to you that (women) differ from (men) ?'

Thus arriving at the underlying construct. Constructs which are too particular are not accepted, e.g. 'I went out with my friend from work last week, and I didn't with my boss'. Again, the underlying construct can be investigated. In this example the following question might be :-

'Do you mean that you are quite likely to meet this friend outside work, but not your boss ?'

It is difficult to give precise rules as to what is too general or particular. Usually both will lack meaning to the interviewer, and the subject will often appear to mean more than he is saying.

5. Constructs based on acquaintance. If the subject does not know a person to fit a role description, he is asked to imagine a person. Constructs saying that the subject knows two role elements and not the third are not accepted. For reasons similar to this, and to those advanced above in 4, constructs saying that two of the role elements are in the subject's family and that the third is not are not accepted. The subject is asked in both of these cases :-

'Is there another way in which any two of these people are similar ?'

If it is suspected that the subject means that there is some characteristic of being 'family' that is relevant to the test situation this can be investigated, but it is to be expected that normally 'family' will be applied as simply the most obvious similarity without much meaning being intended.

Alan Brown.

APPENDIX P

THE PRINCIPAL COMPONENTS ANALYSIS

This appendix illustrates the processes involved in the principal components analysis. Data for the subjects given as examples on pages 28 and 39 is followed through from response-sheet to computer output. The reader is asked to bear in mind the following points.

1. The author's understanding of multivariate analysis is essentially pragmatic. He is not a mathematician, statistician, or computer programmer. Apologies are given in advance if he fails to pose or answer the particular questions which those specialists would like to see answered.
2. For the sake of completeness all the computer output is given. Some output was never in fact used, and is not now explained. We have in mind that which follows the principal components, on the inter and intra element and construct relationships expressed trigonometrically.
3. The extensive references in this appendix are to notes prepared by the program's creator, Dr Patrick Slater<sup>1</sup>. The present author was faced with a choice of strategies in writing this appendix. He could include the whole of those notes verbatim. He could say everything that Slater has said, but in his own words. Or he could deal briefly and pragmatically with the material, in the same manner and spirit that he had approached

---

<sup>1</sup>P. Slater, Notes on INGRID 72, Institute of Psychiatry, London, 1972.

the analysis at the time it was conducted. This last seemed the best strategy and is the one which has been adopted.

It must be recognised, however, that the whole of Dr. Slater's 25 pages of notes are necessary to do full justice to the output from his program. These notes are available from him at St. George's Hospital Medical School, Clare House, Blackshaw Road, London S.W.17.

Figure 13 is the response-sheet for the female clerical worker described on page 28 et seq. The noughts in the columns under the elements show which three elements were included in each of the eight sorts. This was the same for all subjects. For each sort two elements are ticked. These are the two which were said by this subject to be alike. The manner of their resemblance is given, and, with the specified difference, constitutes the construct on which all elements are graded. The highest grade of 9 is located at the resemblance pole, and the lowest grade of 1 is located at the difference pole. These grades are shown as an element - construct matrix. Figure 14 shows the equivalent data for the male manual worker described on page 39 et seq.

Computer output for the clerical female worker is presented as figures 15a) to h), and for the male manual worker as figures 16a) to f). It is proposed to go systematically through this output, discussing those procedures which seem to be of importance.

The program first calculates MEANS for element scores on each construct, and VARIATION about the mean for each construct. This is tabulated and expressed as a percentage of TOTAL VARIATION. It happens that for both our subjects constructs 1 and 5 show lowest variation. Slater says, 'If the informant is applying the same grading scale consistently with all the constructs, the means, totals and percentages per construct will

UNION MEMBER /  
/ FEMALE

JOB : Secretary

SUBJECT CODE : 2 P

COMPANY CODE : Pilot

DATE : 5.1.73

CLERICAL WORKERS' ROLE CONSTRUCTS

2 P

Figure 13. Response-sheet for female clerical worker

SELF	FATHER	MOTHER	H/W./B.F./G.F.	BOSS	FRIEND AT WORK	SHOP-FLOOR WORKER	UNION-MEMBER	UNION REPRESENTATIVE	STRIKER	CONSTRUCT	RESEMBLANCES	DIFFERENCES
1	2	3	4	5	6	7	8	9	10			
6	2	3	8	6	2	3	3	4	3	1	not bothered about social life - content with home life	likes social activity
5	8	5	9	9	8	3	4	3	1	2	feel couldn't strike	feel could strike
8	5	7	8	9	8	3	1	2	1	3	not union-minded	strong union-mindedness
9	6	2	9	9	9	2	3	4	3	4	rewarding (office) work	not rewarding (shop floor) work
8	8	7	9	9	8	3	5	6	3	5	(too) conscientious (to go on strike)	lazy
8	4	2	9	9	8	3	5	7	3	6	interested in clerical/admin. work	not interested in this work
9	8	7	9	9	8	5	5	6	1	7	not like union disruption of country	likes taking over the companies/dictating terms
9	8	8	9	9	9	5	8	7	1	8	listen and think carefully before striking	strike at least thing not suit him

UNION MEMBER /  
SERVICE: 2 yrs MALE /

AGE: 35 yrs

JOB : loader

SUBJECT CODE : oil

COMPANY CODE : M.O.

DATE : 30.8.73

MANUAL WORKERS' ROLE CONSTRUCTS

11B

Figure 14. Response-sheet for male manual worker

SELF	FATHER	MOTHER	H/W./B.F./G.F.	BOSS	FRIEND AT WORK	SHOP-FLOOR WORKER	UNION-MEMBER	UNION REPRESENTATIVE	STRIKER	CONSTRUCT	RESEMBLANCES	DIFFERENCES
1	2	3	4	5	6	7	8	9	10			
7	8	6	4	8	7	6	7	9	2	1	Clever	dim
9	2	1	1	2	8	7	8	9	9	2	active union member	inactive apathetic members
9	3	1	1	1	7	7	8	9	9	3	well aware of the conditions of the working class	not aware at all
9	3	2	1	1	7	9	8	5	8	4	same attitude towards work	different attitude towards work
9	5	5	5	2	8	6	7	9	2	5	sensible about striking	a bit irrational
8	2	1	1	3	7	6	6	9	5	6	have a sense of responsibility to workmates	no sense of responsibility
9	4	2	1	2	5	5	9	9	7	7	strong socialist ideals	no socialist ideals at all
9	4	1	1	1	3	2	9	8	2	8	not afraid of losing our jobs	frightened to death of losing job



\*\*\* A.J. BROWN JUNE 73 CASE 2

29

(Figure 15a) Female Clerical Worker

ANY PUBLICATION USING ANY OF THESE RESULTS SHOULD INCLUDE AN ACKNOWLEDGEMENT  
THAT THEY HAVE BEEN PROVIDED BY THE M.H.C. SERVICE FOR ANALYSING REPERTORY  
GUIDES UNDER DR. PATRICK SLATER AND A COPY SHOULD BE SENT TO HIM.

HIGHEST GRADE CN CONSTRUCT SCALE 5.  
LOWEST .. .. 1.

CONSTRUCT	MEAN	VARIATION	AS PER CENT
1	4.500	48.5000	8.99
2	5.900	82.5000	15.36
3	5.200	91.5000	16.98
4	5.600	88.5000	16.38
5	6.400	46.5000	8.50
6	5.800	63.5000	12.16
7	6.700	58.1000	10.77
8	7.300	58.1000	10.77

TOTAL VARIATION ABOUT CONSTRUCT MEANS 539.6000

BIAS .3167  
VARIABILITY .6844

CORRELATIONS AND ANGULAR DISTANCES BETWEEN CONSTRUCTS

CONSTRUCT 1	1	2	3	4	5	6	7	8
2	.457	78.63	.255	15.22	.214	77.65	.042	87.58
3	.254	75.27	.065	85.14				
CONSTRUCT 2	3	4	5	6	7	8		
3	.886	27.64	.883	27.98	.929	21.76	.689	46.46
4	.826	34.35						
CONSTRUCT 3	4	5	6	7	8			
4	.776	36.13	.856	31.14	.573	55.06	.858	30.90
CONSTRUCT 4	5	6	7	8				
5	.818	35.10	.882	28.06	.751	41.35	.617	51.92
CONSTRUCT 5	6	7	8					
6	.692	46.18	.921	22.98	.851	31.65		
CONSTRUCT 6	7	8						
7	.054	49.13	.609	52.48				
CONSTRUCT 7	8							
8								

CONSTRUCT 7  
8 .928 21.02

FLEMENT	TOTAL	SUM OF SQUARES	AS PER CENT
1	2.212	.035	7.94
2	.179	.313	3.92
3	-.728	.472	5.90
4	2.769	1.006	12.57
5	2.547	.876	10.90
6	1.397	.593	7.42
7	-1.828	1.093	13.66
8	-1.604	.442	6.03
9	-.565	.287	3.55
10	-3.917	2.246	28.08

TOTAL VARIATION ABOUT CONSTRUCT MEANS 8.0000

TOTAL PER CONSTRUCT 1.0000

UNIT OF EXPECTED DISTANCE 1.3333

# DISTANCES BETWEEN ELEMENTS

FLEMENT 1	2	3	4	5	6	7	8	9	10
	.679	.949	.259	.164	.449	1.258	1.075	.924	1.681

FLEMENT 2	3	4	5	6	7	8	9	10
	.505	.895	.771	.509	1.095	.693	.686	1.327

FLEMENT 3	4	5	6	7	8	9	10
	1.111	1.033	.855	.862	.631	.681	1.167

FLEMENT 4	5	6	7	8	9	10
	.229	.674	1.328	1.219	1.039	1.800

FLEMENT 5	6	7	8	9	10
	.478	1.371	1.180	1.010	1.773

FLEMENT 6	7	8	9	10
	1.346	.966	.855	1.577

FLEMENT 7	8	9	10
	.705	.715	.811

FLEMENT 8	9	10
	.311	.479

FLEMENT 9

ELEMENT 9  
10 .942

THE COMPONENT-SPACE IS LIMITED TO 8 DIMENSIONS

COMPONENT	ROOT	AS PER CENT
1	5.8295	72.87
2	1.0542	13.18
3	.5859	7.32
4	.3540	4.43
5	.0953	1.19
6	.0615	.77
7	.0185	.23
8	.0011	.01

BARTLETT TEST

EXCLUDING 6. MAJOR COMPONENTS

CHI SQUARED 2.2777 D.F. 2

EXCLUDING 5. MAJOR COMPONENTS

CHI SQUARED 5.5035 D.F. 5

EXCLUDING 4. MAJOR COMPONENTS

CHI SQUARED 9.6557 D.F. 9

EXCLUDING 3. MAJOR COMPONENTS

CHI SQUARED 20.0472 D.F. 14

EXCLUDING 2. MAJOR COMPONENTS

CHI SQUARED 30.7292 D.F. 20

EXCLUDING 1. MAJOR COMPONENTS

CHI SQUARED 44.6135 D.F. 27

2 COMPONENTS FOUND SIGNIFICANT

ELEMENT	VECTOR	LOADING	RESIDUAL	VECTOR	LOADING	RESIDUAL	VECTOR	LOADING	RESIDUAL
1	-.3204	-.7736	.0371	.1585	.1628	.0106	-.0253	-.0195	.0102
2									



Figure 15d)

COMPONENT C				COMPONENT H				COMPONENT I			
ELEMENT	VECTOR	LOADING	RESIDUAL	VECTOR	LOADING	RESIDUAL	VECTOR	LOADING	RESIDUAL	VECTOR	LOADING
1	-.3204	-.7136	.0371	.1585	.1628	.0106	-.0255	-.0195	.0102		
2	-.0703	-.1702	.2845	-.4373	-.4695	.0641	.1250	.0957	.0549		
3	.0906	.2193	.4235	-.3686	-.3785	.2803	.6448	.4535	.0367		
4	-.3735	-.9028	.1508	.4120	.4230	.0118	.0004	.0003	.0118		
5	-.3773	-.9111	.0417	.1575	.1618	.0155	-.0893	-.0683	.0108		
6	-.2553	-.6165	.2132	-.3350	-.3440	.0549	-.3338	-.2555	.0296		
7	.3404	.8219	.4175	.5356	.5500	.1150	.4198	.3213	.0118		
8	.2230	.5530	.1763	-.1792	-.1840	.1424	-.0465	-.0358	.1411		
9	.1486	.3349	.1582	.0140	.0144	.1590	-.2265	-.1737	.1279		
10	.5824	1.4207	.2277	.0623	.0640	.2236	-.4676	-.3575	.0955		
CONSTRUCT											
1	-.1062	-.2545	.0342	.9080	.9323	.0650	.3262	.2496	.0027		
2	-.4014	-.9493	.0605	-.0678	-.0656	.0557	.0643	.0492	.0533		
3	-.3710	-.8558	.1576	-.0047	-.0048	.1576	.2396	.1834	.1639		
4	-.3725	-.8594	.1511	.0664	.0887	.1832	-.5009	-.3834	.0362		
5	-.3935	-.9508	.0576	-.2205	-.2264	.0463	.0192	.0147	.0461		
6	-.3321	-.8013	.3569	.2578	.2647	.2869	-.0212	-.4754	.0608		
7	-.3000	-.9541	.0660	-.0558	-.0573	.0827	.3170	.2426	.0238		
8	-.3595	-.8680	.2406	-.4126	-.2183	.1590	.3073	.2352	.1436		

## POLAR CO-ORDINATES

CONSTRUCT	H	V	R
1	105.78	14.44	1.00
2	-175.89	2.90	.57
3	-179.69	11.57	.51
4	174.37	-22.95	.58
5	-166.60	.86	.58
6	161.73	-29.38	.57
7	-176.67	14.22	.59
8	-165.88	14.72	.53

## PROJECTIONS FOR ELEMENTS

ELEMENT	H	V	R
1	168.12	-1.41	.59
2	-109.52	10.85	.51
3	-50.88	48.44	.56
4	154.89	.02	.59
5	165.61	-4.22	.59
6	-150.84	-15.89	.57
7	31.79	16.00	.59
8	-18.40	-3.53	.54
9	2.30	-25.61	.71
10	2.58	-14.13	.58

COMPONENT H

Figure 15e)

COMPONENT 4			
ELEMENT	VECTOR	LOADING	RESIDUAL
1	.0789	.0469	.0080
2	.1120	.0666	.0505
3	.1945	.1157	.0233
4	-.0045	-.0031	.0118
5	.1173	.0638	.0660
6	.1225	.0729	.0243
7	.0084	.0051	.0118
8	-.5093	-.3566	.0140
9	-.5397	-.3211	.0247
10	.5139	.3057	.0020
CONSTRUCT			
1	-.0447	-.0266	.0020
2	.1956	.1164	.0397
3	.5036	.3532	.0392
4	.2548	.1546	.0123
5	.0443	.0263	.0454
6	-.3635	-.2195	.0125
7	-.1650	-.0987	.0141
8	-.6114	-.3638	.0113
RELATIONS BETWEEN CONSTRUCTS AND ELEMENTS EXPRESSED AS COSINES			
CONSTRUCT 1 WITH ELEMENT			
1	.424	2 -.627	3 -.627
4	.646	5 .388	6 -.330
7	.352	8 -.442	9 -.220
10	-.263		
CONSTRUCT 2 WITH ELEMENT			
1	.973	2 .574	3 -.345
4	.850	5 .914	6 .752
7	-.757	8 -.711	9 -.923
10	-.910		
CONSTRUCT 3 WITH ELEMENT			
1	.803	2 -.084	3 .025
4	.765	5 .923	6 .796
7	-.651	8 -.924	9 -.813
10	-.826		
CONSTRUCT 4 WITH ELEMENT			
1	.956	2 .242	3 -.660
4	.836	5 .885	6 .841
7	-.744	8 -.771	9 -.646
10	-.733		
CONSTRUCT 5 WITH ELEMENT			
1	.796	2 .534	3 -.695
4	.850	5 .518	6 .715
7	-.948	8 -.771	9 -.525
10	-.883		
CONSTRUCT 6 WITH ELEMENT			
1	.803	2 -.084	3 .025
4	.765	5 .923	6 .796
7	-.651	8 -.924	9 -.813
10	-.826		

1 .803 2 -.217 3 -.707 4 .819 5 .883 6 .651 7 -.651 8 -.603 9 -.175 10 -.680

CONSTRUCT 7 WITH ELEMENT

1 .927 2 .471 3 -.163 4 .804 5 .880 6 .701 7 -.677 8 -.798 9 -.563 10 -.998

CONSTRUCT 8 WITH ELEMENT

1 .788 2 .340 3 -.036 4 .676 5 .758 6 .746 7 -.712 8 -.395 9 -.535 10 -.966

INTER-ELEMENT RELATIONS  
EXPRESSED AS COSINES

ELEMENT 1 WITH ELEMENT  
2 .144 3 -.450 4 .952 5 .980 6 .708 7 -.652 8 -.845 9 -.697 10 -.896

ELEMENT 2 WITH ELEMENT  
3 .431 4 -.064 5 .124 6 .517 7 -.620 8 -.075 9 -.394 10 -.339

ELEMENT 3 WITH ELEMENT  
4 -.519 5 -.631 6 -.221 7 .169 8 .257 9 -.089 10 .145

ELEMENT 4 WITH ELEMENT  
5 .953 6 .512 7 -.492 8 -.828 9 -.582 10 -.833

ELEMENT 5 WITH ELEMENT  
6 .736 7 -.704 8 -.864 9 -.654 10 -.884

ELEMENT 6 WITH ELEMENT  
7 -.553 8 -.545 9 -.507 10 -.684

ELEMENT 7 WITH ELEMENT  
8 .476 9 .420 10 .692

ELEMENT 8 WITH ELEMENT  
9 .803 10 .650

ELEMENT 9 WITH ELEMENT  
10 .594

RELATIONS BETWEEN CONSTRUCTS AND ELEMENTS  
EXPRESSED IN DEGREES

CONSTRUCT 1 WITH ELEMENT

1 64.9 2 128.8 3 115.3 4 49.7 5 67.1 6 109.2 7 69.4 8 116.2 9 102.7 10 105.3

CONSTRUCT 2 WITH ELEMENT



1 13.2 2 55.0 3 110.4 4 31.8 5 24.0 6 41.2 7 139.2 8 135.3 9 157.3 10 155.5

CONSTRUCT 3 WITH ELEMENT

1 30.3 2 85.2 3 88.6 4 40.1 5 22.6 6 37.3 7 130.6 8 157.5 9 144.4 10 145.7

CONSTRUCT 4 WITH ELEMENT

1 17.0 2 76.0 3 131.2 4 33.2 5 27.7 6 32.7 7 138.0 8 140.4 9 130.2 10 137.2

CONSTRUCT 5 WITH ELEMENT

1 37.3 2 57.4 3 95.5 4 31.8 5 23.3 6 44.4 7 161.4 8 140.4 9 121.7 10 152.0

CONSTRUCT 6 WITH ELEMENT

1 36.6 2 102.5 3 135.0 4 35.0 5 28.0 6 46.3 7 130.6 8 127.1 9 100.1 10 132.8

CONSTRUCT 7 WITH ELEMENT

1 22.0 2 61.9 3 99.4 4 36.5 5 28.4 6 45.5 7 132.6 8 142.9 9 124.2 10 176.8

CONSTRUCT 8 WITH ELEMENT

1 38.0 2 70.1 3 92.0 4 47.4 5 40.7 6 41.7 7 135.4 8 113.2 9 122.6 10 165.0

Figure 15g)

INTER-ELEMENT RELATIONS  
EXPRESSED IN DEGREES

ELEMENT 1 WITH ELEMENT

2 81.7 3 115.8 4 17.8 5 11.3 6 44.9 7 120.7 8 147.7 9 134.2 10 153.6

ELEMENT 2 WITH ELEMENT

3 64.5 4 53.7 5 82.9 6 58.9 7 128.3 8 54.3 9 113.2 10 109.8

ELEMENT 3 WITH ELEMENT

4 121.3 5 115.5 6 102.6 7 80.3 8 75.1 9 55.1 10 81.7

ELEMENT 4 WITH ELEMENT

5 17.7 6 50.2 7 119.7 8 145.8 9 125.6 10 146.4

ELEMENT 5 WITH ELEMENT

6 42.6 7 120.8 8 145.6 9 120.8 10 152.1

ELEMENT 6 WITH ELEMENT

7 162.4 8 123.1 9 120.5 10 133.2

ELEMENT 7 WITH ELEMENT

8 61.6 9 65.2 10 46.2

ELEMENT 8 WITH ELEMENT

Figure 15h)

ELEMENT 8 WITH ELEMENT  
9 36.6 - 10 49.4

ELEMENT 9 WITH ELEMENT  
10 53.5



Figure 16a) Male Manual Worker

\*\*\* AJ9ROMJUN74CASE118

HIGHEST GRADE ON CONSTRUCT SCALE - 9.

CONSTRUCT	MEAN	VARIATION	AS PER CENT	LOWEST	..	..	..	1.
1	30.34	36.7000	12.09	10.00	..	..	..	..
2	79.17	11.8700	15.04	10.00	..	..	..	..
3	9.04	11.8700	13.04	10.00	..	..	..	..
4	50.71	11.8700	13.04	10.00	..	..	..	..
5	12.77	11.8700	13.04	10.00	..	..	..	..
6	55.24	11.8700	13.04	10.00	..	..	..	..
7	47.48	11.8700	13.04	10.00	..	..	..	..
8	30.30	11.8700	13.04	10.00	..	..	..	..
9	20.95	11.8700	13.04	10.00	..	..	..	..

TOTAL VARIATION ABOUT CONSTRUCT MEANS 700.7000

BIAS VARIABILITY :1943

## CORRELATIONS AND ANGULAR DISTANCES BETWEEN CONSTRUCTS

CONSTRUCT	1	2	3	4	5	6	7	8	9
CONSTRUCT 1									
CONSTRUCT 2	-.015								
CONSTRUCT 3	.463								
CONSTRUCT 4	.361	.16.04							
CONSTRUCT 5	.517	.50.06	.034						
CONSTRUCT 6	.903	.25.42	.093	.006					
CONSTRUCT 7	.577	.50.79	.073	.03.00	.032				
CONSTRUCT 8	.706	.49.09	.062	.04.00	.042	.031			
CONSTRUCT 9							.075	.07.51	

ELEMENT	TOTAL	SUM OF SQUARES	AS PER CENT
1	2.137	1.032	12.90
2	-1.134	.933	15.42
3	-2.083	.904	14.30
4	-2.083	1.031	16.19
5	1.062	.230	3.63
6	1.062	.230	3.63
7	1.062	.230	3.63
8	1.062	.230	3.63
9	1.062	.230	3.63

TOTAL VARIATION ABOUT CONSTRUCT MEANS 8.0000

TOTAL PER CONSTRUCT 1.0000

UNIT OF EXPECTED DISTANCE 1.3333

UNIT OF EXPECTED DISTANCE

## DISTANCES BETWEEN ELEMENTS

[illegible]

ELEMENT 7	9	.643	9	.793	10	.604
ELEMENT 8	9	.430	10	.961		
ELEMENT 9	10	1.243				

THE COMPONENT-SPACE IS LIMITED TO 6 DIMENSIONS

[illegible]

**BARTLETT test**

EXCLUDING 6. MAJOR COMPONENTS	
CHI SQUARED	.0932
EXCLUDING 5. MAJOR COMPONENTS	
CHI SQUARED	1.1322
EXCLUDING 4. MAJOR COMPONENTS	
CHI SQUARED	7.3738
EXCLUDING 3. MAJOR COMPONENTS	
CHI SQUARED	24.6726

Figure 16b)

Figure 16c)

EXCLUDING 2. MAJOR COMPONENTS	
CHI SQUARED	34.0987 D.F. 20
EXCLUDING 1. MAJOR COMPONENTS	
CHI SQUARED	58.2133 D.F. 27

#### 4 COMPONENTS FOUND SIGNIFICANT

[illegible]

**POLAR CO-ORDINATES**

CONSTRUCT	H	V	R
1	106.05	-2.47	.94

25 45 67 2  
15 1  
16 2 3 4 5 6 7  
10 1 2 3 4 5 6 7  
11 1 2 3 4 5 6 7  
12 1 2 3 4 5 6 7  
13 1 2 3 4 5 6 7  
14 1 2 3 4 5 6 7  
15 1 2 3 4 5 6 7  
16 1 2 3 4 5 6 7  
17 1 2 3 4 5 6 7  
18 1 2 3 4 5 6 7  
19 1 2 3 4 5 6 7  
20 1 2 3 4 5 6 7  
21 1 2 3 4 5 6 7  
22 1 2 3 4 5 6 7  
23 1 2 3 4 5 6 7  
24 1 2 3 4 5 6 7  
25 1 2 3 4 5 6 7  
26 1 2 3 4 5 6 7  
27 1 2 3 4 5 6 7  
28 1 2 3 4 5 6 7  
29 1 2 3 4 5 6 7  
30 1 2 3 4 5 6 7  
31 1 2 3 4 5 6 7  
32 1 2 3 4 5 6 7  
33 1 2 3 4 5 6 7  
34 1 2 3 4 5 6 7  
35 1 2 3 4 5 6 7  
36 1 2 3 4 5 6 7  
37 1 2 3 4 5 6 7  
38 1 2 3 4 5 6 7  
39 1 2 3 4 5 6 7  
40 1 2 3 4 5 6 7  
41 1 2 3 4 5 6 7  
42 1 2 3 4 5 6 7  
43 1 2 3 4 5 6 7  
44 1 2 3 4 5 6 7  
45 1 2 3 4 5 6 7  
46 1 2 3 4 5 6 7  
47 1 2 3 4 5 6 7  
48 1 2 3 4 5 6 7  
49 1 2 3 4 5 6 7  
50 1 2 3 4 5 6 7  
51 1 2 3 4 5 6 7  
52 1 2 3 4 5 6 7  
53 1 2 3 4 5 6 7  
54 1 2 3 4 5 6 7  
55 1 2 3 4 5 6 7  
56 1 2 3 4 5 6 7  
57 1 2 3 4 5 6 7  
58 1 2 3 4 5 6 7  
59 1 2 3 4 5 6 7  
60 1 2 3 4 5 6 7  
61 1 2 3 4 5 6 7  
62 1 2 3 4 5 6 7  
63 1 2 3 4 5 6 7  
64 1 2 3 4 5 6 7  
65 1 2 3 4 5 6 7  
66 1 2 3 4 5 6 7  
67 1 2 3 4 5 6 7  
68 1 2 3 4 5 6 7  
69 1 2 3 4 5 6 7  
70 1 2 3 4 5 6 7  
71 1 2 3 4 5 6 7  
72 1 2 3 4 5 6 7  
73 1 2 3 4 5 6 7  
74 1 2 3 4 5 6 7  
75 1 2 3 4 5 6 7  
76 1 2 3 4 5 6 7  
77 1 2 3 4 5 6 7  
78 1 2 3 4 5 6 7  
79 1 2 3 4 5 6 7  
80 1 2 3 4 5 6 7  
81 1 2 3 4 5 6 7  
82 1 2 3 4 5 6 7  
83 1 2 3 4 5 6 7  
84 1 2 3 4 5 6 7  
85 1 2 3 4 5 6 7  
86 1 2 3 4 5 6 7  
87 1 2 3 4 5 6 7  
88 1 2 3 4 5 6 7  
89 1 2 3 4 5 6 7  
90 1 2 3 4 5 6 7  
91 1 2 3 4 5 6 7  
92 1 2 3 4 5 6 7  
93 1 2 3 4 5 6 7  
94 1 2 3 4 5 6 7  
95 1 2 3 4 5 6 7  
96 1 2 3 4 5 6 7  
97 1 2 3 4 5 6 7  
98 1 2 3 4 5 6 7  
99 1 2 3 4 5 6 7  
100 1 2 3 4 5 6 7

## PROJECTIONS FOR ELEMENTS

[illegible]

ELEMENT	VECTOR	LOADING	RESIDUAL
COMPONENT 4			

Figure 16d)

ELEMENT	VECTOR	LOADING	RESIDUAL
1	.222	.159	.037
2	.071	.141	.044
3	.271	.136	.083
4	.566	.333	.079
5	.004	.397	.095
6	.103	.002	.063
7	.120	.023	.021
8	.139	.006	.004
9	.139	.009	.011
10	.139	.009	.011
CONSTRUCT			
1	.574	.336	.032
2	.126	.095	.006
3	.060	.038	.003
4	.001	.025	.002
5	.001	.009	.003
6	.001	.000	.003
7	.001	.000	.003
8	.001	.000	.003
9	.001	.000	.003
10	.001	.000	.003

RELATIONS BETWEEN CONSTRUCTS AND ELEMENTS  
EXPRESSED AS COSINES

CONSTRUCT	1	2	3	4	5	6	7	8	9	10
CONSTRUCT 1 WITH ELEMENT										
1	.316	.310	.172	.4	.419	.285	.7	.246	.6	.304
CONSTRUCT 2 WITH ELEMENT										
1	.852	.920	.974	.4	.886	.676	.7	.623	.6	.775
CONSTRUCT 3 WITH ELEMENT										
1	.872	.830	.972	.4	.888	.619	.7	.601	.6	.818
CONSTRUCT 4 WITH ELEMENT										
1	.862	.875	.934	.4	.888	.670	.7	.699	.6	.700
CONSTRUCT 5 WITH ELEMENT										
1	.813	.834	.935	.4	.887	.726	.7	.166	.6	.643
CONSTRUCT 6 WITH ELEMENT										
1	.898	.801	.958	.4	.836	.798	.7	.544	.6	.772
CONSTRUCT 7 WITH ELEMENT										
1	.939	.796	.953	.4	.922	.655	.7	.314	.6	.963
CONSTRUCT 8 WITH ELEMENT										
1	.914	.877	.961	.4	.908	.827	.7	.075	.6	.966
CONSTRUCT 9 WITH ELEMENT										
1	.914	.877	.961	.4	.908	.827	.7	.075	.6	.966
CONSTRUCT 10 WITH ELEMENT										
1	.914	.877	.961	.4	.908	.827	.7	.075	.6	.966

INTERPRETED AS RELATIONS

Figure 16e)

INTER-ELEMENT RELATIONS  
EXPRESSED AS COSINES

2	-.002	3	-.914	4	-.032	5	-.092	6	.622	7	.207	8	.941	9	.946	10	-.020
3	.025	4	.031	5	.026	6	-.069	7	-.736	8	-.939	9	-.907	10	-.906		
4	.051	5	.039	6	-.036	7	-.983	8	-.009	9	-.005	10	-.270				
5	.710	6	-.020	7	-.040	8	-.057	9	-.936	10	-.000						
6	-.610	7	-.002	8	-.079	9	-.740	10	-.209								
7	.643	8	.031	9	.078	10	-.090										
8	.105	9	.029	10	.004												
9	.067	10	.031														
10	-.199																

RELATIONS BETWEEN CONSTRUCTS AND ELEMENTS  
EXPRESSED IN DEGREES

1	71.6	2	71.9	3	99.9	4	114.0	5	89.7	6	73.4	7	104.3	8	72.3	9	59.9	10	146.1
1	31.5	2	196.9	3	166.9	4	192.3	5	149.0	6	47.4	7	51.4	8	39.2	9	37.4	10	69.8
1	29.3	2	192.9	3	166.4	4	192.0	5	194.0	6	51.0	7	93.1	8	35.2	9	37.1	10	65.3
1	30.5	2	191.0	3	160.7	4	192.0	5	194.5	6	47.9	7	49.0	8	30.7	9	36.3	10	69.0
1	35.9	2	112.6	3	124.4	4	126.0	5	139.7	6	42.9	7	88.4	8	50.0	9	39.3	10	117.0
1	26.0	2	143.2	3	163.3	4	199.4	5	141.6	6	37.0	7	57.0	8	39.5	9	21.9	10	84.6
1	20.1	2	134.9	3	162.3	4	197.2	5	140.1	6	43.0	7	71.7	8	19.6	9	29.2	10	77.4
1	23.4	2	112.1	3	139.9	4	141.2	5	139.0	6	70.9	7	94.3	8	15.1	9	29.5	10	101.9

Figure 16f)

[illegible]



not differ greatly.<sup>1</sup> We lack at this stage of the analysis a standard against which to judge the significance of observed differences in variation.

BIAS refers to the extent to which elements tend to clump at one end of a construct, rather than being equally distributed between both poles. Formally (and with  $V$  = variance), Slater states 'the variance of the construct means about the midpoint of the grading scale is compared with the variance from  $V$  and the ratio is recorded as BIAS.'<sup>2</sup> Again, we have no standard. Indeed, Slater remarks that, 'The test may not throw much light on the psychological interpretation of the observation as evidence from another closely related measure indicates that a significant degree of bias is normal.'<sup>3</sup>

VARIABILITY increases the more widely the elements are contrasted on the grading scale, reaching its maximum when the elements are evenly balanced at the opposite poles. This is measured as 'the standard deviation of the grades about the construct means.'<sup>4</sup> Slater quotes 0.6115 for a sample of 'normal' subjects. Our figures are not greatly different from that.

---

<sup>1</sup>P. Slater, op. cit., p. 3

<sup>2</sup>P. Slater, op. cit., p. 3

<sup>3</sup>P. Slater, op. cit., p. 3

<sup>4</sup>P. Slater, op. cit., p. 4

It is at this stage of the analysis that the matrix of grades is computationally replaced by a matrix of deviations from construct means. Variations about the construct means have been normalised, that is rescaled so that they each have their total variation put equal to unity.<sup>1</sup> This is a necessary prerequisite for the calculation of CORRELATIONS between constructs.<sup>2</sup> Slater proposes ANGULAR DISTANCE as an alternative, trigonometric, way of expressing association. It may now be seen why in the principal components analysis construct 1 is not included in the first principal component of both subjects. It is in both cases the only component not having substantial correlation with other components.

The computer print-out next shows information on the distribution of elements, based on their deviation from construct means. TOTAL deviation, the first column shown, is difficult to interpret, as deviations in one direction will be cancelling out deviations in the other. This effect is avoided in the SUM OF SQUARES. Slater states that, 'A small sum of squares implies that the informant's attitude towards the element is indifferent: he has rated it neither high nor low but near the mean on all the constructs. Conversely if the sum of squares is large the element must be an important one in the subject's construct system, whether his attitude towards it is consistently favourable or consistently unfavourable or favourable in some respects and unfavourable in others.'<sup>3</sup>

---

<sup>1</sup> P. Slater, op. cit., p. 3

<sup>2</sup> P. Slater, op. cit., p. 5

<sup>3</sup> P. Slater, op. cit., p. 6



It may be seen that for our female clerical worker elements 2, 3, 8 and 9 have the lowest sum of squares, and these are the ones which are not included in the first principal component. Similarly, elements 2, 6 and 7 for our male manual worker.<sup>1</sup>

The cumulative total of all the sums of squares is shown as TOTAL VARIATION ABOUT CONSTRUCT MEANS. This differs from the variable of the same name reported earlier because of the process of normalisation. Hence the TOTAL PER CONSTRUCT is 1.0 and the total variation is 1.0 times the number of constructs. The UNIT OF EXPECTED DISTANCE between elements is the square root of  $(2V/(m-1))$ , where  $V$  = total variation about construct means, and  $m$  = number of elements. It represents 'The expected distance between two elements drawn from a construct system at random.'<sup>2</sup> The DISTANCES BETWEEN ELEMENTS tabulated are observed distances expressed proportionately to the unit of expected distance.<sup>3</sup> The present writer is quite frankly unsure how these figures are to be interpreted. There seems to be no particular pattern to be observed in the two example subjects. The figures for the elements which are subsequently dropped do not seem different to those which remain. It may be noted in passing that Slater suggests that distances

---

<sup>1</sup>Element 10, which has a high sum of squares, is related to the second component, in relation to which it is massgebend, or trend setting. P. Slater, op. cit., p. 7.

<sup>2</sup>P. Slater, op. cit., p. 7

<sup>3</sup>They 'will vary about 1 for a lower limit at 0 to an upper limit at the square root of  $m-1$ .' P. Slater, op. cit., p. 7.

between elements can be used to compare grids in a manner similar to that possible using the angular distances between constructs. This is a source of information not used in the text and <sup>we</sup> will pass on to the principal components results themselves.

Slater describes his program output in the following summary form:

'If the elements are given similar ratings on a large number of constructs the main differences between them can be shown on a single scale. Their measurements on it can be found by adding their ratings on the constructs in certain proportions. The scale which shows the greatest amount of variation is the axis of the first component. The amount of variation shown on it is given by the LATENT ROOT, which is a sum of squares accounting for part of the total variation about the construct means,  $V$ . The proportions in which the ratings for an element on the constructs should be combined to obtain its measurement on the scale of the component are given by a set of coefficients, one for each of the constructs, listed under the heading CONSTRUCT VECTOR. The measurements themselves are listed under the heading ELEMENT LOADINGS.'<sup>1</sup>

The sum of the latent roots of the components is equal to the total variation about the construct means (normalised at 8.0). In the analysis reported in the text use was made only of the first component. The Bartlett test applied showed only the first construct as significant for most subjects. Our examples are not typical of the rest of the sample in that respect. Examination of those 100 subjects entering into the reported analysis showed for the first component a mean root (percentages) of 61.6, with a standard deviation of 11.9.<sup>2</sup>

---

<sup>1</sup>P. Slater, op. cit., p. 10

<sup>2</sup>On the assumption of a normal distribution, 68% of cases are included between plus and minus one standard deviation of the mean.

For the second component the mean was 18.4 and the standard deviation 6.2. In the 100 subjects there were 145 components found to be significant, according to the Bartlett test, but in most cases, as in the examples being followed through here, self was not found to be significantly loaded, using the Burt-Banks test reported on page 27.

Although there were 7 significant loadings of self in second components, 6 of those were in insignificant (Bartlett) second components. Only in one case was there a significant loading of self (Burt-Banks) in a significantly loaded second component (Bartlett).

Both the female clerical worker and the male manual worker for which print-out has been given show an unusually large number of principal components as significant. Self is only significantly loaded in the first and attention can be restricted to that. In both cases a high proportion - 72% - of the variation about construct means is incorporated into this first component. Having worked systematically through the computer output we can see the vectors and loadings confirming what was emerging in terms of correlations earlier in the computation. The construct and element loadings and vectors are, in fact, coefficients. The vector is the loading, normalised so that the sum of squares equals 1.0. Loadings have been emphasised in the text because it is in relation to loadings that accepted significance tests are available. In the case of the female clerical worker, constructs 2, 3, 4, 5, 6, 7, and 8 all emerge as significant.<sup>1</sup> They are expressed negatively. This is simply

---

<sup>1</sup>The reader is reminded that 0.576 or above is required for statistical significance.

a matter of which way round the construct or the grading scale is presented. Elements 7 and 10 emerge as significant in a positive direction, and elements 1, 4, 5 and 6 as significant in a negative direction. There is, as it were, a double negative in this presentation. The constructs have been reversed from their layout on the response-sheet. For example, feel couldn't strike - feel could strike has become feel could strike - feel couldn't strike. The position of the elements relative to the construct/component has been maintained by reversing their positions also. For example, shop floor worker and striker become positive in relation to the construct/component - they feel they could strike.

In the case of the male manual worker, constructs 2, 3, 4, 5, 6, 7, and 8 emerge as significant in a negative direction. That in the two examples constructs were expressed in such a uniform directional manner may be coincidental, as many other subjects mixed their direction of presentation. Taken with the high latent root it may, on the other hand, indicate a particularly consistent and coherent way of looking at things. That a high proportion of constructs are carried through to the first principal component was common in our subjects, and may be a reflection on the relatively small number which they were allowed to generate, and the 'relevance' (range of convenience) which they tried to impose upon their responses. A smaller proportion of elements seemed to be carried through, consistent with the preceeding explanation. Elements 3, 4 and 5 emerge as positively significant and 1, 8 and 9 as negatively significant, for the male manual worker.

---

<sup>1</sup>The reader is reminded that 0.576 or above is required for statistical significance.

To discuss the semantic and logical content of the grids of the example subjects would be to repeat the analysis in the text on pages 28 and 39 et seq. It may be useful, however, to look back at the crude gradings recorded on the subjects' response-sheets. Looking first at the female clerical worker, it would seem plausible to drop construct 1, and elements 2, 3, 8 and 9. This construct and these elements seem on the face of it to have been used less positively than others in the making of cognitive discriminations. In what remains one is struck by the consistency of the gradings. The formal principal components analysis serves to justify and quantify what is an observable opposition between on the one hand self, husband/boyfriend, boss and friend at work, and on the other shop floor worker and striker. The same may be said of the response-sheet of the male manual worker and the removal from the first principal component of construct 1 and elements 2, 6 and 7. It may be pointed out that construct 5 for this subject seems to contain a substantial number of middle-of-the-road gradings. This highlights the functions of the program in precisely measuring realationships and allowing the researcher to apply quantitative decision rules. For the variation about the mean for this construct, reported early in the print-out, is relatively low at 8.22% of total variation. It is second only to the defunct construct 1. But it is, unlike 1, reasonably well correlated with other constructs, particularly 6, 7 and 8, and this is reflected in a modest but statistically acceptable loading in the principal component. The truth is that the discriminatory power of elements and variables is relatively easy to see in the matrix<sup>of</sup> responses, but the matter of correlation is less easy to identify.

It is hoped that these two examples have illustrated that the principal components analysis has provided an acceptable 'first filter' in the data sifting process. Quantitative decision rules have been applied to bring within bounds the material continuing on to more qualitative analysis. Particular decisions may appear arbitrary, but this is the nature of any decision rule.

A final point needs to be made. The author has been asked by some colleagues why he did not rotate the axes of his components. Given the size of this task with so many subjects it was convenient that Slater takes such a firm stand against rotation within his program. ' . . . the components form an ordered series, each accounting for an independent part of the total variation from the largest to the least. In this respect principal components analysis is unique. No axes other than those of the components can be used to analyse the total variation in this orderly way; any rotation of the axes sacrifices the advantage.'<sup>1</sup>

---

<sup>1</sup>P. Slater, op. cit, p. 10

# BIBLIOGRAPHY

- Allport, F.H., Social Psychology, Houghton Mifflin, 1924.
- Bain, G.S., The Growth of White-Collar Unionism, Oxford University Press, 1970.
- Bain, G.S. and Price R.J., 'Union Growth and Employment Trends in the United Kingdom, 1964-1970', British Journal of Industrial Relations, 1972.
- Bain, G.S. and Price, R.J., 'Who is a White-Collar Employee?', British Journal of Industrial Relations, 1972.
- Bannister, D., and Fransella, P., Inquiring Man, Penguin, 1971.
- Bannister D. and Meir, J., The Evaluation of Personal Constructs, Academic Press, 1968.
- Bortlett, M.S., 'Tests of Significance in Factor Analysis', British Journal of Statistical Psychology, 3, 1950.
- Blackburn, R.M., and Prandy, K., 'White-Collar Unionisation: A Conceptual Framework', British Journal of Sociology, 1965.
- Blackith, R., and Reyment, O., Multivariate Morphometrics, Academic Press, London, 1971.
- Bott, E., Family and Social Network, Tavistock, London, 1957.
- Burt, C. and Danks, C., 'A Factor Analysis of Body Measurement for British Adult Males', Annals of Eugenics, 13, 1947.
- Child, D., The Essentials of Factor Analysis, Holt, Rinehart and Winston, 1970.
- Edwards, A., Techniques of Attitude Scale Construction, Appleton-Century-Crofts, New York, 1957.
- Everitt, B., Cluster Analysis, Heinemann, 1974.
- Festinger, L., A Theory of Cognitive Dissonance, Row and Petersen, 1957.

Fishbein, M., 'Attitude and the Prediction of Behaviour', in K. Thomas (ed.), Attitudes and Behaviour, Penguin, 1971.

Goldthorpe, J. and Lockwood, D., 'Affluence and the British Class Structure', Sociological Review, 1963.

Goldthorpe J., and Lockwood, D., et al., The Affluent Worker: Industrial Attitudes and Behaviour, Cambridge University Press, Cambridge, 1968.

Guttman, L., 'The Cornell Technique for Scale and Intensity Analysis', Educational and Psychological Measurement, 1947.

Insko, C.A., and Schopler, J., 'Triadic Consistency: A Statement of Affective-Cognitive-Conative Consistency', in K. Thomas (ed.), Attitudes and Behaviour, Penguin, 1971.

Keats, J.A., An Introduction to Quantitative Psychology, Wiley, 1971.

Kelly, G.A., The Psychology of Personal Constructs, Norton, 1955.

Lockwood, D., The Blackcoated Worker, Allen and Unwin, London, 1958.

Lockwood, D., 'Sources of Variation in Working Class Images of Society', Sociological Review, 1965.

Lupton, T., On The Shop Floor, Oxford, Pergamon, 1965.

Mercer, D., and Weir, D., 'Attitudes to Work and Trade Unionism among White-Collar Workers', Industrial Relations Journal, 1972.

Mills, C.W., White-Collar, Oxford University Press, Oxford, 1972.

Nie, N., Bent, D., and Nunnally Hull, C., A Statistical Package for the Social Sciences, McGraw-Hill, New York, 1970.

Osmond, G.C., et al., The Measurement of Meaning, University of Illinois, Urbana, 1957.

Overall, J., and Flett, C.J., Applied Multivariate Analysis, McGraw-Hill, 1972.

Port, D.L., Hickson, D.J. and Hibings, C., 'On the Social Theory of Structures of Work Organizations', Administrative Science Quarterly, 1969.



Roberts, B.C., et al., Reluctant Militants: A Study of Industrial Technicians, Heinemann, London, 1972.

Siegel, S., Non-Parametric Statistics for the Social Sciences, McGraw-Hill, Tokyo, 1956.

Silverman, D., and Jones, J., 'Getting In: The Managed Accomplishment of "Correct" Selection Outcomes', in J. Child, Man and Organisation, Allen and Unwin, London, 1973.

Slater, P., Notes on INGRID 72, Institute of Psychiatry, London 1972.

Speak, M., 'Communication Failure in Questioning: Errors, Misinterpretations and Personal Frames of Reference', Occupational Psychology, 1967.

Watson, J.P., 'A Repertory Grid Method of Studying Groups', British Journal of Psychiatry, 1970.

Warr, P., and Knapper, C., The Perception of People and Events, Wiley, 1968.