

GENDER DIFFERENCES IN OCCUPATIONAL MOBILITY AND STRUCTURE OF EMPLOYMENT IN THE BRITISH CIVIL SERVICE

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Abstract—In all industrialized societies health status in adults has been found to vary with social position. Attempts to explain this are usually grouped under headings of artefact, material, lifestyle and selective mobility of the healthiest. Such attempts have to date been unsuccessful in fully accounting for this relationship, and whilst they have merit have left unconsidered the effects of the process whereby social stratification occurs. The present study is a prelude to subsequent studies that will endeavour to distinguish between three separate influences on health—the effects of current social position, the long term effects stemming from one's initial class position, and the effects of the processes governing mobility. The purpose of our present investigation is to describe patterns of occupational mobility, that will enable us to identify possible predictors of subsequent mobility and therefore to indicate to what extent mobility might be a process governed by social rules.

The work presented in this paper comprises part of the Whitehall II study of occupational, social and lifestyle influences upon health in a Civil Service population. Using multiple regression techniques almost half the variation in mobility is modelled in terms of educational level, fathers' social class, gender, marital status, age on entry into the Civil Service, length of time in Civil Service employment and grade of entry into the Civil Service. Using estimates derived from this model it is suggested that a number of sub-groups within the Civil Service suffer adverse mobility (mobility appears particularly restricted for women and for those entering the Civil Service above 30 years of age). The results obtained suggest that the issue of obstructed opportunity at the workplace could become a focus for fruitful investigation, linking issues of personal autonomy, expectations and control to health. A number of methodological problems in this kind of work are considered together with discussion of how the model can be used to increase our understanding of mobility.

Key words—gender, mobility, work, structural analysis, regression, health inequalities

INTRODUCTION

In all industrialized societies measurement of health status in adults has been found to vary with social position [1, 2]. Attempts to explain this have tended to concentrate either on characteristics of lifestyle and environment acting in adulthood [3] or on the long term effects of circumstances in early life [4]. These have usually been grouped under the headings of artefact, material, lifestyle and health selection [5]. As yet these have been unable to explain all but a fraction of the observed variation in health states by social status. In the original Whitehall study for example, Marmot *et al.* [6] found that even after controlling for age, smoking, systolic blood pressure, plasma cholesterol and blood sugar the relative risk for coronary heart disease of the lowest employment grades compared to the highest had been reduced by less than one quarter. Similarly when other factors such as income, and education have been invoked, attempts to explain class gradients in mortality and morbidity [7, 8] also failed to account for all of the observed relationship.

Although these types of explanation have merit, they have left unconsidered the effects of the process(es) whereby social stratification occurs. In so far

as primary causal explanations of social events (i.e. the distribution of ill-health by social position) are proposed in terms of the personal or social characteristics of individuals and fail to take account of the more abstract social processes governing the distribution of people into various class locations, the situation resembles the ecological fallacy in reverse. It is certainly conceivable that social mobility itself, or the lack of it, may have an influence on physical health or psychological well being, and that the well established link between social position and ill-health is in fact an intrinsic feature of the formation of social hierarchies. Earlier work by Syme *et al.* [9, 10], and Tyroler and Cassell [11] for example drew attention to some adverse health outcomes associated with cultural mobility, whilst in their more recent study of U.S. academics from working class backgrounds, Ryan and Sackrey [12] highlighted some of the psychological and social-psychological consequences of mobility. These studies have emphasized negative aspects of upward mobility, and implicitly regarded mobile people as departing from a norm of enduring class identity in some way. Whilst there can be no denying the role of earlier class experience in shaping recurring features of personal identity, or indeed that mobility may expose 'hidden injuries' of internalized

low status and low self esteem, a perspective on mobility as a pathway to greater material prosperity and psychological validation has yet to receive equivalent attention.

Social mobility may be related to physical health or psychological well-being in at least two important ways. The one usually considered goes under the title of 'health selection' [13–15]. Ill-health may be more common in people of lower social position because ill-health is a barrier to upward mobility or may even lead to downward mobility, as has been argued with some severe forms of psychological disorder [16]. If upward mobility were simply a matter of the 'fittest' individuals improving themselves socially it would hardly be surprising if those who were upwardly mobile had better health than those remaining in their class of origin. However, several studies have documented the existence of other regularities underlying the operation of mobility.

Marshall *et al.*'s [17] recent study of social mobility in the U.K., for example found the degree of impermeability in the class structure to those from lower socioeconomic groups to have remained relatively unchanged over the previous 40 years, a finding in agreement with the results of other studies of social mobility [18]. Amongst respondents whose parents were from Goldthorpe's [18] service class backgrounds (chiefly professional and administrative workers), the current chances of being in a service class occupation were eight times greater than for someone with working class origins. For women this ratio rose to 14. Given the acknowledged diversity of occupations within the same social classes, the findings not only suggest considerable structural obstacles (class of origin and gender) to mobility, but lead one to ask how such a dynamic equilibrium has been maintained over time. Given the level of consistency in the manner in which mobility chances appear to be apportioned across class boundaries, does selection by class of origin and gender provide sufficient explanation or must additional factors be sought? Either way the evidence as it stands implies the persistence of social rules governing who is mobile and who is not.

Thus, to describe mobility simply in terms of the fitter individuals traversing the social strata would seem to be extremely difficult. If indeed such structural barriers to mobility do exist they may have adverse consequences on health. The effect on people for whom the pathways to advancement are blocked may be additional to other social and environmental influences acting on people of lower status. They may for example engender or compound feelings of unfairness, frustration and invalidation, that effort goes unrewarded, that one ought only to have limited horizons or indeed that one must surrender aspects of one's beliefs or identity in order to advance socially. It is here that some of the more personal accounts which Ryan and Sackrey's subjects attested to, are of value. Although ostensibly about upward mobility, it

was apparent time and again, that within their new 'class location' these people frequently remained at the lower ends of the academic hierarchy, and experienced themselves as marginalized within their institutions and alienated from the beliefs and behaviours exhibited by their colleagues. The possible effects which such persisting forms of social experience engender upon health are far from being understood.

The purpose of our present investigation is to describe patterns of occupational mobility, that will enable us to not only identify possible predictors of subsequent mobility and therefore to indicate to what extent mobility might be a process governed by social rules, but to use these to examine the relationship between mobility and health. This is a prelude to subsequent studies that will endeavour to distinguish between three separate influences on health—the effects of current social position, the long term effects stemming from one's initial class position, and the effects of the processes governing mobility. This work forms part of the Whitehall II study of British civil servants (Marmot *et al.* [19]). A great advantage of the data collected in this study, is that difficulties inherent in the measurement of social class [18, 20–23] are in part circumvented by the use of Civil Service grade as an index of class. Differences between members of the same class that normally arise in national studies from variations between different workplaces or between workplaces situated in different regions are avoided. As civil servants are assigned to grades on the basis of salary, errors that normally arise in studies of social class from the misclassification of occupations should be minimized. As data from the original Whitehall study [24] found even steeper gradients of ill-health between grades than if occupational class alone had been used as the measure, this suggests that grade level does indeed function as a more sensitive measure.

METHOD

1. Participants

A cohort of 10,314 civil servants aged between 35–55 years attended a medical screening examination and completed a self administered questionnaire inquiring into a range of social, psychological, occupational and demographic factors. A response rate of 73% was obtained. As around 4% of employees listed had moved prior to the beginning of the study, the real response rate is likely to be higher. Within the questionnaire, participants were asked to provide their Civil Service grade title. For analysis we have divided these into seven bands in order of decreasing salary. Table 1 below provides examples of the occupational titles subsumed within these grade boundaries. Using these seven tiers, occupational mobility has been defined on the basis of the difference in grade level between respondent's current grade and the grade at which they entered

Table 1. Examples of Civil Service job titles by grade level

Grade	Example occupations
1	Chief Information Officer, Assistant Secretary, Assistant Solicitor, Chief Statistician, Chief Inspector of Schools, Chief Actuary, Principal Medical Officer, Superintending Chemist, Senior Principal Legal Adviser.
2	Principal Psychologist, Principal Scientific Officer, Physiotherapy Officer, Senior Planning Officer, Statistician, Advisory Officer 1, Assistant Chief Investigation Officer.
3	Assistant Divisional Officer, Chief Cartographer, Chief Draughtsman, Conservation Officer D, Patent Examiner, Pharmaceutical Officer 1, Senior Information Officer, Senior Graphics Officer.
4	Assistant Chief Driving Examiner, Auditor, Librarian, Research Officer, Senior Assistant Statistician, Principal Photographer, Translator 2.
5	Actuarial Officer, Assistant Information Officer, Chief Photoprinter, Occupational Health Nursing Adviser, Scientific Officer, Preventive Officer (Customs and Excise), Office Keeper 1.
6	Chief Paperkeeper, Personal Secretary, Clerical Officer, Library Assistant 1 (British Museum), Masons Assistant, Photographer.
7	Library Assistant 2 (British Museum), Paperkeeper, Administrative Assistant, Driver, Data Processor, Copy Typist, Clerical Assistant, Government Telephonist.

employment. Theoretically this allows for a range of scores for mobility between -6 and $+6$.

2. Analysis

Data on occupational mobility will be subjected to the following analyses.

- (A) Calculation of absolute and relative mobility rates for different sub-groups of civil servants (e.g. by gender, age, father's social class). *Absolute* rates of mobility describe the actual degree of mobility between grades in terms of the numbers of people involved. *Relative* rates on the other hand indicate the proportions of people at any one grade who move. The significance of this distinction can be indicated by reference to reported changes in the occupational structure over specific time periods. Between 1971 and 1981, for example, the numbers of professional and managerial jobs for men and women increased by the order of 1 million, accompanied by substantial contractions in the number of people involved in manufacturing industry and unskilled labour [25]. Whilst this shows the occupational structure to have undergone changes in the size of the various classes, it carries no implications whatever for whether the relative probabilities of movement between them have also altered.
- (B) Computation of a dissimilarity index 'DI' [18] between the distributions of employment grade (origins and destinations) in different sub-groups of the Civil Service (e.g. between men and women), in which

$$DI = \frac{1}{2} \sum_{g=1}^G |d_{g2} - d_{g1}|$$

where G = No. of grade levels

d_{g1} and d_{g2} = proportion of sub-groups 1 and 2 falling in grade g .

This index indicates what proportion of a particular sub-group would need to change their current grade position for the distribution of their grades to be identical

with another group with which it is being compared.

- (C) Modelling of the mobility process by techniques of multiple linear regression. General Linear Models of upward mobility (SAS Proc GLM [26]) were constructed for each sex in which educational level (3 levels), grade of entry (6 levels, i.e. grades 2-7), age on entry (4 levels; under 25, 25-30, 30-35, over 35) father's social class (6 levels) marital status (4 levels) and gender (2 levels) were entered as categorical variables. Length of time in the Civil Service was entered as a continuous variable. Mobility was the dependent variable. Testing for trends in a dependent variable against ordinal variables (or interaction terms involving ordinal variables) is carried out by constructing regression models in which the ordinal variable (or the relevant ordinal variable in an interaction term) is entered into the model as a continuous variable. Questions regarding educational level and father's social class were only included in later versions of the questionnaire answered by 7702 (75%) of the subjects. Of the original 9004 people in the study, when respondents with missing values on any of the variables were excluded this left 6026 in the analysis.

RESULTS

I

The data presented in Table 2 show movements between respondents' initial grade on entry to the civil service and their current grade. For men and women, the *inflow* pattern of each current grade describes the composition of that grade on the basis of grade at entry and can be obtained by inspecting the appropriate column (shown in bold). For example 22.4% of men currently in grade 1 were drawn from people who entered the Civil Service at grade 3. The *outflow* pattern from each grade at entry indicates the destination grade for people entering at each of the

Table 2. Grade on entry by current grade for male and female civil servants

		Current grade							N	Total (%)
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)		
<i>(A) Males</i> Grade at entry	1	95.9 9.5	1.4 0.1	0.0 0.0	1.4 0.1	0.0 0.0	0.0 0.0	1.4 1.8	74	100
	2	40.9 13.9	56.7 10.2	1.6 0.4	1.6 0.1	0.0 0.0	1.6 0.2	0.0 0.0	254	100
	3	25.4 22.4	51.9 24.3	21.7 13.2	0.8 0.4	0.2 0.1	0.0 0.0	0.0 0.0	662	100
	4	15.3 7.3	29.4 7.5	26.9 8.9	27.2 7.2	0.8 0.4	0.3 0.2	0.0 0.0	360	100
	5	13.9 34.2	27.1 35.3	26.6 36.8	26.6 35.9	10.3 24.3	0.3 1.3	0.0 0.0	1842	100
	6	3.5 12.7	12.0 22.7	28.7 40.9	28.7 56.4	21.8 75.2	17.3 98.3	0.0 0.0	2682	100
	7	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	100 99.2	122	100
Total		100.0	100.0	100.0	100.0	100.0	100.0	100		
<i>(B) Females</i> Grade at entry	1	85.0 20.5	0.0 0.0	0.0 0.0	5.0 0.2	0.0 0.0	0.0 0.0	10.0 0.3	20	100
	2	30.8 19.3	63.5 15.1	0.0 0.0	3.8 0.4	0.0 0.0	0.0 0.0	1.9 0.2	52	100
	3	36.5 27.7	44.4 12.8	19.1 6.4	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	63	100
	4	6.6 4.8	34.4 9.6	19.7 6.4	37.7 5.1	1.6 0.2	0.0 0.0	0.0 0.0	61	100
	5	4.6 22.9	24.6 46.6	23.4 51.6	32.1 29.5	14.0 9.4	1.2 0.5	0.2 0.2	415	100
	6	0.2 4.8	1.9 16.0	3.6 35.6	15.5 64.7	29.8 90.5	49.0 99.5	0.0 0.0	1880	100
	7	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	100 99.4	643	100
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0		

various levels. This information is read along each row of the table (shown in plain type). As an example 34.4% of women who entered the Civil Service at grade 4 and who are still in the Civil Service are currently to be found in grade 2.

As can be seen, there is no mobility from the lowest grade, but a good deal of mobility from higher grades. Particularly striking are the relatively high rates of mobility into the top grade from both men (34.2%) and women (22.9%), entering at grade 5. The civil service in fact operates a two tier career structure for administrative grades, distinguishing between 'fast' and 'main stream' entrants. Fast stream entrants are usually promoted to top administrative grades within 5 years*, main streamers on the other hand enter at the same level but are promoted more slowly. No information is available regarding the criteria used to make this differen-

tiation, nor unfortunately do we have information regarding which of these mobility trajectories respondents are on.

Overall, mobility has been considerably less for women than for men – 54.5% of women have remained in the grade in which they entered the Civil Service compared with 20.5% men. This picture of restricted mobility for women is shown in the composition of current grades. For example amongst those currently in the highest grade, proportionately more men are drawn from lower grades (90.5% *cf* 79.5%, $P < 0.005$). Similarly, in the highest but one grade, 89.8% of men are drawn from lower grades compared with 84.9% of women ($0.025 < P < 0.05$).

A substantial imbalance between men and women is shown in Table 3. Not only are women less mobile, they are disproportionately recruited into lower grades. The dissimilarity index for destinations means that almost one half of the entire female sample (47.1%) would need to change their current grade in order to render the distributions identical.

*Civil Service Personal Communication.

Table 3. Distribution of Civil Service grade origins (entry grade) and destinations (current grade) for males and females in Civil Service employment

Grade	Males		Females	
	Origins %	Destinations %	Origins %	Destinations %
1	1.2	12.5	0.6	2.6
2	8.1	23.6	1.7	7.0
3	11.0	18.2	2.0	6.0
4	6.0	22.7	1.9	14.4
5	30.7	13.0	13.2	19.8
6	44.7	7.8	60.0	29.6
7	2.0	2.0	20.5	20.6
<i>N</i>	5996		3134	
Dissimilarity index	women's destinations = 47.1%		men's destinations/men's origins = 33.8%	

Figure 1 shows relatively less mobility for women than men across a range of grades. It appears that the relative odds of their remaining in their grade of entry compared to men substantially increases the lower in the employment hierarchy they enter ($P = 0.0001$). How might these results be explained? One possible answer is—other things being equal the older the age at which employment is entered, the less opportunity to be mobile. This cannot explain all the gender differences in mobility. Table 4 shows that with the exception of grade 6 women, there are only minor gender differences in the age of entry in other grades.

A second factor likely to be related to mobility is level of education. Table 5 shows the distribution on entry grades amongst respondents with particular levels of education (plain), and for each entry grade the proportions of people with a given educational level (bold). The final two columns give for each entry grade, the odds ratios between men and women for particular levels of education. Values above 1 show that women are more likely than men to have that level of education.

As expected there is a strong association between respondents' educational level and their grade of entry, for both men ($\chi^2 = 1092, df = 12, P < 0.00001$, Contingency coefficient $C = 0.431$) and women ($\chi^2 = 723, df = 12, P < 0.0001, C = 0.473$). A higher proportion of women educated beyond 18 years entered into grades 2–5 compared to men. This is consistent with it being easier for men with lower levels of education to be admitted to higher grades. Correspondingly, women with lower levels of educational attainment are more likely to have entered the lower grades than are men with similar levels of education.

It can be seen from Table 6 that in the top 4 current grades a greater proportion of women than men possess a high level of education, but as the outflow figures show, a woman with high education is less likely to be a high grade than a man with high education.

Tables 5 and 6 suggest that women require higher education to achieve the same grade level as men, and

that for a given level of education, a woman is likely to be in a lower grade than men. This concurs with the finding reported by Marshall *et al.* [17] that men receive greater returns on their credentials in terms of life chances than women—women being more likely to require credentials if they aspire to relatively privileged social class positions.

If there are institutional impediments on women's mobility in the Civil Service then it is essential to rule out the possibility that their adverse mobility stems from another more fundamental discriminatory schema—one which targets people by virtue of their class background, with women civil servants being more concentrated in vulnerable lower social class backgrounds. As with education, women are more likely than men to be drawn from manual work backgrounds ($\chi^2 = 506, df = 1, P < 0.00001$); and (Table 7) women from manual class backgrounds are more likely than men to enter into low grades, and are less likely to be found in the higher (2) and middle grades (3, 4, 5). (N.B. Data are only available from 6 women in the highest grade and should therefore be treated with caution.)

To some extent, then, the restricted mobility of women is related, at least in part, to their class of origin. Women's limited mobility however cannot be attributed solely to their class of origin. Fig. 2 reveals that even women from the most advantageous class backgrounds who enter at a higher grade level, stand greater chances of remaining there than do men from any class background who enter at any level.

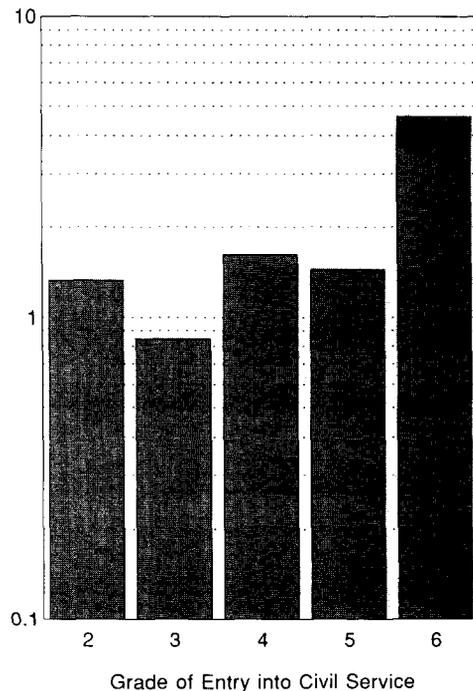


Fig. 1. Odds ratios of females: males of remaining in grade at which entered Civil Service.

Table 4. Mean age at entry for males and females in Civil Service employment

Entry grade	Males		Females		Mean diff	<i>t</i>	<i>P</i>
	Mean age	<i>N</i>	Mean age	<i>N</i>			
1	39.32	72	39.89	19	0.57	0.34	NS
2	34.91	254	37.46	52	2.55	2.73	0.0060
3	31.12	660	29.47	63	-1.65	-1.75	NS
4	30.62	358	31.01	61	0.39	0.36	NS
5	24.13	1835	25.18	414	1.05	3.25	0.0019
6	23.47	2669	29.37	1854	5.90	22.64	0.0001
7	38.20	119	38.21	631	0.01	0.05	NS

II

Thus far, we have shown that degree of mobility within the Civil Service is influenced by employees' educational level, age at entry to the Civil Service, occupational (grade) level at entry, social class origin and gender. These factors are included in a multivariate model together with length of time in employment, and marital status. Table 8 presents the results of this analysis, with general linear models constructed separately for males and females.

The above models show that several factors relate differently to men's and women's mobility within the civil service. High social class background for example is positively associated with mobility for women ($P = 0.0001$), whilst for men marital status (married/cohabiting or divorced) is ($P = 0.0001$). Significant differences between the sexes are also to be found in mobility trends by entry age ($P = 0.0001$), with the association of mobility with low entry age being stronger in men ($P = 0.0001$). Differences are found in the patterning of mobility with entry grade ($P = 0.0001$), there being a sharp decline in mobility

for women from grade 5 to 6. In addition length of time in the Civil Service is more strongly related to mobility for men.

If these two models are combined to produce a single model of mobility for the whole Civil Service population, a multiple correlation coefficient equal to 0.691 is obtained ($R^2 = 0.478$, $F = 140.62$, $P < 0.0001$). After controlling for all main effects and interactions with gender, women's mobility (LSMean = 0.757) was still found to be significantly less than for men (LSMean = 0.935), $P = 0.05$. The above analysis indicated that for both genders, higher educational levels (Fig. 3) and a younger age on entry (Fig. 4) to the Civil Service were associated with greater mobility.

The results for educational level confirm that women in the highest educational category, unlike men do not enjoy an advantage in mobility terms over women from the group immediately below. The finding that younger entrants tend to achieve greater mobility is by no means obvious; especially as length of time in Civil Service employment, entry grade and educational level were controlled for.

Table 5. Level of education by entry grade into Civil Service employment

Entry grade	Males: level of education				Females: level of education				Odds ratios F:M	
	Up to 16	17-18	18+	Total (%)	Up to 16	17-18	18+	Total (%)	Up to 16	18+
1	0.5	0.3	1.3		Figures omitted due to small numbers					
	15.8	10.5	73.7	100						
2	1.1	0.6	5.9		0.1	0.0	3.9		0.39	4.41
	9.0	5.5	85.5	100	3.7	0.0	96.3	100		
3	4.6	2.9	21.4		0.1	0.2	6.1		0.21	4.09
	10.3	6.6	83.0	100	2.4	2.4	95.2	100		
4	5.4	4.1	8.6		0.3	0.9	6.5		0.22	3.46
	22.1	17.1	60.9	100	5.9	9.8	84.3	100		
5	14.5	36.4	39.2		1.2	11.0	34.4		0.35	2.40
	12.2	31.0	56.8	100	4.7	19.4	75.9	100		
6	68.1	54.1	23.0		64.2	74.9	39.8		1.56	0.72
	41.9	33.7	24.4	100	52.9	28.2	18.8	100		
7	5.9	1.5	0.6		33.8	12.7	8.9		1.38	0.90
	69.2	18.3	12.5	100	75.6	13.0	11.4	100		
Total (%)	100	100	100		100	100	100			

Test for trend in odds ratios by grade $P = 0.0001$.

Bold typeface, percentage at each grade of entry into Civil Service employment with a given level of education.

Roman typeface, distribution of those with a given level of education by entry grade.

Table 6. Level of education by current Civil Service grade

Current grade	Males: level of education				Females: level of education				Odds ratios F:M	
	Up to 16	17-18	18+	Total (%)	Up to 16	17-18	18+	Total (%)	Up to 16	18+
1	5.5 11.0	8.6 15.9	21.8 73.2	100	0.4 7.6	0.5 4.6	8.0 87.9	100	0.67	2.65
2	12.3 15.2	19.3 22.3	29.9 62.5	100	0.3 2.6	5.4 19.4	16.8 78.1	100	0.15	2.13
3	20.7 30.5	22.4 30.6	15.7 39.0	100	0.9 7.9	8.2 32.1	11.6 60.0	100	0.19	2.35
4	22.4 28.5	28.8 34.2	17.3 37.3	100	7.6 26.9	17.4 27.8	21.8 45.4	100	0.92	1.40
5	19.4 40.4	13.9 27.0	9.3 32.7	100	19.4 47.9	29.9 29.7	17.7 22.4	100	1.36	0.60
6	14.2 49.9	5.5 17.9	5.4 32.2	100	37.5 62.0	28.1 20.8	17.7 17.2	100	1.64	0.44
7	5.5 69.3	1.6 18.4	0.6 12.3	100	34.0 75.5	13.4 13.4	8.6 11.2	100	1.36	0.90
Total (%)	100	100	100		100	100		100		

Test for trend in odds ratios by grade $P = 0.0001$.

Bold typeface, percentage at each current Civil Service grade with a given level of education.

Roman typeface, distribution of those with a given level of education by current grade.

Table 7. Distribution of males and females according to fathers' social class (non-manual vs manual) by grade of entry

Entry grade	Males			Females			χ^2	Odds ratio F:M manual	P
	Non-manual	Manual	Total (%)	Non-manual	Manual	Total (%)			
1	1.0 69.4	0.6 30.6	100	Figures omitted due to too small numbers					
2	3.9 70.3	2.4 29.7	100	2.2 84.6	0.4 15.4	100	2.26	0.43	NS
3	13.7 66.2	10.2 33.8	100	3.6 90.0	0.4 10.0	100	9.64	0.22	0.002
4	7.1 64.5	5.6 35.5	100	3.8 79.2	0.9 20.9	100	3.97	0.48	0.046
5	33.9 63.5	28.2 36.5	100	19.9 72.3	7.1 27.7	100	7.69	0.67	0.006
6	38.8 52.8	50.2 47.2	100	56.1 45.1	63.1 54.9	100	17.66	1.36	<0.0001
7	1.6 46.0	2.7 54.0	100	14.1 32.0	27.8 68.0	100	6.33	1.81	0.012
Total (%)	100	100		100	100				

Test for trend by Grade $P = 0.0001$.

Bold typeface, percentage at each grade of entry according to father's social class.

Roman typeface, distribution of those with father of a given class background by entry grade.

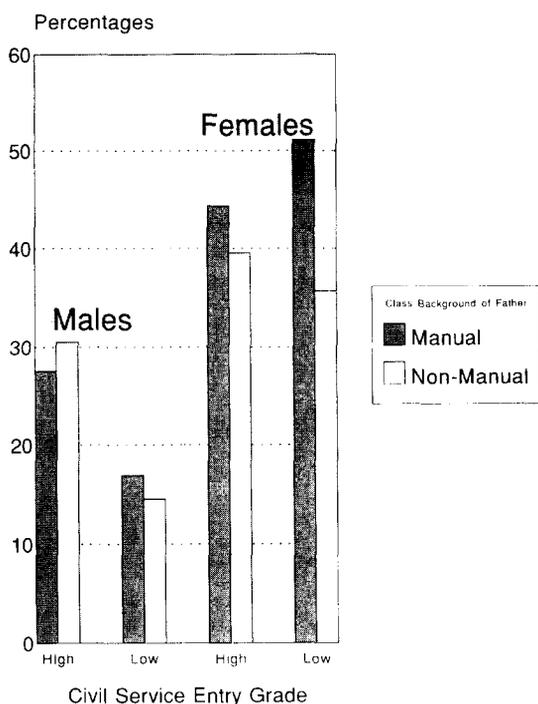
DISCUSSION

Modelling occupational mobility

Our analysis of occupational mobility suggest that a number of sub-groups within the Civil Service suffer adverse opportunities for occupational mobility—this after a number of factors involved in modelling

mobility (gender, age on entry, educational level, grade on entry, social class background, marital status and length of time in the Civil Service) have been examined. Mobility is seen to be particularly restricted for women and for those entering the Civil Service over 30 years of age, whilst for those entering into the lowest grade (grade 7), there is no mobility at all. As regards the latter this cannot be ascribed simply to the characteristics of people occupying these lower positions—as for example over one quarter of people in this grade had levels of education above the lowest level ($N = 158, 25.5\%$)* indicating

*At ages over 18 years when finished full-time education ($N = 13$ males, 12.5%, $N = 59$ females 11.4%). Aged 17-18 when finished full-time education ($N = 19$ males, 18.3% $N = 67$ females, 13.0%).



High = Grades 2-4 Low = Grades 5-6

Fig. 2. Males and females remaining in entry grade by class background of father.

that the lower grade presents an impermeable barrier with respect to occupational mobility. Data on educational level, whilst it cannot be conclusive, also suggests that the relatively high rates of mobility, referred to earlier, for those entering at grade 5 is not to be explained on this basis. The grades immediately above this, contain a higher proportion of people educated beyond 18 years and yet have lower mobility rates.

Our separate modelling of mobility by gender supports the view that different social processes in the workplace govern men's and women's mobility. The observation for example that marital status in men, but not women, is positively associated with mobility, clearly warrants further study. In the absence of relevant data here, any speculations must be treated with caution. However at least two possible explanations can be proffered. First of all, that married men may be the beneficiaries of support offered by their spouses, support which married women do not receive from their husbands and which has, as a consequence greater quality and output of work, leading to promotion. This needs to be considered in view of the oft repeated finding that mental health tends to be best amongst married men, and worst in married women [27].

A second possibility; that the customary social roles assigning responsibility to women for child

Table 8. Results of multiple regression for upward mobility*

Parameter	Males Estimate	P	Females Estimate	P (Diff)	
Intercept	0.555	0.058	0.096	NS	
Time in Civil Service	0.031	<0.0001	0.005	0.0069	0.0001
Marital status		0.0001		NS	0.0001
Married/Cohabiting	0.498		0.085		
Divorced	0.354		0.109		
Widowed	0.000		0.000		
Single	-0.003		0.144		
Entry grade*		0.0001		0.0001	0.0001
2	-0.347		0.040		
3	-0.004		0.382		
4	0.378		0.528		
5	0.647		1.005		
6	0.579		0.412		
7	0.000		0.000		
Entry age*		0.00001		0.0001	0.0001
Under 25	1.286		0.820		
25-30	0.828		0.334		
30-35	0.389		0.123		
Over 35	0.000		0.000		
Educational level*		0.0001		0.0001	NS
Under 16	-0.075		-0.196		
17-18	0.000		0.000		
Over 18	0.241		-0.009		
Father's social class*		NS		0.0001	0.0107
I	0.107		0.274		
II	0.084		0.120		
III Non-Manual	0.016		0.019		
III Manual	0.037		-0.034		
IV	0.141		-0.064		
V	0.000		0.000		
N	4066		1960		

NB, *Estimates describe contribution to mobility in units of Civil Service grades.

*P values signify results of trend test.

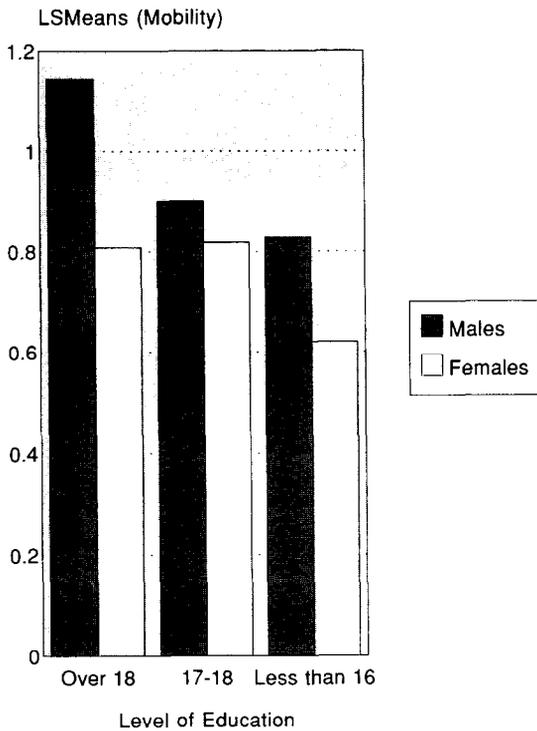


Fig. 3. Degree of mobility by level of education.

rearing has meant that those who have had children have spent significant periods of time away from employment, a situation which could well have interfered with promotion prospects. Alternatively the role strain in pursuing a career whilst simultaneously raising children could have had adverse repercussions on career prospects. Unfortunately we lack information on either the frequency or length of time of any such breaks in employment. Details however are available, concerning the number of children of different ages (under 5 years, between 5 and 15 years and over 15 years) present in an employees' household, and this might provide some indication as to whether child rearing has influenced mobility.

Incorporating the above data on children into our analysis improves the strength of our model ($R^2 = 0.500$, $F = 105.79$, $P < 0.0001$) and suggests that bringing up children is associated with worsening mobility prospects for women irrespective of marital status. Whilst for men, mobility was not found to be associated with the number of children in their household, for women the numbers of children under 5 ($P = 0.0091$), between 5 and 15 years ($P = 0.0001$) and over 15 years ($P = 0.0006$) were all significantly related to mobility. Marital status for men was closely tied to having children in their household—only 0.021% of men with children in the household were either not married or cohabiting. In contrast 21.7% of women with children were unmarried or cohabiting. These results whilst not explaining the link between marital status and mobility in men, do show unequivocally that women's roles as marriage

partner offers them no such advantage and if combined with having children places them at a considerable disadvantage in career terms. As we do not have any information on children who may already have left home, we are likely to be underestimating the effect of raising children on mobility, particularly for older women in the study.

Our data regarding the concentration of women from lower social class backgrounds into low civil service grades provide further support for what Marshall *et al.* [17] and Stanworth [28] argue to be the genderized nature of class oppression; that overall patterns of class or occupational mobility for men cannot be understood without reference to how women become concentrated in certain kinds of occupations and in the worst paid levels of those occupations [29].

The constructed regression equation suggests that around 50% of the observed variance in mobility can be explained by recourse to the terms in the model. For a social science model this is high, and indicates that a substantial degree of regularity exists in the process. This does of course still leave a sizeable proportion of unexplained variance. Some of this 'missing' variance probably stems from the imprecision with which certain attributes were measured. With the value of hindsight, improvements could be made to our assessments of educational level, incorporating larger gradations between attainment levels. Similarly our measure of social class background (based on father's occupation) could be improved, by

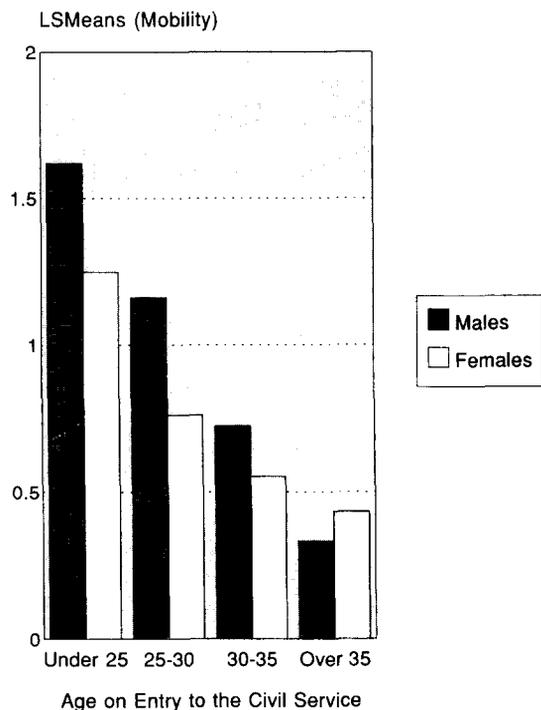


Fig. 4. Degree of mobility by age on entry to the Civil Service.

more stringent wording of the questionnaire item. Respondents may be providing answers based on their father's occupation at the highest point in their career, others at the lowest. Would social class coding based on maternal occupation also have contributed any additional significant variance?

Several factors which might improve the strength of the model were unable to be included. No data were available on the geographical region from which respondents were drawn. It is certainly feasible that personal characteristics (e.g. accent or manner), which associate a person with a particular region of the country might have bearings on opportunities for mobility within a workforce situated in the capital city of the country. Likewise data was lacking on the type of school (private, grammar, comprehensive) attended. In addition sufficiently precise information regarding respondents' ethnic background had not been collected. Ideally in modelling of this kind in future, information concerning people's career goals and aspirations would be included. This might provide some balance to the view that the process of mobility proceeds exclusively on mechanistic principles.

The population under study, includes people who have entered the Civil Service at varying periods—from between 1943 to 1987. Accordingly many people will be at different points along their career paths—differing in their potential for future mobility. One assumption embodied in the model described, is that the importance of each of the terms in the model has remained uniform over the 44 years between the first and the most recent entrants. Applying the model to those who entered the Civil Service in the first half of this period (1943–1965) yields an R^2 of 0.322 ($F = 21.48$, $df = 1709$) compared with a value of 0.436 ($F = 80.27$, $df = 4079$) for those who entered after this. This does suggest that the model gives a better description of mobility for more recent entrants. One interpretation of this, is that variables in the model have assumed different degrees of importance over time (Goldthorpe [18] for example has argued that mobility chances in the 20th century are becoming increasingly influenced by educational attainments). Another possibility is that the longer one's career proceeds, modelling mobility as a linear function becomes less accurate. To investigate this further, year of entry to the Civil Service was entered into the model as a dichotomous class variable, and in interaction terms with the other variables. Mobility was indeed found to vary significantly with year of entry ($P = 0.0001$). Estimates derived from this new model indicated that those who entered the Civil Service prior to 1966 had poorer subsequent mobility ($P = 0.019$), that this was particularly true for females who entered during this period ($P = 0.056$), but that entrants to grades 5 ($P = 0.0002$) and 6 ($P = 0.0001$) during this time have gone on to experience greater mobility. Contrary to Goldthorpe, there was no support for educational attainment having

contributed differentially to mobility over time. In fact education contributes to only 0.7% of the explained variance in mobility (0.8% males, 0.6% females). In agreement with Marshal *et al.* [17], no differences in mobility by social class background over time are found. To what extent changes such as these are reflections of wider social trends or describe processes confined to the British Civil Service is a matter for debate. Applying the model to forecast future mobility of the relatively more recent entrants, may help to clarify some of these issues.

The absence of information regarding candidates rejected for Civil Service entrance, leaves room for uncertainty as to what extent the composition of the Civil Service population (demographically speaking) is derived from processes involved in their selection, or is a reflection of the composition of applicants. Thus it remains in the realms of speculation whether those same pressures operating in the area of mobility are also present on selection (at each of the grade levels). Were the same 'filters' to be demonstrated on selection, then this would be an important factor in clarifying whether the characteristics of people associated with particular grade levels derive solely from the attributes of the individuals themselves or else are organizationally determined. Similarly, the possibility remains that people leaving the Civil Service prior to the commencement of Whitehall data collection might bias the relationship between mobility and a number of variables present in our model. For this bias to operate however, it would be necessary for large numbers of civil servants of a particular category to have left. Given the reputation of the Civil Service as amongst the most stable employers in the country we think this possibility unlikely.

A more difficult question to address is how accurate a picture of mobility in the wider occupational community do these results provide? This cannot of course be answered with any certainty. Attempting to repeat this methodology in any wider community or national survey would have to contend with the difficulties concerning the lack of precision in determining class membership, or problems arising from having worked in different occupational settings. Any similar analysis would strictly speaking not be comparable. However, we believe the value of the current work is in showing that in principle, mobility in a large employment setting is not only amenable to statistical modelling but can be shown to exhibit considerable regularity. Whilst the Civil Service is in a number of ways a unique organization in British working life, it is also part and parcel of the wider community and subject to the pressures of social life that are found everywhere. In this respect we believe the results described here have implications for studies of social mobility beyond their current confines.

On a somewhat wider front, our results lend themselves to the suggestion that the issue of obstructed opportunity at the workplace, could become a focus for fruitful investigation. The partitioning of mobility

chances along the parameters we have observed raises for discussion the matter of how restricted opportunities for career advancement are perceived and managed by those subject to them, what forms of social interaction are central to these processes, and in what manner such interactions impact upon personal autonomy, effectiveness, level of expectation and control. All these matters may have considerable bearing on understanding how ill-health develops.

The next stage in this work, will involve utilizing this model to predict future mobility, investigating possible health and psychological consequences of restricted or actual mobility, and in so doing distinguish these from any effects stemming from current social position. As such we think this will form a useful contribution to widening the debate on the origin of health inequalities to the processes involved in partitioning people by social status.

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