

**AN EXPLORATORY COMPARATIVE ANALYSIS OF DATA COLLECTED IN
THE 1958 AND 1970 BRITISH BIRTH COHORT STUDIES:¹**

*The Role of Personal Agency in Entry to Employment
Under Different Labour Market Conditions*

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Abstract

Britain is responsible for three Birth Cohort Studies with samples based on a single week's births in 1946, 1958 and 1970. The latter two, the National Child Development Study (NCDS) and the Child Health and Education Study (CHES), now known as BCS70, are based at the Social Statistics Research Unit (SSRU) at City University. Each comprise in the order of 16,000 cohort members for each of whom data have been collected at birth, and subsequently at ages 7, 11, 16, 23, 33 and 37 (NCDS), and at birth, 5, 10, 16, 25 (BCS70). The value of these studies for testing competing hypotheses about the role of qualifications as opposed personal agency in labour market entry at times of economic stress is demonstrated by a comparative analysis involving data collected in the 1970 and 1958 cohorts. Using regression models the findings demonstrate, in line with human capital theory, that at times of economic stress, the part of personal agency concerned with individual skills and psychological well-being, over and above educational qualifications, does appear to provide a measure of protection against unemployment in the transition from education to work. An analysis is included in which the NCDS data are re-weighted to take attrition into account. The paper also includes an examination of some of the design requirements for data collection in cohort studies on participation in education and the labour market, across the period of transition from childhood to adulthood.

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Introduction

Longitudinal birth cohort studies are an invaluable data resource which add an extra dimension to the study of transition processes. In this paper we examine the design of two of the three longitudinal studies located in Britain. We then exemplify their use through preliminary comparative analyses between the studies of the relative significance of education and attributes embodied in personal agency in the experience of unemployment. Finally we set out the principles of a forward plan for design and analysis across the rest of the life of the studies.

A major application of comparative analysis is to use one study's data to replicate (or refute) the inferences from another. This enables the researcher to assess the stability of relationships between variables with information collected in different cohorts, in different economic climates.

It also facilitates the testing of hypotheses about the effects of social change. Thus if the experience of the cohorts differs by some major economic factor like unemployment, we are able to test hypotheses about the effects on individuals that this experience is going to have. Finally there is the additional facility that inter-cohort comparison can be used to address the problem faced by any single cohort study: that period effects are confounded with cohort effects and age effects. Comparison of two cohorts at the same age or at the same time controls the age or period effect respectively.

Birth cohort studies are typically criticised because of the large amount of money the studies cost and their relative under-use (Ekinsmyth, 1996). Linked to this is a major methodological criticism. Studies are longitudinal by design, but analysed as though they were cross-sectional. This paper not only signposts appropriate longitudinal analysis but demonstrates the power of comparative analysis across cohorts.

Design Features

Birth cohort studies involve following up a sample of the population from birth across the whole of the life course. They use the information about life histories, both collectively and individually, to target the goals of first: *explaining* human functioning at a given age in terms of past circumstances and experiences; and second, *predicting* future human functioning at later ages from current and past functioning. The main principles informing their design are *timing* and *coverage*.

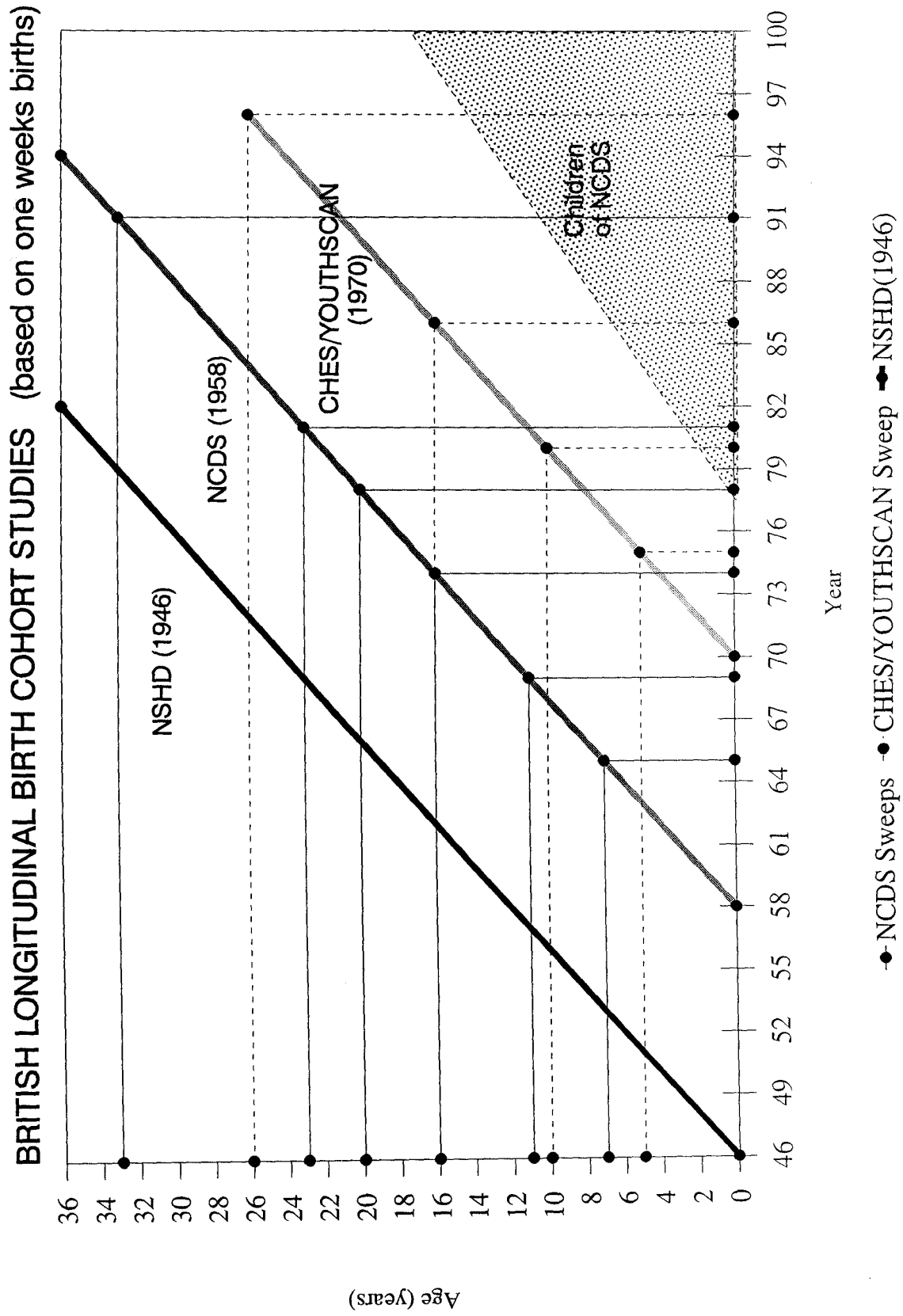
Timing

The timing of data collection needs to meet three main requirements. First, data need to be collected at time points that are separated by *regular* intervals, the length of which will vary at different stages of the life course, and represent key periods of transition in the life course for most individuals. Second, during periods of rapid developmental (biological and cognitive) growth, such as in childhood, data need to be collected at *frequent* intervals to enable the *rate of change* in key characteristics to be modelled as opposed to the *absolute levels* when development has levelled off. Third, to complete the life record, in between surveys (waves), data have to be collected retrospectively. The accuracy of recall for such information will of course vary by type of life event.

These principles are illustrated by the British Birth Cohort Studies whose progress to date and data collection points are illustrated in Figure 1 (Ekinsmyth et al, 1992). In Britain there have

been three birth cohort studies involving the follow-up of all individuals born in a single week of a particular year. The first birth cohort study is now fifty years old, and has pursued a sample of all births (originally 5,362) occurring during a single week in 1946. This study, referred to as the National Survey of Health and Development is funded by the Medical Research Council and based at University College, London. The two birth cohort studies with which we are concerned here, started in 1958 and 1970 respectively. They are both based at the Social Statistics Research Unit at City University. As Figure 1 shows, in the '58 birth cohort study, known as the National Child Development Study (NCDS), based on 17,414 births, data were collected at birth, age 7, 11, 16, 23, 33 and most recently at 37 (10% sample). In the 1970 Birth Cohort Study, known as BCS70, based on 17,198 births, data were collected at birth, 5, 10, 16 and 21 (10% sample) and most recently at 26.

Figure 1



Coverage

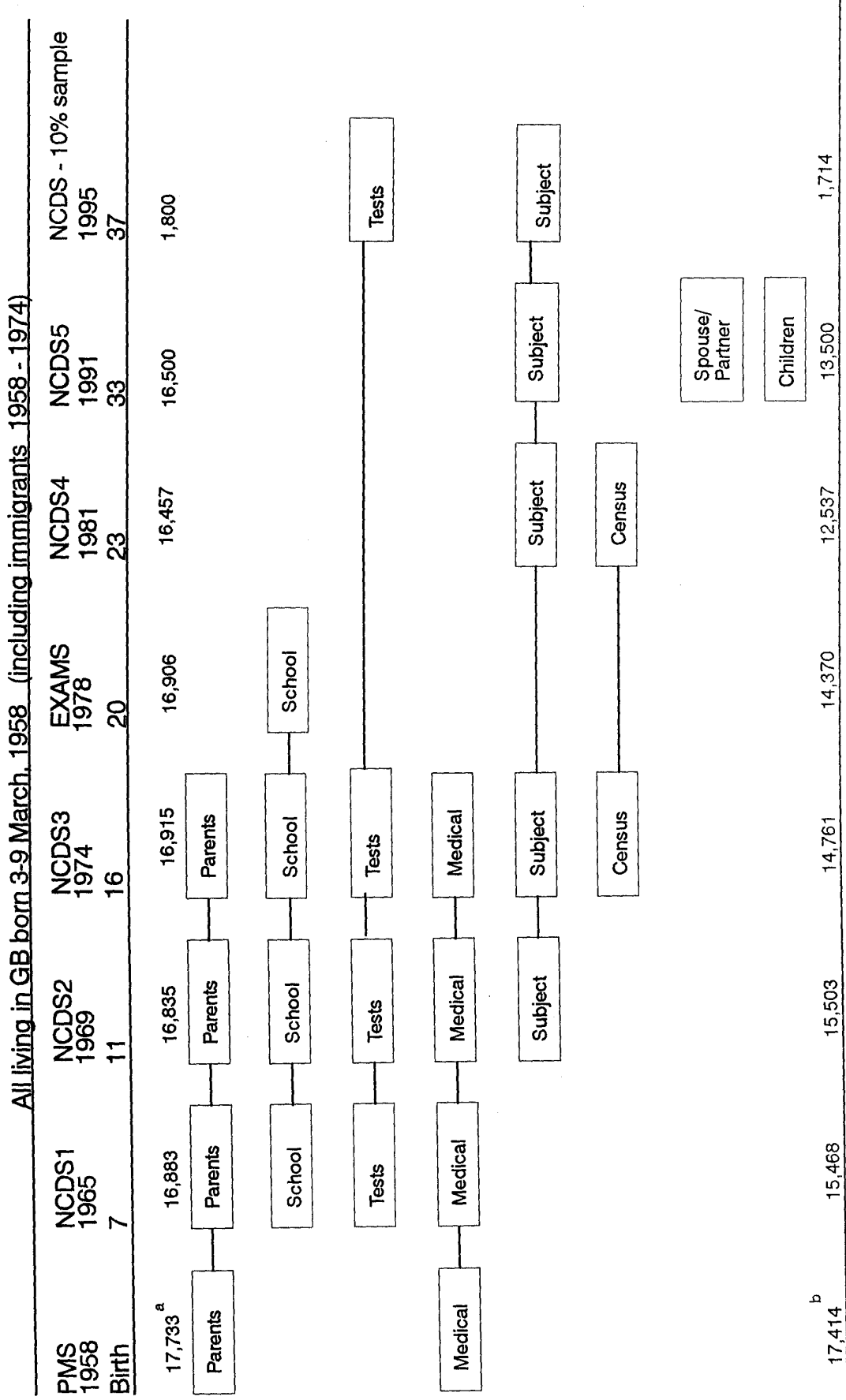
In determining the data coverage of a birth cohort study we need to balance *depth* against *breadth*. That is to say within the parameters of time allocated to data collection for any given cohort member in any sweep, there is the possibility of ranging widely over many if not all domains of life, - employment, family and so on - or focusing specifically on one or two of them, for which repeated measures over time have been taken. Another balance needs to be struck between objective versus subjective features of life experiences, ie. the timing of spells of unemployment vs reasons for being unemployed and feelings about it.

The balance again will shift between them depending on the questions to which the study is directed and the stage of development reached. Thus in early childhood, the emphasis is on cognitive and behavioural development, aspects of schooling and education attainment. In adult life, the range extends to incorporate family formation, housing, employment, income, health, leisure and recreational activities. Particular psychological, biological and behavioural measures, together with objective situational measures, may also be taken to gain as complete a picture as possible of what comprises the individual's life history and identity at a particular stage of his or her life.

At certain stages *specialised* data collection may be carried out to meet a particular scientific or policy interest. Thus in the two 10% sub sample studies carried out in BCS70 (age 21) and NCDS (age 37) , interest focused on *basics skills*, which were objectively assessed by tests of functional literacy and numeracy. Another follow-up study in NCDS comprised individuals who had reported respiratory problems in the 23 and 33 year surveys.

Each of these different design features have been accommodated to a more or less degree in each wave of the three birth cohort studies. The different waves in the data collection of the 1958 cohort study, identifying the sources of data used, are given in Figure 2.

Figure 2
Data Collection in National Child Development Study



a: Target sample
b: Achieved sample

Attrition

One of the key problems inherent in a birth cohort study is sample loss or attrition. Cohort members leave a study for a variety of reasons, including refusal to continue to participate or geographical mobility. Loss is common but not inevitably substantial. If it happens to be non-random then the remaining sample will be biased. Table 1, taken from Shepherd (1992), demonstrates how sample loss can differentially affect certain key variables by comparing univariate sample distributions for NCDS5 with the distributions in earlier sweeps (notably at birth). Clearly sample biases may be compounded as loss may occur at different rates for subclasses of cohort members. Whilst there is a growing literature (Little and Rubin, 1987; Skinner and Coker 1996; Fitzmaurice, Heath and Clifford, 1996) on ways of handling missing data none of the methodologies are routinely available to the practitioner at present. What we decided to do here is to explore the impact of non-response by re-weighting the data for NCDS by use of a composite index based on gender, marital status of the mother at birth and overcrowding (see Table Ai in Appendix). The method is essentially equivalent to post-stratification (Elliot, 1991) and fairly easy to execute in spss. The choice of variables can be questioned, of course. What we have attempted here is a first stage illustration of how one can begin to explore the impact of attrition within a birth cohort. A similar assessment for BCS70 data was not available at the time of writing. The results are reported in the next section.

Table 1
Response Bias
Comparison of NCDS5 with earlier Follow-Ups.

	Source	Target %	Achieved %	Bias*
<u>DEMOGRAPHIC VARIABLES</u>				
Male respondents	NCDS1-4	51.20	49.20	-2.0
<u>SOCIAL CLASS/ECONOMIC STATUS</u>				
Father's Social Class 1965 - Manual	NCDS1	66.5	65.00	-1.0
Father's Social Class 1969 - Manual	NCDS2	64.8	63.00	-1.8
Father's Social Class 1974 - Manual	NCDS3	63.10	61.00	-2.1
<u>HOUSING</u>				
Tenure 'private rented' at 7	NCDS1	12.40	11.70	-0.7
Tenure 'private rented' at 11	NCDS2	7.70	7.0	-0.7
Overcrowding at 11 (>1 person/room)	NCDS2	39.3	37.00	-2.3
Overcrowding at 16 (>1 person/room)	NCDS3	32.00	30.10	-1.9
<u>EDUCATION</u>				
Low Maths Score at 7	NCDS1	28.50	26.60	-1.9
Low Maths Score at 11	NCDS2	20.50	17.20	-3.3
Low Reading Score at 7	NCDS1	18.10	16.50	-1.6
Low Reading Score at 11	NCDS2	20.00	16.90	-3.1
Parents don't want Child to stay on at school	NCDS1	5.10	4.23	-0.87
Attended 3 or more schools 11-16	NCDS3	3.10	2.70	-0.4

* % Bias = NCDS5 achieved % - Target %

Inter-Cohort Comparison:

Relative effects of Education and Personal Agency on Unemployment

To exemplify the use of the NCDS and BCS70 birth cohort studies in the analysis of transition processes we select a simple example comprising two aspects of the transition process with strong theoretical roots: the effect of *structural* factors, as mediated particularly through education, as opposed to characteristics located in the individual, best described as *personal agency* (Giddens, 1979).

Human capital theory (Becker, 1975) predicts that one of the main sources of protection against unemployment is the qualifications possess, because they signify possession of skills, which are valued by employers. Social exclusion theorists, on the other hand, (eg Collins, 1979) dispute the intrinsic value of qualifications seeing them merely as a sorting device for maintaining the class structure. At the same time individual characteristics identified with personal agency also have a part to play. These are partly represented by the occupational identity people have - as embodied in the range of skills they perceive themselves to have - and partly in their psychological state, as indicated by the level of malaise they exhibit. The way these different components of employability function in protecting the individual from unemployment will differ depending on the kind of labour market they experience. If human capital theory is correct then personal agency will be particularly important at times of economic hardship. Social exclusion theorists would predict that only qualifications would make much difference.

To test these competing hypotheses, drawing on earlier work in this field (Bynner 1994; in press), we select five variables which may be implicated in failure to achieve a successful transition into employment, as indicated by the amount of unemployment experienced since the

age of sixteen. The five variables are: *social class of family during childhood*, *educational attainment* (assessed from public examination results at age 16), *literacy* and *numeracy ability* (measured subsequently in adulthood; Ekinsmyth and Bynner, 1994), and *Malaise* (a measure of depression or reduced self-esteem; Rutter et al, 1970. See Table Aii in Appendix for Malaise Inventory). The hypothesis is that over and above the amount of variance in the *proportion of time available for work spent unemployed* that is explained by structural factors, including social class and qualifications, such characteristics associated with personal agency as, malaise, and specific skills associated with literacy and numeracy will add something to the explanation. To help eliminate the effects of higher educational attainment on employment experiences, analysis has been restricted to cohort members who had left school by age 16. This comprises 57% of the NCDS sample members and 53% of the BCS70 sample members.

Comparisons of the BCS70 and NCDS cohorts in analyses of this kind are of particular interest because of the different experiences the two cohorts had in relation to entry into the labour market. The BCS70 cohort members were eligible to leave school at a time when expectations of jobs were still high based on a flourishing youth labour market in preceding years. The recession of this period and the re-structuring of industry, virtually wiped out this labour market and the consequence was that large numbers of young people had great difficulty in finding work. Many went into training schemes instead, and others drifted in and out of casual jobs and unemployment (Bynner, 1990; Banks et al, 1991). In such circumstances 'Human Capital' (Becker, 1975), embodied in the qualifications and skills people possess, becomes at an ever higher premium. In contrast, in the mid 1970s, when the restructuring of employment had only just begun, the '58 cohort (NCDS) had a relatively easy passage into the labour market with upwards of two thirds of cohort members leaving school at the minimum age, sixteen, most of

whom got a job without too much difficulty. Their problems came later in the early twenties, when the economic restructuring of the 70s and the sharp economic recession of the early 80s began to bite (Fogelmann, 1985). Consequently, comparing the analysis of the relations between the variables selected in the two cohorts enables us to see to what extent a similar model applies in both cases. In what is no more than a preliminary analysis we use multiple regression indicators of relative effects of the variables, i.e. the standardized partial regression coefficients (beta coefficients), and assess the overall explanatory value of the model, ie the variance explained from the square of the multiple correlation coefficient (R^2). The analysis has been carried out under two conditions: i) all cohort members who had left full-time education at 16, and ii) cohort members who had left full-time education at 16 and *ever* experienced unemployment. Given the strong influence of gender on labour market experiences, the analysis is repeated for men and women separately.

Before turning to the results, the range and values of the variables chosen for the regression model are given in Table 2. The compatibility of variables used for the two cohorts is clear to see.

Table 2
Variables Used in Cross-Cohort Comparison

		Age Data Collected	
		BCS70	NCDS
<u>Dependent Variable:</u>			
HADUNEM	Proportion of the time when available for work spent unemployed between 2 age points	Age 16 - 21	Age 16 - 23 Age 16 - 33
<u>Independent Variable:</u>			
	<u>Values</u>		
SEX	(1=male; 2=female)	Birth	Birth
SOCLASS	Social Class from Father/Head of Household Occupation (1=professional....7=unskilled)	Age 10	Age 11
EXAM16	Score derived from O'Level and C.S.E. examination grades (NCDS: low-high as 0 - 80) (BCS70: low-high as 0 - 86)	Age 16	Age 16
MALAISE	A summary measure of mental well-being (Malaise Inventory, Rutter et al, 1970, see Appendix 2) (low-high as 0 - 24)	Age 21	Age 23
LITSCORE	Score obtained in Literacy Skills assessment (NCDS: low-high as 0 - 23) (BCS70: low-high as 0 - 16)	Age 21	Age 37
NUMSCORE	Score obtained in Numeracy Skills assessment (NCDS: low-high as 0 - 18) (BCS70: low-high as 0 - 14)	Age 21	Age 37

Findings

Analysis results are given initially for the total sample who left full-time education at age 16 and then for males and females separately. In each table we compare the results for BCS70 with the results for NCDS. The BCS70 results measure unemployment between age 16 to 21, with unemployment being measured from 16 to 23 and from 16 to 33 for NCDS members. These analyses are then replicated across the two cohort studies for those leaving school at 16 years and *ever experiencing any unemployment*.

i) Cohort members who left school at 16

For those cohort members who had left full-time education at age 16, the most striking finding is that for unemployment between age 16 and the early 20's, a much better predictive model is obtained for the BCS70 when compared to NCDS data (multiple R, .28 cf. .14). A similar result holds for both men and women. Clearly this was a period for the BCS70 cohort when human capital was at a premium in determining whether or not young school leavers got jobs; hence the strength of the prediction. Extending the age period from 16 to 33 for NCDS members, so as to include their fortunes during the 1980s, provides no statistical improvement. These results are evident for both the total sample and for men and women separately. The conclusion appears to be that very different influences have helped shape the experiences of the two cohorts so far in the labour market. Tables 3a, 3b and 3c provide the full detail of the analyses. Beta coefficients with statistical significance at the $P < .05$ level or better are marked with an asterisk..

Table 3a:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR ALL COHORT MEMBERS WHO LEFT FULL-TIME EDUCATION AT AGE 16			
	BCS70 (AGE 16 - 21)	NCDS (AGE 16 - 23)	NCDS (AGE 16 - 33)
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SEX	-.05	-.07	-.11*
SOCLASS	-.02	.05	.03
EXAM16	-.23*	.04	-.04
MALAISE	.04	.13*	.06
LITSCORE	.04	-.01	-.00
NUMSCORE	-.11*	.02	.01
MULTIPLE R	.28*	.14	.13
<i>N</i> =	486	567	578

Table 3b:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR ALL MEN WHO LEFT FULL-TIME EDUCATION AT AGE 16			
	BCS70 (AGE 16 - 21)	NCDS (AGE 16 - 23)	NCDS (AGE 16 - 33)
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SOCLASS	-.03	.03	.04
EXAM16	-.20*	.05	-.07
MALAISE	-.01	.16*	.05
LITSCORE	-.08	-.03	.01
NUMSCORE	-.08	.01	-.00
MULTIPLE R	.29*	.17	.10
<i>N</i> =	244	288	295

Table 3c:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR ALL WOMEN WHO LEFT FULL-TIME EDUCATION AT AGE 16			
	BCS70 (AGE 16 - 21)	NCDS (AGE 16 - 23)	NCDS (AGE 16 - 33)
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SOCLASS	-.01	.08	.01
EXAM16	-.28*	.01	-.01
MALAISE	.07	.11	.11
LITSCORE	.18*	.01	-.02
NUMSCORE	-.13	.04	.04
MULTIPLE R	.31	.14	.11
<i>N</i> =	242	279	283

With respect to the influence of individual variables our hypotheses are confirmed for the BCS70 cohort, although somewhat differently for men and women. Thus whilst educational attainment is the key predictor (as indicated by the beta coefficient), literacy and numeracy ability also turn out to be important. Interestingly, they have equal importance for men, but for women an unexpected picture is drawn: *high* literacy scores and *low* numeracy were significantly related to unemployment for women who left full-time education at age 16. The malaise score was positive but not statistically significantly associated ($p < .05$) with unemployment for BCS70 members, but for the older NCDS cohort, and particularly men, significant results were obtained for the period 16 to 23. Unexpectedly, for the NCDS cohort, educational attainment had non-statistically significant relationships with unemployment for both men and women between age 16 to 23. Only Malaise achieved a statistically significant (positive) Beta, and only among men; this reduced in size substantially over the longer period - 16-33. For women the largest Beta coefficient over both age periods was for Malaise, but statistical significance ($p < .05$) was not

achieved .

A possible explanation of the weak relationships in the NCDS data is that in the early 1970s benefits were somewhat 'easier' to claim. The legislation which removed the dole from people under the age of 18 and partially from those under age 23 was not enacted until 1988. The labour market had not contracted and young adults also did not have to prove they were "looking for work" to claim benefits. There was therefore a much larger element of choice in being unemployed at this time. Some young men and women took 'time out' from employment, which cut across the role of qualifications their unemployment experience. On the other hand, many students could choose to take jobs when they wanted them in the vacations. If students chose not to work or could not find a job that suited them, they would count themselves as unemployed.

By 1986 when the younger BCS70 cohort were entering the labour market for the first time, the youth labour market in many areas had collapsed. Jobs were hard to come by and benefits were not available. There was far less *choice* with respect to unemployment, with the less qualified facing particular difficulties in getting employment, and yet still reluctant either to stay on in education or enter Government training schemes instead.

ii) Cohort members who left school at 16 and ever experienced unemployment

We turn now to cohort members who left full-time education at 16 and had *ever* been unemployed between the two relevant age points. Does the model better predict the *amount of time* unemployed when concentrating on the men and women who had ever been unemployed? The very different economic climates facing the two cohorts on leaving school at 16 is very plain to see. Table 4 shows that unemployment from age 16 to the early 20's was experienced by *four*

times as many men and *three times* as many women in the younger BCS70 cohort.

Table 4
% of Men and Women Who Left Full-Time Education at Age 16
Ever Experiencing Unemployment in BCS70 and NCDS

	<u>BCS70</u>	<u>NCDS</u>	
	16-21	16-23	16-33
Overall	37% (486)*	11% (567)	23% (578)
Men	40% (244)	11% (288)	26% (295)
Women	33% (242)	10% (279)	19% (283)

*N = 100%

Given the relative lack of unemployment experienced by NCDS members, the sample sizes were greatly reduced for this stage of analysis. The predictive power of the model increased though statistical significance ($p < .05$) was not achieved for the NCDS cohort, except for women over the period 16-33. Tables 5a, 5b and 5c gives the Beta coefficients and Multiple Rs for the total sample and for men and women separately.

Table 5a:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR ALL COHORT MEMBERS WHO LEFT FULL-TIME EDUCATION AT 16 AND <i>EVER UNEMPLOYED</i>			
	BCS70 (AGE 16 - 21)	NCDS (AGE 16 - 23)	NCDS (AGE 16 - 33)
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SEX	-.03	-.09	-.17*
SOCLASS	-.04	.05	.06
EXAM16	-.26*	.10	-.06
MALAISE	.00	.27	.18*
LITSCORE	.05	-.17	.01
NUMSCORE	-.22*	-.05	-.09
MULTIPLE R	.38*	.38	.29
<i>N</i> =	179	60	132

Table 5b:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR BY ALL MEN WHO LEFT FULL-TIME EDUCATION AT 16 AND <i>EVER UNEMPLOYED</i>			
	BCS70 (AGE 16 - 21)	NCDS (AGE 16 - 23)	NCDS (AGE 16 - 33)
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SOCLASS	-.02	-.10	.04
EXAM16	-.24	.09	-.10
MALAISE	-.06	.30	.09
LITSCORE	-.16	-.17	.01
NUMSCORE	-.06	.04	-.09
MULTIPLE R	.37*	.38	.19
<i>N</i> =	98	33	77

Table 5c:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR BY ALL WOMEN WHO LEFT FULL-TIME EDUCATION AT 16 AND <i>EVER UNEMPLOYED</i>			
	BCS70 (AGE 16 - 21)	NCDS (AGE 16 - 23)	NCDS (AGE 16 - 33)
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SOCLASS	-.05	.35	-.12
EXAM16	-.29*	-.02	.03
MALAISE	.10	.29	.42*
LITSCORE	.27*	-.15	-.05
NUMSCORE	-.35*	-.10	-.09
MULTIPLE R	.47*	.57	.49*
<i>N</i> =	81	27	55

For the younger cohort the overall explanatory value of the model improved, (as indicated by an increase in the value of the multiple R). This increase occurred for the overall cohort, and for men and women separately, with the improvement most marked for women in the BCS70 cohort, increasing from .31 to .47. This pattern is echoed in the NCDS results over both age ranges. The relatively small numbers of NCDS members experiencing unemployment before the age of 23 years shift our attention to the experience up to 33 years. Over this longer time period, the multiple R increased from .11 to .49 for women who left full-time education at 16 and were ever unemployed. The comparable figures for men were .10 and .19 respectively.

Educational attainment remained the key predictor for the overall BCS70 cohort and for men, but although its significance did slightly increase for women, literacy and numeracy ability became very strong predictors. The unexpected positive relationship between *high* literacy scores and

low numeracy with unemployment among women found earlier, strengthened. The beta coefficients increased from .18 to .27 for literacy ability, and from -.13 to -.35 for numeracy ability. For men, the relative importance of literacy increased, but surprisingly, the importance of numeracy decreased slightly. The malaise score was again not statistically significantly associated ($p > .05$) with unemployment for BCS70 members, although the beta coefficients were larger.

For the older NCDS cohort over the period 16-33, the association between poor educational attainment and male unemployment increased slightly, as it did for low numeracy ability and malaise score. None were, however, statistically significant. Turning to women, the overwhelming key predictor of unemployment was their malaise score. The beta coefficient increased from .11 for women who left full-time education at 16 to a massive statistically significant .42 for women who left full-time education at 16 and had experienced unemployment. Both literacy and numeracy ability were negatively associated with unemployment, especially for the period 16-23, but in what was a very small sample ($n=27$) the betas failed to reach statistical significance.

Weighting the Data

Reanalysing the NCDS data using the composite weight described earlier produced a slight overall decrease in the explanatory power of the models. The influence of key variables was broadly similar. Interestingly, the influence of examination attainment moved in the predicted direction for men. Thus high educational attainment was negatively associated with relatively large amounts of unemployment. This reversal was less strong for women and was only observed when taking the longer time period between 16 and 33 years into account. See Tables 6a, 6b and 6c below. The slightly different number of men and women in the unweighted results, when compared with the sample size in Tables 5a, 5b, 5c, is due to restricting the sample here to cohort members for which information on all three variables used in constructing the weight is available.

Table 6a:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR BY ALL EVER UNEMPLOYED WHO LEFT FULL-TIME EDUCATION AT AGE 16				
	AGE 16 - 23		AGE 16 - 33	
	Unweighted	Weighted	Unweighted	Weighted
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SEX	-.11	-.08	-.15	-.11
SOCLASS	.10	.08	.07	.08
EXAM16	.10	.08	-.01	-.04
MALAISE	.28	.26*	.19*	.14
LITSCORE	-.16	-.11	-.02	-.07
NUMSCORE	-.06	-.08	-.10	-.05
MULTIPLE R	.40	.35	.28	.24
<i>N</i> =	57	81	126	180

Table 6b:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR BY ALL MEN EVER UNEMPLOYED WHO LEFT FULL-TIME EDUCATION AT AGE 16				
	AGE 16 - 23		AGE 16 - 33	
	Unweighted	Weighted	Unweighted	Weighted
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SOCLASS	-.07	-.08	.06	.05
EXAM16	.02	-.00	.02	-.03
MALAISE	.31	.31	.04	.03
LITSCORE	-.17	-.12	-.03	-.09
NUMSCORE	.04	.03	-.12	-.05
MULTIPLE R	.39	.37	.17	.16
<i>N</i> =	31	46	73	112

Table 6c:

NUMBER OF MONTHS UNEMPLOYED: BETA COEFFICIENTS AND MULTIPLE CORRELATION FOR BY ALL WOMEN EVER UNEMPLOYED WHO LEFT F/T EDUCATION AT AGE 16				
	AGE 16 - 23		AGE 16 - 33	
	Unweighted	Weighted2	Unweighted	Weighted2
	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>	<i>Beta</i>
SOCLASS	.33	.33*	.12	.14
EXAM16	.10	.10	-.09	-.11
MALAISE	.33	.29	.41*	.34*
LITSCORE	-.15	-.14	-.05	-.03
NUMSCORE	-.15	-.14	-.03	-.03
MULTIPLE R	.58	.51	.50*	.44*
<i>N</i> =	26	35	53	69

Conclusions and Future Plans

Comparing the labour market experiences of two British cohorts has provided a unique insight into the value of inter-cohort analysis. For the 16 to 23 year age group a much better model for predicting unemployment is apparent for the BCS70 data than for the NCDS data. This reflects a strong *cohort effect* driven by a tightening of the labour market for the 1970 cohort - when human capital was at a premium in determining whether young school leavers got jobs or not. For the older NCDS cohort we needed to extend the age period up to 33 years to achieve a statistically significant prediction, i.e. it was only over a longer period which included the 1980s that the experience of unemployment began to have predictable precursors. With respect to key influences the BCS70 cohort supports our hypothesis somewhat differently for men and women. Though educational attainment was the key predictor, literacy and numeracy skills also turn out to be important- particularly numeracy for women. Mental well-being, as assessed by the *Malaise* Inventory also had a strong association with the amount of unemployment. This was much more noticeable amongst those who had ever been unemployed and, in particular, women. In general, not only do we find evidence to support the protective role that educational achievement provides in both cohorts, but in line with human capital theory, at times of economic stress, the part of personal agency concerned with individual skills, over and above educational attainment, appears to provide some measure of protection against unemployment in the transition from education to work. This was clearly supported by the experiences of the younger cohort, who became available for work at the peak of the 1980s economic recession. This inter-cohort study has shown us how stable our interpretation of the relationships between careers in education and the labour market, and the role of personal agency across the period of

transition from childhood to adulthood is under different economic climates.

The somewhat unexpected, positive, results between literacy skills in women and unemployment are difficult to interpret, but in all probability reflect - in part - the different form of women's relationship to the labour market than men's. More women in the 1970 cohort with high literacy skills may have been opting for unemployment over the period, perhaps to pursue qualifications, rather than take on unsatisfactory work. On the other hand, the high correlation between literacy scores and examination results may also be producing a degree of multicollinearity in the data, in which only one variable (exam results) shows the expected relationship. The whole area would repay further investigation, including the use of structural equation modelling (Jöreskog and Sörbom, 1979) in which the likely causal sequence of the predictor variables could be taken into account.

Postscript

The examples presented here demonstrate effectively the value of the British birth cohort studies for testing and elaborating competing hypotheses by means of cross-cohort analysis. The full potential of the datasets for this purpose will be realised through the forward plan for their future development.

Figure 3 sets out the proposed schedule for future data collection, which is also premised on some degree ideally of coordination of design with that of the quite separately managed and funded 1946 birth cohort study. The plan comprises data collection at eight year intervals by interview from cohort members with supplementary surveys by post every four years to update the record of life events. A time interval of 4 years has the added advantage of bringing NCDS

and BCS70 members into phase, thus 33 year-olds surveyed in 1991 in NCDS would be surveyed in the year 2003 in BCS70. Intergenerational continuity and discontinuity will be pursued through the collection of data on one third cohort members' children. Following the strategy adopted by the US National Longitudinal Survey of Youth (NSLY), data would be collected every two years up until the sixteenth birthday about this sub-sample using developmental and educational tests and parent interviews. New children enter the study for this purpose at the age of five, with information about them being collected earlier through the general cohort member interview. Repeated testing is necessary until age 16 to monitor a child's rapid cognitive and behavioural development. From age 16, data collection at less frequent intervals would begin. Such a schedule would then be continued right through the cohort members' and their children's lives.

Figure 3

BIRTH COHORT STUDIES FORWARD PLAN
Data Collection Programme 1995 - 2011

	YEAR																
	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>
<u>NCDS</u>																	
Type of Survey	Interview 10% Sub-sample			Interview/ Postal Survey				Postal Survey				Interview/ Postal Survey			Postal Survey		
AGE37 (N = 11,600)				41				45				49				53	
<u>BCS70</u>																	
Type of Survey	Postal Survey			Postal Survey				Interview/ Postal Survey				Postal Survey			Interview/ Postal Survey		
AGE (N = 12,000)	26			29				33				37				41	

<u>NCDS</u>																	
<u>MOTHER & CHILD</u> (N = 5,000)			Tests		Tests		Tests		Tests		Tests		Tests		Tests		Tests
<u>BCS70</u>																	
<u>MOTHER & CHILD</u> (N = 5,000)			Tests		Tests		Tests		Tests		Tests		Tests		Tests		Tests

APPENDIX

i)Weighting the Data

A composite weight was calculated from the bias found in three variables. The variables chosen were; i) *gender*; ii) whether their mother was married or not at the time of their birth; and iii) *if they lived in overcrowded accommodation when born*. Table Ai details the individual bias of these variables for the 10% NCDS sample at age 37. The final weight used to is simply the product of a combination of individual weights depending on the particular combination of cohort member characteristics reported.

Table Ai
Bias attached to the 3 Variables used to Weight the Data

<u>Variable</u>	Data Source	Target %	Achieved %	Weight*
Gender - % Male	BIRTH	51.7%	46.7%	1.11
Mother unmarried	BIRTH	12.6%	8.8%	1.43
Overcrowded accommodation	BIRTH	32.0%	25.5%	1.28

* Weight = Target % / Achieved %

Table Aii
The Malaise Inventory, (Rutter et al, 1970)

	Yes (1 pt)	No (0 pts)
1) Do you often get back-ache?	<input type="checkbox"/>	<input type="checkbox"/>
2) Do you feel tired most of the time?	<input type="checkbox"/>	<input type="checkbox"/>
3) Do you often feel miserable or depressed?	<input type="checkbox"/>	<input type="checkbox"/>
4) Do you often have bad head-aches?	<input type="checkbox"/>	<input type="checkbox"/>
5) Do you often get worried about things?	<input type="checkbox"/>	<input type="checkbox"/>
6) Do you usually have great difficulty in falling or staying asleep?	<input type="checkbox"/>	<input type="checkbox"/>
7) Do you usually wake unnecessarily early in the morning?	<input type="checkbox"/>	<input type="checkbox"/>
8) Do you wear yourself out worrying about your health?	<input type="checkbox"/>	<input type="checkbox"/>
9) Do you often get into a violent rage?	<input type="checkbox"/>	<input type="checkbox"/>
10) Do people often annoy and irritate you?	<input type="checkbox"/>	<input type="checkbox"/>
11) Have you at times had a twitching or the face, head or shoulders?	<input type="checkbox"/>	<input type="checkbox"/>
12) Do you suddenly become scared for no good reason?	<input type="checkbox"/>	<input type="checkbox"/>
13) Are you scared to be alone when there are not friends near you?	<input type="checkbox"/>	<input type="checkbox"/>
14) Are you easily upset or irritated?	<input type="checkbox"/>	<input type="checkbox"/>
15) Are you frightened of going out alone or of meeting people?	<input type="checkbox"/>	<input type="checkbox"/>
16) Are you constantly keyed up and jittery?	<input type="checkbox"/>	<input type="checkbox"/>
17) Do you suffer from indigestion?	<input type="checkbox"/>	<input type="checkbox"/>
18) Do you suffer from an upset stomach?	<input type="checkbox"/>	<input type="checkbox"/>
19) Is your appetite poor?	<input type="checkbox"/>	<input type="checkbox"/>
20) Does every little thing get on your nerves and wear you out?	<input type="checkbox"/>	<input type="checkbox"/>
21) Does your heart often race like mad?	<input type="checkbox"/>	<input type="checkbox"/>
22) Do you often have bad pains in your eyes?	<input type="checkbox"/>	<input type="checkbox"/>
23) Are you troubled with rheumatism or fibrosis?	<input type="checkbox"/>	<input type="checkbox"/>
24) Have you ever had a nervous breakdown?	<input type="checkbox"/>	<input type="checkbox"/>

If 'Yes' is answered to 7 or more questions, a '*depressed*' label is assigned.

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