BORN TO BE MILD: COHORT EFFECTS IN SUBJECTIVE WELL-BEING

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ABSTRACT

Cross-section analysis of subjective well-being data typically reveals a U-shaped relationship with age. This paper uses nine waves of balanced British panel data to show that the U-shape results from two distinct phenomena: a fixed effect which is strongly negatively correlated with year of birth (such that those born earlier report higher levels of well-being), and an aging or life-cycle effect which is almost always negative. The size and shape of these different components are very different by sex, and by levels of education.

JEL Codes: C23, I3, J11.

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Andrew E. Clark*

1. Introduction

Economists' interest in well-being data has developed at the same time as increasingly sophisticated tools in social science to better control for fixed effects. These techniques consist (overwhelming in economics) of the use of panel data, or cross-section analysis with very careful controls ("twin" studies, where the initial distribution of the genetic pack of cards can be controlled for: see Bouchard, Lykken, McGue, Segal, & Tellegen, 1990; Tellegen et al., 1988). The combination of these two interests has seen a number of papers trying to split measures of subjective well-being up into its permanent or fixed part and a transitory component that depends on life events. Some recent contributions in this spirit include Clark, Georgellis, Diener, & Lucas, 2002; Clark, Georgellis, Diener, & Lucas, 2003; Frijters, Haisken-DeNew, & Shields, 2001 and Kawaguchi, 2002.

This approach has spilled over into the analysis of the relationship between well-being and age: in an econometric world plagued by accusations of endogeneity, age, sex and ethnicity typically stand out as exogenous variables, and consequently receive a great deal of attention. Early work emphasised that older individuals tended to be happier/more satisfied than younger individuals. More recent analyses have refined this approach by using terms in age and age-squared, revealing a strong U-shaped relationship between subjective well-being and age, tending to bottom out somewhere in the thirties or early forties.

Two competing interpretations of this U-shaped relationship can be imagined. One is that it reflects individuals passing through different life events; another is that it reflects a cohort effect, and that individuals born in the 1950s, say, have (and always will have) particularly low levels of subjective well-being. This paper uses nine waves of British panel data, with the GHQ-

12 as a measure of subjective well-being, to test the hypothesis that the U-shape is a pure cohort phenomenon. Two types of test are presented, the first indirect, although intuitive, and the second direct. All tests are carried out on balanced panel data.

I first show that the minimum point of the age-well-being relationship does not move shift one year to the right from data wave t to wave $t+1$, as would be the case if the U-shape were a cohort phenomenon. As such, I conclude that there is an "aging phenomenon" in well-being: this is something that we will all (statistically) go through, no matter when we were born.

The second test is direct. I introduce fixed effects into panel well-being regressions. After controlling for unobserved heterogeneity (and thus all cohort effects), the relationship between age and well-being is negative, and somewhat convex. The dual result is that the fixed effects show a very strong positive correlation with year of birth, such that those born earlier have higher levels of well-being. The U-shaped relationship in cross-section or pooled data then seems to result from the combination of a negatively-sloped aging effect and a positively-sloped cohort effect.

2. Cohort or Life-Cycle?

Empirical work linking age to measures of subjective well-being (such as life satisfaction or happiness) typically finds a U-shaped relationship, minimising somewhere in the mid-thirties to early forties. See Blanchflower & Oswald, 2003 for British and American evidence, and Frijters et al., 2001 and Senik, 2002 for Russian and German results respectively. As highlighted in Frey & Stutzer, 2002, there is less agreement on what phenomenon this U-shape represents. One interpretation is that, loosely speaking, the U-shape reflects the different events that occur to individuals over the life cycle, and their reaction to these events. This was suggested by Argyle, 1989 and Clark, 1996, for example. A more recent discussion is found in Hayo & Seifert,

2002. An alternative explanation is that well-being is broadly flat over the life-cycle, with the U-shape reflecting unobserved individual heterogeneity[1]. In this case, the hypothesis is that those in the 1950s birth cohort typically report lower well-being scores than do those born earlier or later.

Cross-section data does not allow us to separately identify the life-cycle and cohort components. Neither, incidentally, does twin data, as both age and birth year are identical across matched subjects. Progress can be made with panel data, however, in which we have repeated observations on individuals of the same birth cohort, but different ages, allowing the two effects to be identified separately. In this paper, I therefore use panel data to distinguish between lifecycle and cohort effects. The first, indirect, test relies on the prediction of the "cohort" model that there will be no systematic year-to-year change in subjective well-being once all other relevant variables are controlled for. The second, direct, test involves controlling explicitly for fixed effects in a panel well-being regression. The subsequent correlation between these fixed effects and the individual's year of birth reveal the extent to which cohort effects lie behind the U-shaped relationship found in cross-section data.

Data

The data come from the first nine waves of the British Household Panel Survey (BHPS), a general survey covering a random sample of approximately 10 000 individuals in 5 500 British households. This data set includes a wide range of information about individual and household demographics, employment, income and health. There is both entry into and exit from the panel, leading to unbalanced data. The BHPS is a household panel: all adults in the same household are interviewed separately. The wave 1 data were collected in late 1991 - early 1992, the wave 2 data were collected in late 1992 - early 1993, and so on. The analysis in this paper refers to

individuals aged between 16 and 65. To render the sample relatively homogeneous, I restrict myself to balanced panel data. There are 4391 individuals who were interviewed at all nine waves of the BHPS, giving an overall sample of 39519. In practice, the regression analysis will be based on slightly fewer observations due to missing values.

3. Results

The central question addressed in this paper is whether individual well-being changes systematically over the life cycle[2]. The measure of subjective well-being measure is the GHQ-12, which reflects overall mental well-being and is popular in psychology and medicine, but less well-known by economists. The GHQ-12 (see Goldberg, 1972) is constructed from the responses to twelve questions (administered via a self-completion questionnaire) covering feelings of strain, depression, inability to cope, anxiety-based insomnia, and lack of confidence, amongst others (see Appendix A). Responses are made on a four-point scale of frequency of a feeling in relation to a person's usual state: "Not at all", "No more than usual", "Rather more than usual", and "Much more than usual". The GHQ is widely used in medical, psychological and sociological research, and is considered to be a robust indicator of the individual's psychological state. The between-item validity of the GHQ-12 is high in this sample of the BHPS, with a Cronbach's alpha score of 0.89.

This paper uses the Caseness GHQ score, which counts the number of questions for which the response is in one of the two "low well-being" categories. This count is then reversed so that higher scores indicate higher levels of well-being, running from 0 (all twelve responses indicating poor psychological health) to 12 (no responses indicating poor psychological health). The distribution of this well-being index in the BHPS sample is shown in Appendix B. The median and mode of this distribution is 12: no responses indicating poor psychological health.

However, there is a long tail: one-third of the sample have a score of 10 or less, and thirteen per cent have a score of 6 or less.

Well-Being and Age in pooled data

Table 1 sets the scene by presenting the results from standard well-being equations estimated on pooled data. Column shows OLS results, while column 2 refers to ordered probits. Both regressions include age and age-squared as explanatory variables. These attract very significant coefficients; the negative coefficient on age and positive coefficient on age-squared reveal that, *ceteris paribus*, well-being is U-shaped in age. Some simple algebra shows that the age of minimum well-being is 39 in the OLS regression and 37 in the ordered probit.

The second panel of Table 1 reproduces the analysis, but with age dummies. The reference age group is the 16-22 year olds. The estimated coefficients on these dummies again reveal a U-shape. The minimum is here estimated to be in the mid-thirties to mid-forties by OLS, and in the late thirties by ordered probit.

Test 1: Does the U-shape move to the right by one year per wave?

The first test is indirect. If the U-shape is a cohort phenomenon, then the whole distribution should shift to the right by one year per wave. I provide a test of this hypothesis by running Table 1's ordered probit regressions separately for each of the nine waves of the BHPS. I then calculate the estimated minimum point of the U-shape for each wave. Alternatively, interactions between age and wave can be introduced into Table 1's regressions.

The results are summarised in Figure 1. If the U-shape were a pure cohort phenomenon, the estimated age of minimum well-being would rise by one year per wave, tracing out a 45-degree line. Figure 1 shows little evidence of this. Although the estimated minimum does rise somewhat at the beginning of the sample period, there is no strong trend thereafter.

This evidence points to at least some role for a pure ageing effect. It should be borne in

mind, however, that the estimated minimum, as the ratio of two estimated coefficients, is likely measured with a certain degree of error, and as such we cannot consider Test 1's results to be definitive, but rather suggestive. What follows is a direct test of the importance of cohort effects which escape this criticism.

Test 2: Introducing individual fixed effects.

A perhaps simpler approach to the question is to introduce controls for unobserved heterogeneity. However, this method does impose some restrictions on the type of regressions that can be run. Two broad approaches are possible, corresponding to the two columns of Table 1. First, one can assume cardinality of the Caseness GHQ score and run standard "within" regressions in an OLS framework. Alternatively, the ordinality of the GHQ can be respected via the estimation of fixed effects logits, which do however require a dichotomous dependent variable. I use both methods.

The first column of Table 2 shows the results from "within" estimation of the GHQ. The remaining four columns are various flavours of fixed effect logit. I retain two different definitions of the binary dependent variable (GHQ greater than 9 on the 0 to 12 scale, and GHQ greater than 10). In addition, I estimate both unconditional fixed effect logits (which allow the individual fixed effects to be estimated, but which are biased for values of T, the number of time periods, less than infinity), and conditional fixed effect logits (unbiased for small T, but which condition out the fixed effects, which are therefore not estimated). The estimated coefficients (and their standard errors) are qualitatively similar between the conditional and unconditional specifications, suggesting that the bias from small T is not overwhelming.

At first glance, Table 2's results with respect to age seem rather similar to those in Table 1: age attracts a negative coefficient (although less significant than in Table 1) and age-squared a positive coefficient. However, the ratio of the age to (twice) the age-squared coefficient (which

reveals the age of minimum well-being) is far higher in Table 2 than in Table 1. In fact, the estimated turning point in all five columns is at or above the age of retirement (which is actually out of sample, since I only consider individuals of working age at all waves). These estimated coefficients reveal a significant ageing effect on well-being, which is negative and convex for those under the age of retirement.

The second panel of Table 2 shows the estimated coefficients on age group dummies. These tell mostly the same story: well-being falls up to middle age, and then rises only little or not at all[3]. The exception is the within regression in column 1, which assumes cardinality of the GHQ scale, where the most negative coefficients are to be found for the 35-41 and 41-47 age groups.

This finding of a mostly negative aging effect begs the question of what the fixed effects look like: this is what is often described as the cohort effect. I am able to estimate these fixed effects for the regressions in columns one to three of Table 2: their average level by year of birth is plotted in Figure 2. The results are unambiguous. The fixed (or cohort) effect in the GHQ measure of subjective well-being is strongly negatively correlated with year of birth: those born earlier report higher levels of well-being on the GHQ scale, independently of their current age[4].

Figure 3 compares the estimated fixed effects from the first graph in Figure 2 (averaged over eight age groups) with the estimated coefficients in Table 1's pooled cross-section OLS estimation. There are two points to note. The first is that the difference between the continuous and the dashed line shows the estimated negative life-cycle correlation between well-being and age: younger (older) individuals have higher (lower) levels of well-being than those predicted simply from their fixed effects.

The second point is that the estimated fixed effects are very large: the difference between those of the youngest and oldest cohort in the first panel of Table 2 is in the order of two points

on the 0-12 GHQ scale. Given the tightness of the GHQ distribution (see Appendix B), this is very substantial. By way of comparison, two points is twice the estimated effect of unemployment on well-being in pooled cross-section estimates, and is equal to the difference between having excellent health and having fair or worse health (the omitted health category in the regressions).

4. Sub-regressions and interpretation

One potential criticism of this paper is that it has not answered any questions. Rather it has replace one question (why is subjective well-being U-shaped in age?) with two new ones: what lies behind the (largely) negative aging effect and the (strongly) positive fixed effect in the relation between age and GHQ?

A first reaction might be that the GHQ is singularly unsuitable for this kind of analysis, as its constituent parts are phrased in terms of comparisons to usual. It is worth noting that the empirical literature on GHQ scores treat them unambiguously as indicators of the level of well-being, and it was for this purpose that the instrument was designed. On a practical level, the employed's GHQ is more strongly correlated with job satisfaction levels in the BHPS data than with job satisfaction changes. Last, with nine years of balanced panel data, a relatively direct test of the usefulness of the GHQ score in this respect can be envisaged. If events become more "usual" as an individual ages then the standard deviation of GHQ scores (and of its individual components) will fall with age. There is no evidence of this phenomenon in the BHPS balanced panel data.

A second thought is that the estimated fixed effects in Figure 2 look suspiciously linear, and may well be some sort of statistical artefact. One way of refuting this claim is to show that the shape of the fixed effects is very different across demographic groups. Figure 4 shows the

estimated fixed effects for first men and women, and then by three broad levels of education. It is immediately obvious that the strong cohort effect is uniquely confined to men: women's fixed effects show no correlation with year of birth. In addition, while the cohort fixed effects are positive for the low- and medium-educated, they are actually negative for the higher-educated. As such, it seems that there are real phenomena to explain: a negative life-cycle shape in well-being (after controlling for income, labour force status, marital status etc.), and very strong positive (on average) cohort effects.

In a sense it is obvious that any attempt to explain the fixed effects will be speculative, as they by definition reflect unobserved differences between individuals. I will allow myself one such piece of speculation as to why those born earlier will have higher levels of mental well-being. Researchers in a number of social science disciplines have emphasised the importance of comparisons to reference groups (Adams, 1965; Frank, 1989; Kapteyn, van Praag, & van Herwaarden, 1978; Pollis, 1968). It seems likely that one type of comparison may occur with respect to the past, and perhaps even to a certain defined period (parents' situation during the individuals' childhood, or the individual's first job, for example). Secularly rising living standards will then imply that older cohorts compare to lower levels, and will therefore report higher well-being scores.

Such comparisons to the past imply that, in the long run, the correlation between GNP per capita and individual well-being may well be small. For some recent empirical contributions to this debate, see Diener & Oishi, 2000; Easterlin, 1995; Hagerty & Veenhoven, 2000 and Oswald, 1997.

5. Conclusion

This paper has used nine waves of British panel data to conclude that subjective well-

being is U-shaped in age in cross-section data. Panel data allows us to distinguish the life-cycle or ageing component of this relationship from the fixed effect or cohort part. The results show that the ageing effect is mostly negative, whereas the cohort effect is very strong and positive. Individuals from earlier cohorts will have, *ceteris paribus*, distinctly higher levels of subjective well-being, as measured by the GHQ-12 score, than those from later cohorts. This pattern is markedly different by sex, and by level of education.

The main result may be considered as essentially negative: whereas we used to think that there was only one phenomenon to explain (the U-shape), there are now two (the negative aging effect and the positive cohort effect). This paper has not tested any theories of why this might be the case. I do note in passing that the results are consistent with reference group theory, in that those born earlier may have lower standards of comparison.

It should be stressed that this paper's result is quite specific, referring to British data and to one particular measure of well-being, the GHQ-12. It may be that other measures and other datasets will produce different results. The simple method used in this paper can be easily applied to any panel data set. The search for consistent patterns in well-being data should perhaps now pay more attention to the structure of the fixed effect.

Footnotes

* I am grateful to Andrew Oswald and Claudia Senik for useful discussions. The BHPS data were made available through the ESRC Data Archive. The data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex. Neither the original collectors of the data nor the Archive bear any responsibility for the analyses or interpretations presented here.

1. This is the conclusion reached by Easterlin & Schaeffer, 1999, using twenty years of cohort data from the General Social Survey.

2. More precisely: whether subjective well-being changes systematically in a way that cannot be explained by the standard set of explanatory variables (covering income, employment, health, demographics etc.).

3. The slight turn-ups in the estimated coefficients for the older age groups in columns two through five are not statistically significant.

4.Many will feel uneasy about this type of analysis. If I am to conclude that one cohort is happier, in a fixed effect way, than another, whatever their ages, then surely I need to observe both cohorts over the whole spectrum of ages? This appealing reaction is actually wrong. As an analogy, consider labour economists running wage equations. Panel techniques allow them to conclude that individual *i* is an innate higher earner than individual *j*, without needing to observe both *i* and *j* over the whole range of the wage distribution.

Appendix A

The twelve questions used to create the GHQ-12 measure appear in the BHPS questionnaire as follows:

1. Here are some questions regarding the way you have been feeling over the last few weeks. For each question please ring the number next to the answer that best suits the way you have felt.

Have you recently....

a) been able to concentrate on whatever you're doing ?

Better than usual 1
Same as usual 2
Less than usual 3
Much less than usual 4

then

b) lost much sleep over worry ?
e) felt constantly under strain ?
f) felt you couldn't overcome your difficulties ?
i) been feeling unhappy or depressed ?
j) been losing confidence in yourself ?
k) been thinking of yourself as a worthless person ?

with the responses:

Not at all 1
No more than usual 2
Rather more than usual 3
Much more than usual 4

then

c) felt that you were playing a useful part in things ?
d) felt capable of making decisions about things ?
g) been able to enjoy your normal day-to-day activities ?
h) been able to face up to problems ?
l) been feeling reasonably happy, all things considered ?

with the responses:

More so than usual 1
About same as usual 2
Less so than usual 3
Much less than usual 4

Appendix B

The Distribution of Well-Being in the BHPS (Inverted Caseness index of the GHQ-12)

Well-being Score	*Number of Observations*	*Cumulative Percentage*
0	562	1.44
1	489	2.69
2	553	4.11
3	618	5.69
4	749	7.61
5	874	9.85
6	1092	12.65
7	1361	16.14
8	1694	20.48
9	2278	26.32
10	3241	34.62
11	5499	48.72
12	20012	100.00
Total	**39022**	**100.00**

Source: BHPS Waves One to Nine, Balanced Data.

TABLE 1. GHQ REGRESSIONS. BHPS WAVES 1 TO 9 POOLED

	Pooled OLS	*Pooled Ordered Probit*
Male	0.596	0.255
	(.033)	(.013)
Age	-0.110	-0.037
	(.010)	(.004)
Age-squared/1000	1.416	0.501
	(.129)	(.053)
Self-employed	-0.117	-0.046
	(.051)	(.021)
Unemployed	-1.059	-0.397
	(.074)	(.029)
Retired	-0.213	-0.085
	(.089)	(.037)
Family care	-0.398	-0.185
	(.116)	(.046)
FT student	-0.366	-0.123
	(.053)	(.021)
Long-term sick/disabled	-0.447	-0.214
	(.106)	(.042)
Maternity leave	-1.472	-0.503
	(.084)	(.032)
Government training scheme	-0.731	-0.288
	(.293)	(.117)
Something else	-1.152	-0.454
	(.322)	(.125)
Yearly labour income	-0.153	-0.067
	(.021)	(.009)
Yearly non-labour income	-0.134	-0.055
	(.056)	(.022)
Yearly income: others in household	0.075	0.034
	(.013)	(.005)
Education: High	-0.287	-0.138
	(.038)	(.016)
Education: A/O/Nursing	-0.035	-0.016
	(.037)	(.015)
Health: Excellent	1.988	0.810
	(.042)	(.017)
Health: Good	1.552	0.569
	(.036)	(.014)
Married	0.034	0.003
	(.047)	(.019)
Separated	-1.065	-0.363

	(.103)	(.040)
Divorced	-0.250	-0.085
	(.066)	(.027)
Widowed	-0.544	-0.225
	(.119)	(.047)
One Child	0.038	0.021
	(.043)	(.017)
Two Children	0.165	0.062
	(.045)	(.018)
Three+ Children	0.021	0.008
	(.066)	(.026)
Region dummies (18)	Yes	Yes
Wave dummies (9)	Yes	Yes
Constant	10.732	---
	(.200)	
N	38912	38912
Log Likelihood	---	-65711.6
Log Likelihood at zero	---	-67986.9
Adjusted R-squared	0.1138	---
Estimated Age of Minimum Well-Being	***38.7***	***36.8***

Estimated coefficients on age dummy variables

16-22	Ref.	Ref.
22-28	-0.118	-0.048
	(.075)	(.031)
28-35	-0.308	-0.103
	(.078)	(.032)
35-41	-0.411	-0.132
	(.08)	(.033)
41-47	-0.410	-0.106
	(.081)	(.033)
47-53	-0.209	-0.034
	(.084)	(.034)
53-60	0.121	0.106
	(.09)	(.037)
60-65	0.178	0.105
	(.116)	(.048)

Note: Standard errors in parentheses.

TABLE 2. PANEL GHQ REGRESSIONS.

	"Within"	*FE logit Unconditional (GHQ>9)*	*FE logit Unconditional (GHQ>10)*	*FE logit Conditional (GHQ>9)*	*FE logit Conditional (GHQ>10)*
Age	-0.164	-0.156	-0.124	-0.138	-0.110
	(.065)	(.081)	(.076)	(.076)	(.072)
Age-squared/1000	1.268	1.113	0.873	0.986	0.771
	(.236)	(.303)	(.28)	(.285)	(.263)
Self-employed	-0.032	-0.031	-0.087	-0.028	-0.077
	(.079)	(.096)	(.090)	(.090)	(.085)
Unemployed	-1.187	-1.044	-0.913	-0.915	-0.802
	(.077)	(.089)	(.086)	(.083)	(.081)
Retired	-0.247	-0.284	-0.118	-0.249	-0.103
	(.101)	(.130)	(.123)	(.122)	(.115)
Family care	-0.640	-0.772	-0.685	-0.680	-0.604
	(.108)	(.126)	(.119)	(.118)	(.111)
FT student	-0.510	-0.580	-0.503	-0.511	-0.444
	(.066)	(.077)	(.073)	(.073)	(.068)
Long-term sick/disabled	-0.452	-0.465	-0.527	-0.410	-0.465
	(.109)	(.127)	(.118)	(.119)	(.111)
Maternity leave	-1.328	-0.990	-1.100	-0.870	-0.966
	(.109)	(.127)	(.126)	(.119)	(.118)
Government training scheme	-0.717	-0.626	-0.538	-0.550	-0.472
	(.272)	(.329)	(.332)	(.309)	(.311)
Something else	-0.642	-0.537	-0.434	-0.474	-0.384
	(.307)	(.354)	(.338)	(.333)	(.317)
Yearly labour income	-0.085	-0.098	-0.100	-0.086	-0.088
	(.028)	(.037)	(.035)	(.035)	(.032)
Yearly non-labour income	0.035	0.003	-0.072	0.002	-0.064
	(.064)	(.083)	(.068)	(.078)	(.064)
Yearly income: others in household	0.005	0.002	0.008	0.001	0.007
	(.016)	(.021)	(.019)	(.020)	(.018)
Education: High	0.049	0.051	0.136	0.044	0.120
	(.124)	(.153)	(.141)	(.144)	(.132)
Education: A/O/Nursing	0.086	0.048	0.210	0.041	0.184
	(.129)	(.158)	(.146)	(.149)	(.137)
Health: Excellent	1.140	1.082	1.052	0.954	0.928
	(.049)	(.060)	(.056)	(.056)	(.052)
Health: Good	0.900	0.741	0.731	0.652	0.644
	(.039)	(.044)	(.043)	(.041)	(.040)
Married	0.204	0.246	0.249	0.218	0.221
	(.092)	(.112)	(.102)	(.106)	(.096)
Separated	-0.534	-0.291	-0.400	-0.255	-0.351
	(.141)	(.164)	(.155)	(.154)	(.145)
Divorced	0.253	0.374	0.336	0.331	0.298
	(.132)	(.155)	(.145)	(.146)	(.136)
Widowed	-1.244	-0.602	-0.440	-0.529	-0.386
	(.232)	(.266)	(.256)	(.249)	(.240)
One Child	0.056	0.047	0.054	0.042	0.048

	(.054)	(.066)	(.062)	(.062)	(.058)
Two Children	0.272	0.266	0.227	0.235	0.200
	(.067)	(.082)	(.076)	(.077)	(.071)
Three+ Children	0.067	0.106	0.116	0.094	0.102
	(.095)	(.112)	(.106)	(.106)	(.099)
Region dummies (18)	Yes	Yes	Yes	Yes	Yes
Wave dummies (9)	Yes	Yes	Yes	Yes	Yes
N	38912	27146	30013	27146	30013
Constant	13.314	---	---	---	---
	(2.284)				
Log Likelihood	---	-14229.5	-16249.4	-10692.7	-12268.4
Log Likelihood at zero	---	-14272.5	-16292.0	-10724.8	-12299.1
Estimated Age of Minimum Well-Being	***64.7***	***70.1***	***71.0***	***70.0***	***71.3***
16-22	Ref.	Ref.	Ref.	Ref.	Ref.
22-28	-0.119	-0.204	-0.219	-0.181	-0.194
	(.086)	(.106)	(.097)	(.099)	(.091)
28-35	-0.311	-0.462	-0.437	-0.409	-0.387
	(.123)	(.150)	(.138)	(.141)	(.130)
35-41	-0.417	-0.611	-0.546	-0.541	-0.483
	(.157)	(.191)	(.177)	(.179)	(.166)
41-47	-0.394	-0.771	-0.524	-0.683	-0.464
	(.191)	(.232)	(.216)	(.219)	(.203)
47-53	-0.187	-0.608	-0.438	-0.539	-0.388
	(.224)	(.273)	(.254)	(.257)	(.239)
53-60	0.007	-0.571	-0.394	-0.506	-0.349
	(.259)	(.318)	(.296)	(.299)	(.278)
60-65	-0.007	-0.623	-0.508	-0.553	-0.451
	(.300)	(.372)	(.346)	(.349)	(.326)

FIGURE 1. ESTIMATED MINIMUM OF THE U-SHAPE, BY WAVE

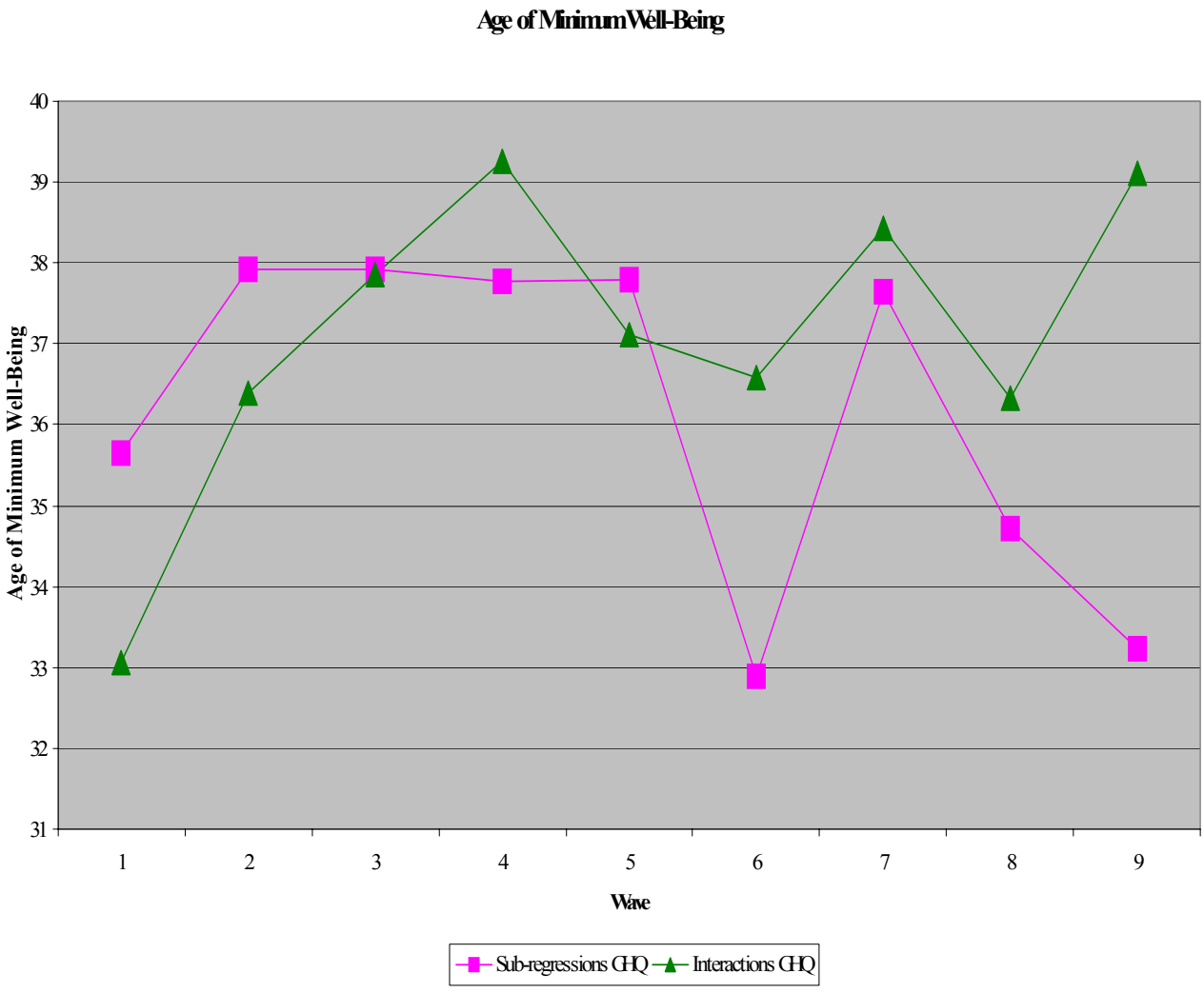
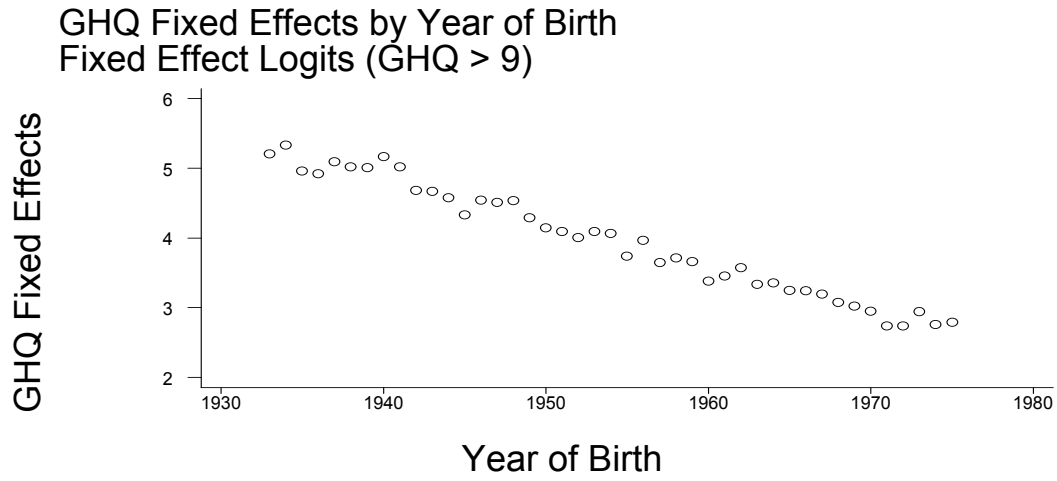


FIGURE 2. FIXED EFFECTS BY COHORT



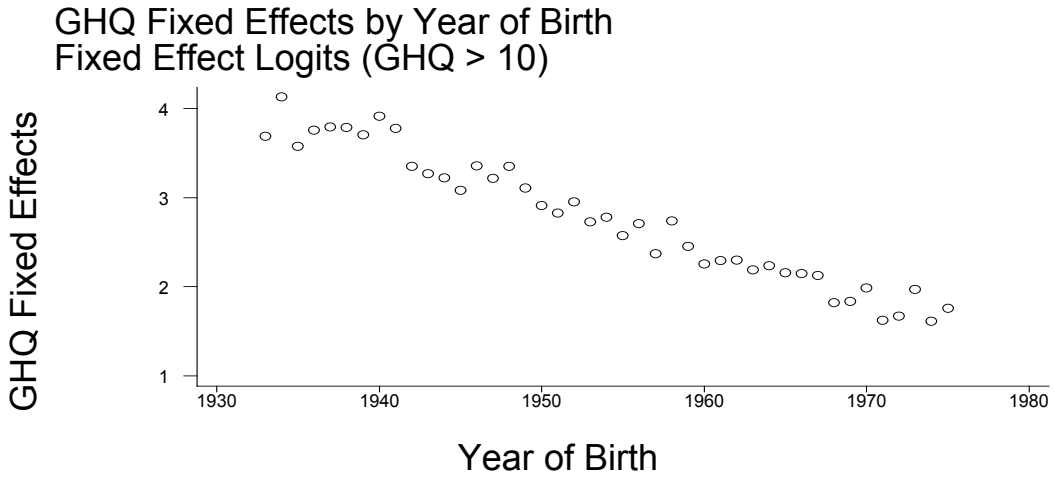


FIGURE 3. THE AGE-WELL-BEING U-SHAPE IN POOLED DATA, AND ESTIMATED FIXED EFFECTS

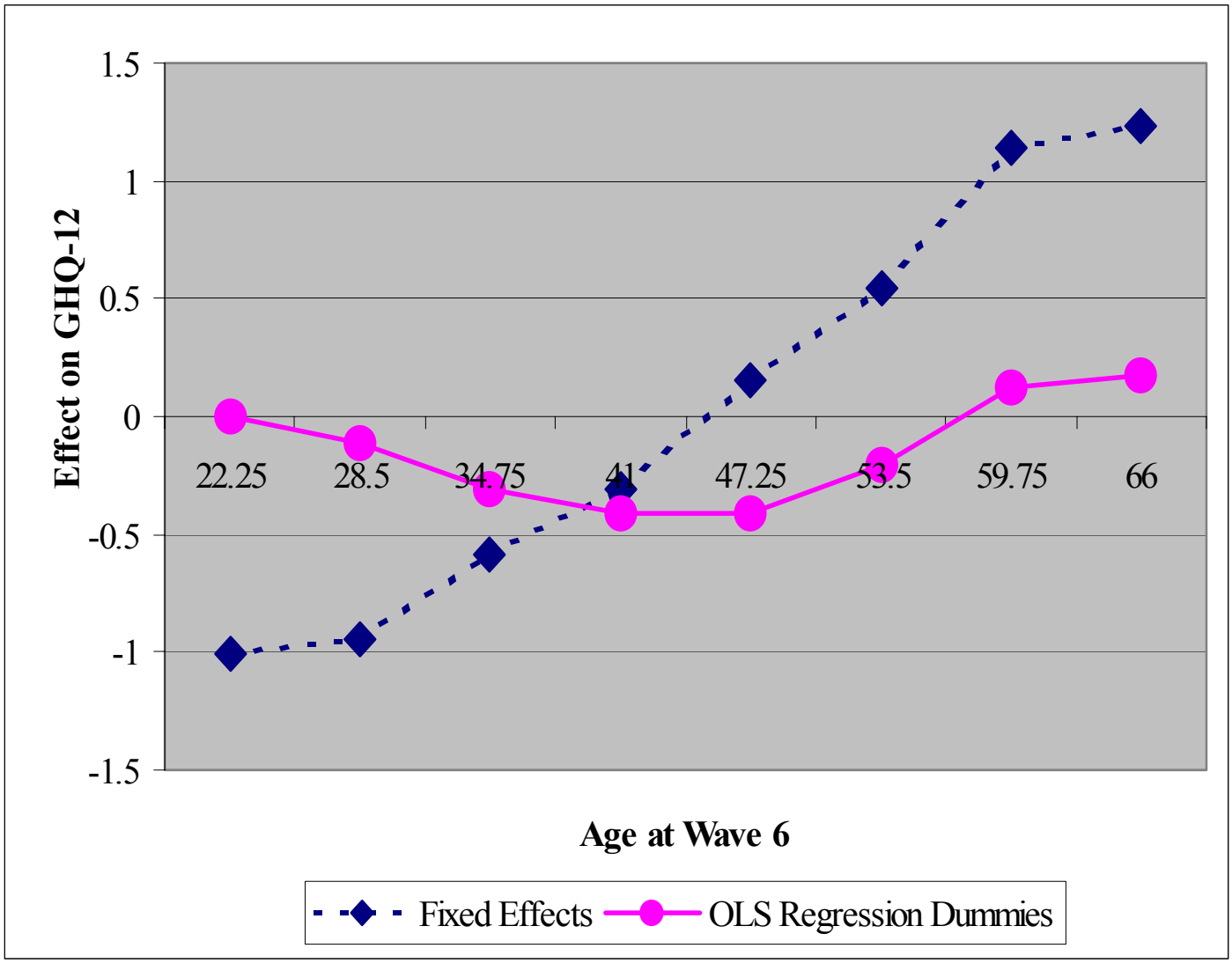
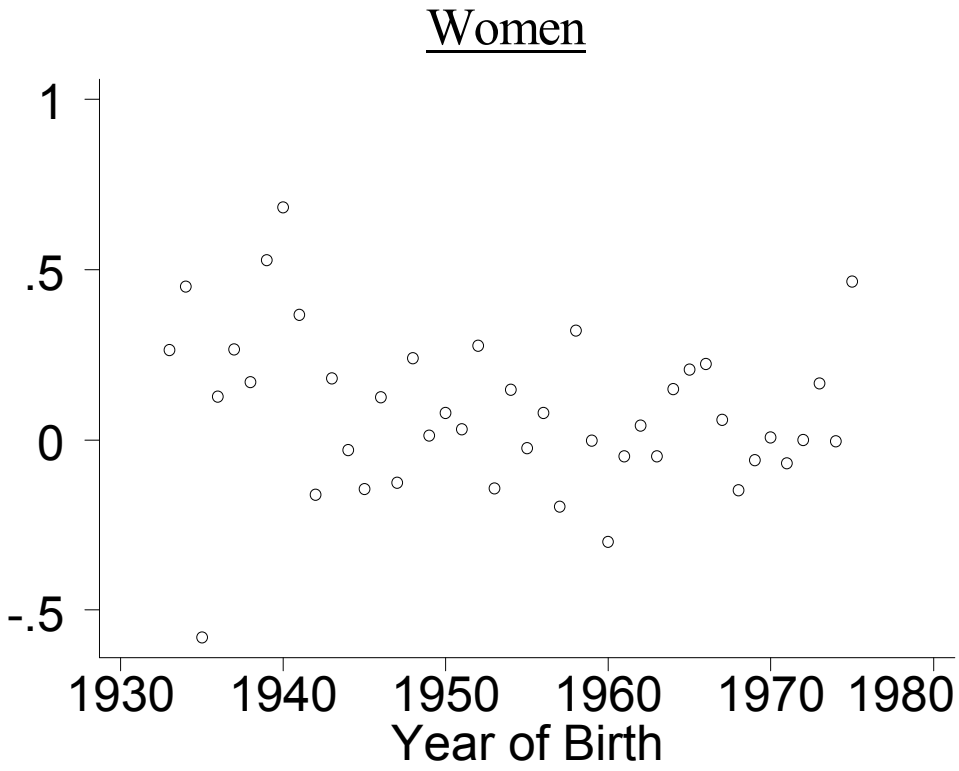
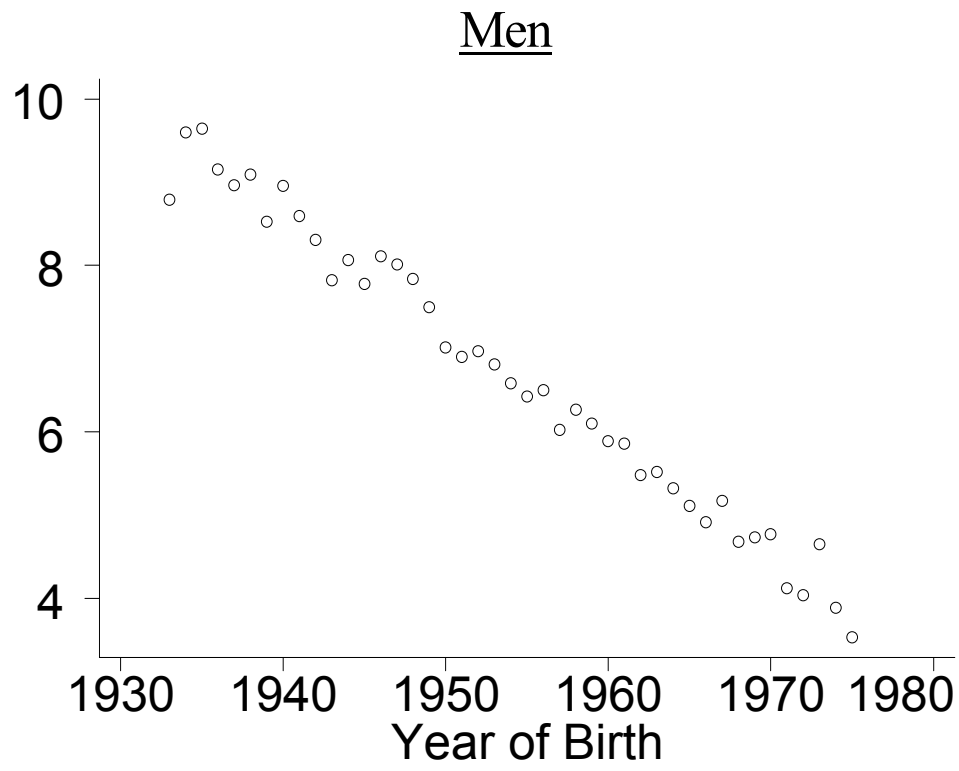
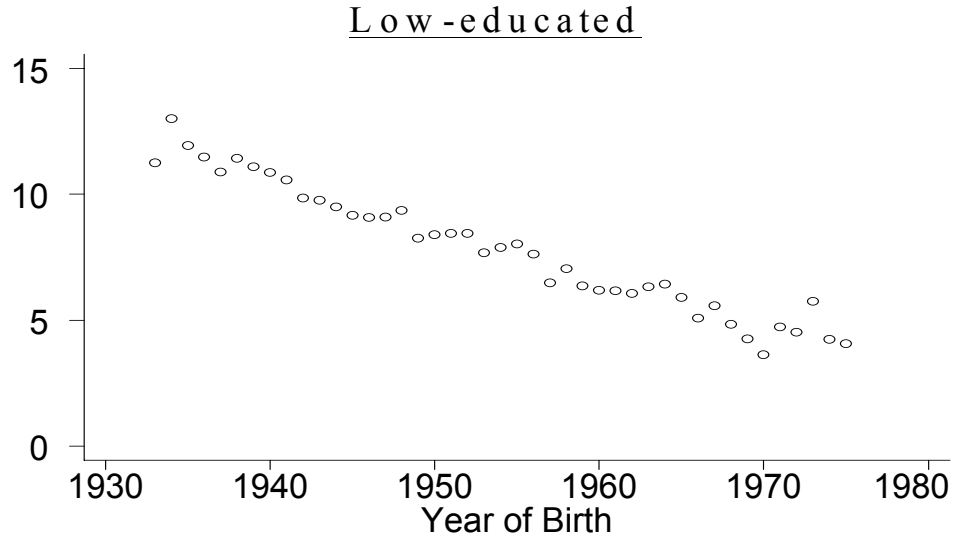
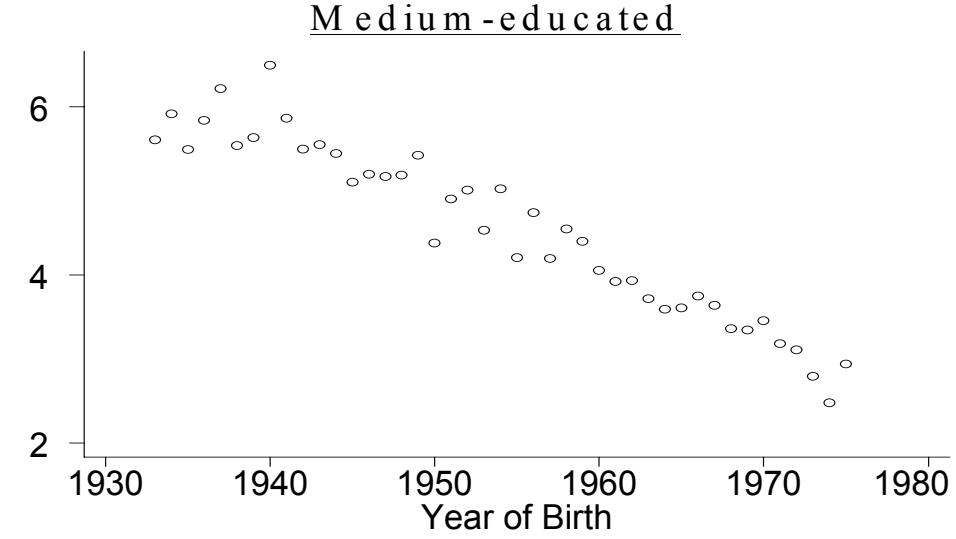


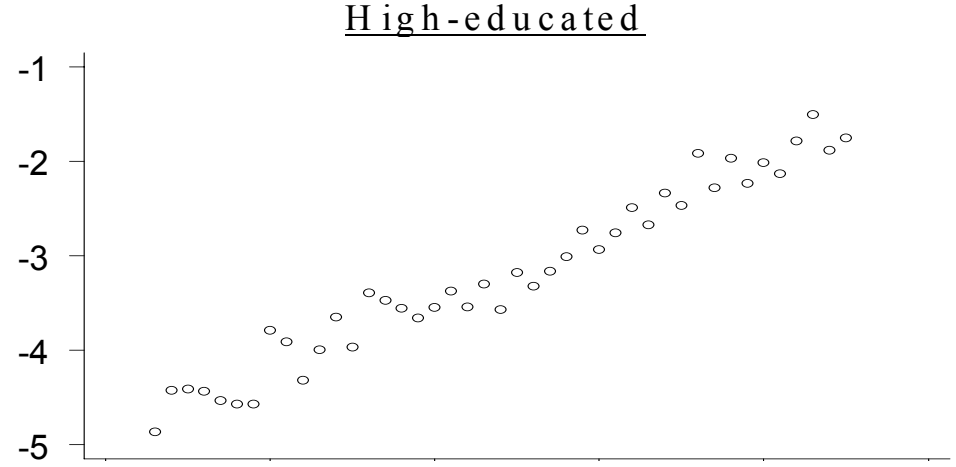
FIGURE 4. FIXED EFFECTS BY COHORT: RESULTS BY SEX AND BY EDUCATION






Low-educated
15
10
5
0
1930
1940
1950
1960
1970
1980
Year of Birth


Medium-educated
6
4
2
1930
1940
1950
1960
1970
1980
Year of Birth


High-educated
-1
-2
-3
-4
-5

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