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Early motherhood and mental health in midlife: a study of British and American cohorts

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Abstract

Objectives—Examine the relationship between early age at first birth and mental health among women in their fifties.

Methods—Analysis of data on women from a British 1946 birth cohort study and the US Health and Retirement Study birth cohort of 1931-41.

Results—In both samples a first birth before 21 years, compared to a later first birth, is associated with poorer mental health. The association between early first birth and poorer mental health persists in the British study even after controlling for early socioeconomic status, midlife socioeconomic status, and midlife health. In the US sample, the association becomes non-significant after controlling for educational attainment.

Conclusions—Early age at first birth is associated with poorer mental health among women in their fifties in both studies, though the pattern of associations differs.

Keywords

birth timing; mental health; aging

Introduction

A number of studies establish that early childbearing, especially teenage childbearing, is associated with a range of poorer outcomes at various points across the life course, including lower socioeconomic status, poorer physical health, and higher mortality (Coley & Chase-Landale, 1998; Geronimos & Korenman, 1992; Grundy & Tomassini, 2005; Henretta, 2007; Hofferth & Moore, 1979; Kington *et al.*, 1997). In addition, studies of common mental health problems, such as anxiety, depression, and neuroticism, show women with an early first birth have worse scores at various intervals after the first birth. These latter studies have mostly focused on early adulthood. The analysis presented here uses data from a US and a

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British cohort to examine firstly, whether the mental health disadvantage associated with a young age at first childbirth extends into the sixth decade of life and secondly, to see whether any continuing disadvantage associated with early childbearing persists once disadvantage during childhood, adverse midlife socioeconomic circumstances, and physical health are taken into account.

While previous research has shown a link between early motherhood and poorer mental health near the time of birth (Deal & Holt, 1998; Simms and Smith, 1986; Wagner *et al.*, 1998), in early adulthood (Kalil & Kunz, 2002; McGee *et al.*, 1983;), and at follow-up ranging up to 22 years (Liao, 2003; Williams *et al.*, 1997), little attention has been given to longer term associations. The few investigations that include both younger and older women (e.g., Mirowsky & Ross, 2002) do not consider whether timing of first birth has different associations with mental health at different points in the life course or place the analysis in a cohort context. By focusing on the sixth decade of life, the research reported here adds to a literature that has focused on shorter-term linkages. Additionally our analysis adds cohort context to the existing literature on the association of birth timing and mental health in recognition of the fact that the timing of childbearing takes place in a specific historical context that provides social meaning to childbearing patterns and may affect their long-term implications.

Timing of Childbearing and Later Mental Health

Previous research indicates several potential pathways between early childbearing and later mental health. The disadvantaged situation and poorer mental health of early mothers may, for example, be a result of adverse childhood circumstances that are also independently associated with early motherhood (Chase-Lansdale & Kiernan, 2004; Geronimus & Korenman, 1992). Alternatively, young motherhood may have an impact on other outcomes in young and mid adulthood that are themselves correlated with mental health. Previous work suggests that these outcomes include education and income (Hofferth & Moore, 1979; Ross and Huber, 1985), employment (Macran *et al.*, 1996; Waldron *et al.*, 1998), and partners' employment (Ermisch & Pevalin, 2003; Hofferth & Moore, 1979).

A further associated risk of early motherhood is poorer family functioning even among those with high levels of employment and educational attainment (Department for Education and Science Teenage Pregnancy Unit, 2005). Younger mothers tend to experience higher levels of partnership instability (Kalil & Kunz, 2002), and past experience of divorce or separation, rather than current partnership status, may account for part of the association between early motherhood and mental health (Liao, 2003). Partnership status around the time of first birth may be critical. Kalil & Kunz (2002) found that absence of a cohabiting partner at that time accounted for most of the association between teenage motherhood and poor mental health at ages 27-29 years. Young mothers may have less social support than older mothers because of differences in their lifestyle, and they may be more likely than older mothers to experience family estrangement (Hofferth & Moore, 1979; Moffitt *et al.*, 2002).

Poor physical health is a common co-morbidity with psychological distress (Kuh *et al.*, 2002; Liao, 2003) and is more prevalent among women with a younger age at first birth (Kington *et al.*, 1997; Moffitt *et al.*, 2002). Younger age at first birth may adversely affect the mother's physical health (Grundy & Tomassini, 2005), and the later socioeconomic disadvantage of early motherhood may also lead to poorer physical health (Miech & Shanahan, 2000; Mirowsky & Ross, 2002; Waldron *et al.*, 1998;).

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The Cohort Context

The present research focuses on two well-defined cohorts, one in the US and one in Britain, who were born ten years apart, on average, but are both observed in their fifties. Both cohorts include mothers of the post-war baby booms in their respective countries. Compared to other twentieth-century cohorts, they experienced early and high fertility although, unlike in contemporary cohorts, most early childbearing occurred within marriage. Because early marital childbearing was a quite common life course pattern, early mothers in these cohorts were probably less selected than in either preceding or succeeding cohorts and hence less likely to reflect the high level of selective disadvantage that characterizes contemporary early mothers (e.g., Coley & Chase-Lansdale, 1998). Although similar with regard to their relatively high and early fertility pattern (in the context of the two countries considered) there are some interesting and important differences between the US and British cohorts. The British cohort was born in 1946 at the end of a war which had ravaged Britain but had also seen a substantial upsurge in an ethos of collective action and welfare provision. They were born two years before the National Health Service began and they represent the first British generation who hoped to experience the 'cradle to grave' security afforded by the Welfare State. The US cohort was born between 1931 and 1941. Its older members spent their childhood during a period of economic depression. Cohort members were affected by WWII during part of their childhood or early adolescence, but this had a much lesser effect on the US than on Britain.

Research questions

We analyze associations between age at first birth and mental health in later midlife. Following the earlier literature, we expected to find that those who had a child earlier, particularly before age 21, had worse mental health than women who became mothers later, but the question we address specifically is whether this is still apparent once early and midlife circumstances are taken into account.

Methods

The Health and Retirement Study (HRS) (the US study) is a probability sample of the US non-institutionalized population (Juster & Suzman, 1995). The data used here come from the 1992 interview of the original HRS cohort who were born 1931-41 and were aged 51-61 at the interview when a great deal of retrospective data were collected. The response rate to this interview was 82 percent. Sampling weights are used in the analysis to adjust for these over samples of African Americans, Hispanics, and residents of Florida.. The analysis is limited to women with children. There were 5167 age-eligible women, of whom 4766 had living children. After deletions for missing data, there were 4430 women with complete data or 93 percent of women with children.

The MRC National Survey of Health and Development (the British study) is a socially stratified sample of all single, legitimate births occurring in Britain during the week 3-9 March 1946, consisting of 2547 women and 2815 men (Wadsworth *et al.*, 2003). Data collection began at birth, and the sample has been followed up throughout life, most recently at age 53 years. Sampling weights are used to adjust for the 1946 under-sampling of babies whose fathers were in manual employment. At the age 53 data collection in 1999, 1520 of the original 2547 women responded. Sample attrition resulted from death (7.7 percent of the original female sample), emigration (8.0 per cent), temporary and permanent refusal (14.3 per cent), and inability to contact or get a response (10.2 percent). Of the 1999 respondents, 1324 had children. After deletions for item missing data, there were 1062 women in the final analysis, or 80 percent of the 1999 respondents with children.

Variables

Our primary interest is in mental health, but because of the strong association between physical and mental health, we present models for number of health conditions, and level of disability, as well as mental health. The different measures of a*dult mental health* available in the two data sets measure overlapping concepts. The US study measures psychological distress and symptoms of depression using eleven items (Steffick, 2000) from the twenty-item Center for Epidemiologic Studies Depression Scale (CES-D), originally developed for survey measurement of depressive symptoms (Radloff, 1977), and used extensively (Schwartz, 2002; Steffick, 2000). Each item requests a frequency response, ranging from never to almost all the time. The analysis utilizes a predicted score for the full 20-item CES-D, using the linear transformation developed by HRS staff from the National Longitudinal Surveys – Mature Women sample interviewed with the full 20-item instrument at the same age. (Steffick, 2000: 24).[1] The British study uses a different measure -- the General Health Questionnaire-28 (GHQ-28), a validated measure of mental health designed to detect symptoms of depression as well as anxiety and somatic problems (Goldberg and Hillier, 1979; Singleton *et al.*, 2003).

Information on *number of health conditions* comes in the US study from respondents' reports of six doctor-diagnosed conditions (heart disease, stroke, high blood pressure, diabetes, cancer, and chronic lung diseases other than asthma) and six other self-diagnosed ailments. Details on this and all measures are available from the Health and Retirement Study (2006) website. In the British study respondents were asked by a nurse if they had had any of a check list of 27 serious conditions; the list included all the doctor-diagnosed conditions from the US study. In the analysis this was summed into the following categories: (0,1,2,3, 4+).

Disability in the US data is a score ranging between 0 and 36 based on summed reports of whether performing 13 specified activities was not at all difficult (coded 0), a little difficult (1), somewhat difficult (2), or very difficult (including "can't do" or "don't do) (coded 3). Examples of activities include walking various distances, climbing stairs, lifting weights, and pushing or pulling a large object. In the British study, disability was measured by a count (scored 0,1,2,3,3+) of the number of difficulties with everyday activities because of long-term health problems, including walking for a quarter of a mile on the level, holding and opening things, reaching up or back, and balance.

The main analytic interest centers on the association between *timing of first birth* and these outcomes. In the US study, information on respondents' childbearing histories is derived from a roster of living biological children, including each child's age. In combination with mother's birth year, these data allowed calculation of the timing of first birth. The data exclude children who have died as well as children who may have been given up for adoption at birth. Omission of adoptions is probably most likely to affect women with non-marital births and younger women. The roster also excludes pregnancies that ended in abortion, miscarriage or stillbirth, though these pregnancies might also have later mental health consequences. In the British study age at first birth was derived using interview data from multiple time points, and comprises all known live births; again pregnancies ending in miscarriage, abortion or stillbirth are omitted. In both samples age at first birth is divided into three groups: age 20 or younger, ages 21-24, and ages 25 and older.[2]

We also include *number of children* which is correlated with age at first birth. Number of children in the US study is number of living children, and it is divided into biological and

[1]The regression-based linear transformation is: (Predicted standard 20-item CES-D) = 1.6212 * (11-item CES-D score) + .7415.

step children. The living children measure is the only one available for all respondents. Number of children in British study is number of children ever born.

Other covariates are measured at one of three life course points: before first birth; adolescence/early adulthood around the time of first birth, and in midlife. Early measures include childhood socioeconomic circumstances and, in the US study, race-ethnicity and immigration status.

Childhood socio-economic circumstances are measured by father's education in the US study coded in six categories of years completed. In the British study the measure of childhood social class, manual vs. non-manual, was determined from records of the father's occupation when the survey member was aged 11 years if available, otherwise at age 15 years, and otherwise at age 4 years.

Race-ethnicity in the US study is measured in five categories: black, Hispanic-English interview, Hispanic-Spanish interview, white, and other. Black Hispanics are included in the black category. Language of interview is included because previous work (Mills & Henretta, 2001) has indicated marked differences between these groups in the HRS data. *Time in the US* by 1992 is also included to allow for acculturation effects. This variable is coded in four categories: native born, 30 or more years, 11-29 years, and 10 or fewer years. Ethnicity data were not collected in the NSHD as it is only more recently that the UK population has become more ethnically diverse. The 2001 Census showed that 96.5% of the population aged 50 and over described their ethnicity as 'white,' although this group does include some members of minority groups, such as those of Irish descent.

Two variables are measured in early adulthood or around the time of first birth: level of schooling completed and marital status at the time of first birth. *Education* is an interval measure of number of years completed in the US study, ranging from 0 to 17. In the British study, we used a categorical measure of the highest levels of educational and training qualifications at age 26 years: no qualifications; up to GCE O-level (qualifications up to and including those usually taken at age 15-16 years at the end of compulsory schooling); A levels or higher (qualifications usually taken at age 17-18, diplomas, and graduate or postgraduate degrees).

Marital status at first birth in the US study is determined using the age of the oldest living child and the respondent's marital history that includes the beginning and ending dates of marriages. In the British study, this variable is marital status (married/unmarried), defined by marriage prior to or in the same year as the first child's birth.

Finally, we measure several characteristics in later midlife – at ages that vary between 51 and 61 in the US study and age 53 in the British study. These include: partnership status, current employment, social support, and household socioeconomic circumstances with three indicators: household income, housing tenure, and occupation. In both data sets, midlife *partnership* is a dichotomous measure indicating whether or not the respondent is married or living with a partner. In the British data, the variable was constructed using marital status and household relationships. Non-married persons were included in the partnered category if there was positive evidence of living with a partner; otherwise they were considered non-

[2]The choice of cutpoints for the early birth measure was based on inspection of a dummy variable regression for each country, using individual ages at first birth. The data suggested that age 20 or younger would be most appropriate for the British sample and age 19 or younger would be appropriate for the US sample. We adopted one definition for both countries to produce a more parallel analysis. In preliminary work, we estimated alternate models for the US using the age 19 and younger cutpoint. The coefficients for early birth were greater in equations one and two, but the pattern of results was similar to those reported in Table 2, with early birth becoming non-significant when education is added to the equation. The one difference is that in equation 6, neither of the age at first birth contrasts is significant when the age 19 cutpoint is used.

partnered. *Current employment* is a dichotomous indicator of whether the respondent is currently working for pay. Socioeconomic circumstances in adulthood are measured in the same way in both samples using three indicators. *Household occupational social class* is measured by a manual-non-manual dichotomy, distinguishing women in households in which either or both partners had a non-manual job from those in which neither did. *Household annual income* is measured in thousands before-tax or deductions. The US measure is an interval dollar household income. In the British study, the income data were collected in categories in pounds; these are transformed using midpoints of each group. The highest category, £50,000 or more, included 7.5 percent of respondents and was coded as £50,000. *Housing tenure* is a dichotomous indicator of whether the respondent's household lives in owner occupied housing.

Finally, we include *social support* indicators that are measured differently in each data set. In the US data set, respondents were asked: "Among your nearby neighbors… the ten to fifteen families living closest to you, how many of the adults would you know by name…?" The responses are coded: all (1), most (2), some (3), none(5). A second measure: "How often do you get together with… these neighbors…?" has responses coded 1-6, ranging from daily to don't know any neighbors. In the British study, respondents were asked whether they would get help in a crisis, with responses always, often, sometimes, and no (coded 1-4). In both studies, the social support variables are coded so that a higher score indicates less social support. There are other social support measures in each data set, but none of the others in either data set were statistically significant alone or in combination with the entire set.

Analysis Plan

The central research questions in our analysis focus on the association of early motherhood with mental health in the sixth decade of life. Are the two associated? If so, do variables determined preceding a first birth, around the time of first birth, or those intervening between a first birth and late midlife account for the association? Associations do not necessarily imply causation, particularly for the midlife measures whose reference date is the present, the same reference time as the mental health measures. Even if inclusion of a mid-life measure accounts for the early birth-mental health association, the data are equally consistent with different causal hypotheses. Nonetheless, the analysis can provide insight into the constellation of factors that link childbirth timing and later mental health.

Results

Table One presents univariate statistics for the US sample in the left panel and the British sample in the right panel. The first column in each panel presents overall results and the following columns show results for each age at first birth group. Well over one-third (37.3 percent) of the US sample consists of mothers with a first birth before age 21. The British percentage with an early birth, 25.7 percent is lower than the US estimate, but nevertheless substantial. The overwhelming majority of first births in both countries are marital births even though women with a birth before age 21 are more likely than other mothers to be unmarried at the time of first birth..

The means and frequencies for different age at first birth groups indicate a general pattern of adversity among early mothers. Early mothers in the US are more likely to be African American, more likely to have fathers with low educational attainment or not to report father's education, and are less likely to have been married at first birth. Having no report on father's education probably indicates an absent father or one with low educational attainment. Perhaps partly because of their early childbearing, these women also have lower educational attainment of their own. This disadvantage continues into midlife, with lower

income, lower household occupational attainment, lower home ownership rates, and slightly lower rates of midlife partnership. Finally, early mothers show a higher (worse) score on the CES-D, more physical health conditions, and greater disability.

The British study indicates a similar pattern of lifetime disadvantage. Early mothers are more likely to have fathers in manual occupations, obtain fewer qualifications themselves, and are more likely to be unmarried at first birth. Early British mothers show the same pattern of midlife disadvantage and poorer mental and physical health as their US counterparts.

US Study Results

Tables Two (for the US) and Three (for Britain) use OLS multiple regression to estimate the association of early childbearing and a continuous mental health outcome (Kessler, 2002) in later life.[3] We describe results from the two tables separately. In Table Two, the left panel presents CES-D results for the US sample while the right panel presents results for health conditions and disability. Model one shows that women with births at ages 21 and older have lower levels of depressive symptoms in midlife, controlling for the number of their own and step children. Model two adds characteristics that are unequivocally determined before a first birth. African Americans show a higher level of symptoms as do Hispanics who received the Spanish interview. Length of time since immigration, contrasted to native born, is not significant. Results for father's education indicate that those with low levels of father's education and those unable to provide their father's education have higher symptom levels. Controlling for these early characteristics reduces the association between early childbirth and CES-D by about 40 percent, but it remains substantial in size and statistically significant.

Model three adds the woman's educational attainment, and model four adds marital status at the time of first birth. There is no clear causal ordering to these variables and age at first birth because they occur around the same time. They are added in separate models to elucidate their different associations. The addition of educational attainment indicates that a higher levels of educational attainment are associated with a lower (better) CES-D score. Holding education constant, age at first birth is no longer statistically significant and the estimates hover around zero. After adjusting for their lower level of schooling, long-term immigrants have lower levels of depressive symptoms. The inclusion of education absorbs a substantial part of the association of father's education with mental health. The addition of marital status at first birth in the next equation does not alter other associations but does indicate that being unmarried at first birth is associated with a higher CES-D score.

Equations five and six add midlife characteristics. In equation five, higher income, owning a home, being currently employed, and living with a partner are all associated with a lower CES-D scores. Less social connectedness (indicated by a high score on the two neighbor variables) is associated with higher CES-D scores. The addition of these midlife characteristics reduces the size of a number of coefficients that reflect earlier life course events – suggesting these earlier measures have an association with CES-D that is mediated by late midlife attainments. The contrast between whites and African Americans is reduced to less than half its previous size and is no longer statistically significant. The coefficient for

[3]The outcome measure, the CES-D and the GHQ-28 are both skewed to the right. The large number in both samples mean that the sampling distributions of regression coefficients are likely to approximate the t-distribution. In preliminary work, we estimated the models allowing a gamma error which yielded results generally parallel those reported. However, the large number of zero values in the British data prevented convergence of model 6 (probably due to negative predicted values during the maximum likelihood iterative estimation).

education is reduced to two-thirds its previous size and the unmarried at first birth coefficient declines to half its previous size.

The final model adds midlife health and disability to the model. More health conditions and greater disability are associated with higher levels of depressive symptoms. Because of the strong association of health and disability with both birth timing and CES-D scores, inclusion of these variables result in a reversal of the age at first birth coefficients. Holding health and disability constant, women who became mothers later have more mental health symptoms. The coefficient for marital status at first birth is no longer significant.

The right panel of the table presents models for health conditions and disability. Current employment is not included in these models because it may result from poor health. Models 7 and 8 indicate the large association between age at first birth and both disability and health conditions. These associations are reduced but remain substantial and statistically significant after adjusting for all the variables in the model.

British Study Results

Table Three presents results for the British sample. Model one indicates a J-shaped relationship between early motherhood and mental health: early mothers have worse scores on the GHQ-28 than those with a first birth at ages 21-24, with women who had their first birth at age 25 and older falling in-between. This pattern is maintained across all the models for GHQ-28, and the contrast between a first birth before 21 versus a first birth at ages 21-24 is consistently statistically significant. Model two indicates that childhood socioeconomic status, measured by father's occupation, does not have a significant association with midlife mental health. Models three and four add characteristics measured around the time of childbearing. Unlike the US results, a woman's level of qualifications and her marital status at the time of her first birth do not have significant associations with midlife mental health, and their inclusion leaves the age at first birth coefficients virtually unchanged. The addition of midlife characteristics in model five indicates that those currently employed have better mental health and those who report less social support have worse mental health.

In model six, women with worse health or more disability have higher GHQ-28 scores. Inclusion of these variables reduces the association of early birth with mental health, but the contrast between a first birth at ages 21-24 versus earlier remains significant and is about two-thirds its size in equation 3.

The right-hand panel of Table 3 presents results for health and disability. Birth timing has no association with number of health conditions, but those with more children, a manual household occupation, non-home owners, and those with less social support report more health conditions. Surprisingly, those with qualifications at the A-level or above report more health conditions net of other variables. Early motherhood is strongly associated with reported disability in model 8, an association that persists in model 9 after other variables are added to the model. Midlife characteristics of income, household occupation, home ownership and social support have associations in the expected direction. Those who are currently partnered report higher levels of disability, an unexpected result.

Conclusion

Results in both studies indicate that women who first give birth at a younger age experience a higher level of common mental disorders long after the birth itself. Early mothers in both countries are more likely to come from low socioeconomic backgrounds, but in both samples the association between early motherhood and midlife mental health remains statistically significant after controlling for measured socioeconomic background.

In the US, the association between early childbearing and later depressive symptoms is mediated by the woman's own level of education. In turn, about half of the total association between her education and later mental health is due to the association of education with later midlife attainments, including health and disability. These results imply that early mothers who nevertheless attain a high level of education (perhaps indicating greater psychological resilience) do not suffer later poorer mental health. Marital status at first birth is also associated with higher levels of midlife depressive symptoms, but over two-thirds of this total association is due to the association of early marital status with midlife characteristics. Health and disability have strong associations with early birth in the US study, consistent with existing research (Kington *et al.*, 1997; Waldron *et al.*, 1998), and our analysis links both to poorer midlife mental health. In sum, the analysis of the US data suggests that events around the time of first birth – educational attainment and marital status – set the stage for later socioeconomic and health characteristics, all of which are associated with midlife mental health.

The British results also indicate a substantial association between early motherhood and mental health in the sixth decade of life but do not lend themselves to a simple description of process. Early motherhood has a significant association with poor mental health in all the models, but the relationship appears to be J-shaped. The size of the early birth association is reduced by about one-third by inclusion of midlife measures but it remains statistically significant.

The robustness across studies in the overall association between early motherhood and midlife mental health despite differences in the data sets is particularly noteworthy. On the other hand, differences in results between the two studies might be a result of these differences in measurement. Most obviously, the two data sets utilize different measures of the mental health outcome, and many of the variable definitions differ between studies as well. In addition, the two studies follow different data collection strategies. The British data used a panel design in which events were measured near the time of their occurrence, but there has been attrition over the many years of the study. The retrospective study design in the single wave of the HRS study used in this analysis avoids the problem of attrition found in panel studies, but the design meant that many measures, including childbearing histories, were collected retrospectively. Additionally, the data set includes only the age of children who were alive when the respondent was interviewed. Hence measurement errors in age at first birth are likely to be greater in the US study. Despite these differences, results in the two data sets clearly point to the association of early first birth with events much later in the life course.

Beyond methodological differences, the difference in findings between US and Britain may partly lie in differences in opportunity, particularly in education. In the British data, there is a strong relationship between educational qualifications attained and early birth, but only a very weak relationship between qualifications and midlife mental health. The reason might be that for this cohort opportunities for further and higher education were low for women in general, and very low for women from manual socio-economic households (Halsey & Webb, 2000; Wadsworth, 1991;). While in the US an early mother's attainment of more schooling may have been an indicator of psychological resilience, the restricted education opportunities for women in this British cohort may have meant that education could not serve a similar role.

The direction and degree of any causality in these relationships is uncertain. It is possible that both early motherhood and later life disadvantage are independent results of common early risk factors that are unmeasured in this analysis, rather than early motherhood itself having any adverse consequences (e.g., Geronimus & Korenman, 1992). In particular, more

complete measurement of early life circumstances might reduce the association of age at first birth with midlife mental health. Causality is also uncertain because education and birth timing have an uncertain causal relationship with each other; and, as noted above, education may simply be an indicator of other characteristics such as resilience. Finally, poor adult socioeconomic circumstances, physical health, and social support are possible consequences of long-term poor mental health as well as risk factors for it.

Both studies exclude pregnancies ending in miscarriage, abortion, or stillbirth. Hence we focus on first birth, not first pregnancy. The effects of first pregnancy could be quite different and might operate through different mechanisms, but our data do not allow us to address this issue.

Earlier we emphasized that the historical circumstances of a cohort as they enter their childbearing years will define the meaning and significance of birth timing. In a changing world in which each cohort faces a different set of circumstances, it is simply not possible to extrapolate the lifetime experience of older cohorts to the cohort born 30 to 40 years later. Hence, the applicability of our findings to today's early mothers remains an open question. There are some similarities in the two cohorts, however. There is considerable evidence that women with a younger age at first birth are still more likely to experience socioeconomic disadvantage both prior to and after the first birth, and to have had less education (Moffitt *et al.*, 2002; Social Exclusion Unit, 1999). In a recent British study, more than a third of young mothers left education before standard leaving age and over half had not returned to education, training or work since the birth (Department for Education and Science Teenage Pregnancy Unit, 2005). While the general decline of marriage may mean there is less stigma to bearing children while unmarried, that status increasingly characterizes teenage mothers and may indicate that today's teenage mothers will experience increased socioeconomic disadvantage as they age compared to early mothers in the 1950s. In addition, the smaller proportion of a cohort who bear children as teenagers today compared to the cohorts we have examined, opens up the possibility that those with early births today are even more disadvantaged than in the past.

Teenage pregnancy is now regarded as a public health issue in both the US and Britain, and our results provide additional support for this perspective. Future research might further elaborate this public health link through analyses of data sets that include measures of depressive symptoms at various points of the life course, including adolescence and mid-life, to provide insight into the relative contribution of 'trait' (personal characteristics) versus 'state' (person-environment interactions) influences on mid life mental health (Paykel 2001).

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Table 1

Frequencies and Percentages by Age at First Birth

	US Health and Retirement Study				British 1946 Cohort Study			
	Overall	Age at first birth			Overall	Age at first birth		
		<=20	21-24	25+		<=20	21-24	25+
US measure: CES-D score (mean)	9.0	9.7	8.7	8.4				
British measure: GHQ-28 score (mean)					3.1	3.9	2.5	3.1
N. health conditions (mean)	2.5	2.8	2.3	2.2	1.2	1.4	1.2	1.1
Disability score (mean)	7.7	9.2	7.0	6.8	0.7	1.0	0.6	0.6
Age at first birth (percent)								
20 or younger	37.3%				25.7%			
21-24	35.9%				38.1%			
25 and older	26.8%				36.2%			
Number own children (mean)	3.2	3.8	3.2	2.3	2.3	2.7	2.3	2.0
Number step children (mean)	0.3	0.4	0.3	0.3				
Race/ethnicity (percent)								
white	81.9%	77.0%	86.1%	83.0%				
black	10.3%	15.1%	7.2%	7.7%				
Hispanic-English IW	3.2%	3.4%	3.0%	3.2%				
Hispanic-Spanish IW	2.1%	2.4%	1.8%	2.0%				
other	2.6%	2.1%	2.0%	4.0%				
Years in US (percent)								
US born	91.1%	94.4%	92.1%	85.1%				
30 or more years	3.9%	2.6%	4.0%	5.7%				
11-29 years	4.0%	2.1%	3.2%	7.9%				
10 or fewer years	1.0%	1.0%	0.7%	1.4%				
Father's education (percent)								
0-5 years	12.9%	15.6%	10.8%	11.8%				
6-8 years	30.9%	30.5%	32.9%	28.6%				
9-11 years	12.2%	13.3%	11.5%	11.8%				
12 years	20.6%	17.5%	22.3%	22.4%				
13 or more years	11.5%	6.9%	12.4%	16.7%				

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	US Health and Retirement Study				British 1946 Cohort Study			
	Overall	Age at first birth			Overall	Age at first birth		
		<=20	21-24	25+		<=20	21-24	25+
missing	12.0%	16.2%	10.1%	8.7%				
Father's occupation: manual (percent)					73.7%	83.4%	78.0%	62.4%
Education (mean)	12.2	11.3	12.5	13.2				
Education Qualifications (percent)								
none					44.0%	66.5%	44.8%	27.2%
O-level					35.4%	29.1%	39.9%	35.2%
A-level or more					20.5%	4.4%	15.2%	37.6%
Unmarried at first birth (percent)	11.4%	16.4%	8.4%	8.3%	6.0%	10.3%	4.4%	4.6%
Midlife measures								
Income (mean, in 1000s)	49.4	39.7	53.3	57.7	23.2	19.3	23.3	25.9
Manual occupation (percent)	32.0%	44.0%	27.0%	22.0%	50.2%	69.2%	51.5%	35.5%
Living with partner (percent)	74.7%	73.0%	76.4%	75.0%	84.0%	82.6%	84.4%	84.5%
Own home (percent)	82.7%	79.0%	85.0%	84.0%	86.4%	77.7%	88.1%	90.8%
Currrently employed	62.6%	58.1%	65.5%	62.0%	76.9%	70.9%	76.2%	81.9%
Neighbors known by name (mean)	2.4	2.4	2.4	2.4				
Socialize with neighbors (mean)	3.6	3.6	3.6	3.6				
Receive help in crisis					1.1	1.1	1.2	1.2
Number of Observations	4430				1062			

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Table 2

US Health and Retirement Study: Women Aged 51-61

Independent Variables	CES-D						Health Conditions		Disability	
	1	2	3	4	5	6	7	8	9	10
Age at first birth (ref. <=20)										
21-24	−0.99 **	−0.58 *	−0.10	−0.03	0.14	0.67 **	−0.56 **	−0.35 **	−2.13 **	−1.09 **
25 and older	−1.31 **	−1.00 **	−0.25	−0.16	−0.06	0.43	−0.60 **	−0.34 **	−2.20 **	−0.88 **
Number own children	0.04	−0.08	−0.15 *	−0.14 *	−0.14 *	−0.13 *	0.02	−0.01	0.13 *	−0.02
Number step children	−0.18	−0.12	−0.12	−0.13	−0.04	−0.12	0.05	0.08 **	0.07	0.12
Race/ethnicity (ref. white)										
black		2.03 **	1.98 **	1.41 **	0.63	0.52		0.10		0.01
Hispanic-English IW		0.17	−0.46	−0.51	−0.77	−0.19		−0.49 **		−1.14 *
Hispanic-Spanish IW		4.16 **	1.60	1.55	−0.27	1.40		−0.45 **		−0.76
other		0.37	0.16	0.07	0.86	−0.18		0.01		−0.16
Years in US (ref. US born)										
30 or more years		−0.87	−1.46 *	−1.47 *	−1.40 *	−0.82		−0.15		−1.25 *
11-29 years		0.16	−0.03	−0.15	−0.15	0.60		−0.36 *		−1.58 *
10 or fewer years		0.58	0.06	0.01	−1.25	0.17		−0.71 *		−3.05 **
Father's education (ref: 12 years)										
0-5 years		2.90 **	1.91 **	1.89 **	1.70 **	0.82 *		0.40 **		1.89 **
6-8 years		0.87 **	0.41	0.44	0.43	0.12		0.18 *		0.51
9-11 years		0.92 *	0.74	0.74	0.63	0.43		0.20 *		0.44
12 years		−0.07	0.76	0.72	0.61	0.30		0.36 **		0.53
13 or more years		2.23 **	1.36 **	1.25 **	0.93 *	0.28		0.43 **		1.30 **
Education (years)			−0.55 **	−0.53 **	−0.36 **	−0.26 **		−0.06 **		−0.31 **
Unmarried at first birth				1.69 **	0.76 *	0.46		0.03		0.93 **
Midlife measures										
Income					−0.01 **	−0.01 *		−0.01 **		−0.02 **

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Independent Variables	CES-D						Health Conditions		Disability	
	1	2	3	4	5	6	7	8	9	10
Manual occupation					0.44	0.10		0.25 **		1.08 **
Living with partner					−1.49 **	−1.06 **		−0.13 **		0.04 **
Own home					−1.67 **	−1.02 **		−0.44 **		−1.75
Currrently employed					−2.12 **	−0.44 *				
Neighbors known by name					0.35 **	0.21		0.06		0.32 **
Socialize with neighbors					0.33 **	0.27 **		−0.01		0.02
N. health conditions						0.49 **				
Disability score						0.36 **				
intercept	9.62	4.46	15.44	15.03	15.43	8.62	2.73	3.66	8.65	12.51
R-squared	0.6%	4.1%	6.5%	6.9%	12.1%	25.7%	2.4%	7.8%	2.7%	11.6%

* p <=.05;

** p <= .01 (two-tailed tests)

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Table 3

British NSHD Data: Women Aged 53

Independent Variables	GHQ-28						Health Conditions		Disability	
	1	2	3	4	5	6	7	8	9	10
Age at first birth (ref. <=20)										
21-24	−1.32 **	−1.31 **	−1.33 **	−1.29 **	−1.11 **	−0.84 *	−0.17	−0.13	−0.35 **	−0.24 **
25 and older	−0.68	−0.65	−0.63	−0.58	−0.18	0.01	−0.18	−0.13	−0.39 **	−0.21 *
Number of children	0.25	0.26	0.27	0.29	0.30	0.23	0.08 *	0.09 *	0.01	0.01
Father's occupation: manual		0.12	0.09	0.09	0.11	0.02		0.03		0.08
Qualificatons at 26 (ref. up to O level)										
none			0.42	0.42	0.73 *	0.67 *		0.14		−0.07
A-level or more			−0.11	−0.12	0.19	0.14		0.22 *		−0.09
Unmarried at first birth				0.69	0.61	0.23		0.18		0.20
Midlife measures										
Income					−0.01	−0.01		−0.01		−0.01 *
Manual occupation					0.51	0.15		0.25 **		0.16 *
Living with partner					−0.46	−0.61		0.20		0.22 *
Own home					−0.88	−0.48		−0.30 **		−0.32 **
Currently employed					−2.12 **	−1.12				
Help in crisis					1.65 **	1.40 **		0.15 *		0.24 **
N. health conditions						0.61 **				
Disability score						0.98 **				
Intercept	3.21	3.23	3.06	2.93	9.12	6.89	1.14	1.52	0.97	1.85
R-squared	1.5%	1.5%	1.7%	1.8%	9.5%	16.1%	1.2%	4.1%	2.6%	8.2%

* p <=.05;

** p <= .01 (two-tailed tests)