Transition to Motherhood and Women's Psychological Well-Being over the Life Course:
Focusing on the Effects of Mother's Age at the First Birth and Age of Children

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Although previous studies have made substantial contributions to understanding the effects of marriage on individuals' psychological well-being, the effects of being a parent on mental health, however, have received relatively less attention and most empirical studies support that parents are more likely depressed than those who do not have a child. The negative effects of being a parent on well-being may arise partly because most studies focus on short-term effects and do not take into account the fact that they may change as children grow up. In addition, although it is noticed that women tend to have a childbearing at later age in recent decades, there is little known how the timing of birth affects women's well-being over time. The current study explores how women's age at the first birth and being a parent are associated with women's psychological well-being over the life course by focusing on women who are in their 40's.

Data and Measures

Data came from the 2004 National Longitudinal Survey of Youth 79 cohort (NLSY79) whose respondents are 39 to 47 at the time of the interview in 2004. The NLSY79 is designed to collect information for important life events with a nationally representative sample of 12,686 young men and women who were 14-22 years old when they were first interviewed in 1979. They were interviewed annually through 1994 and biennially until 2004. Among 21 rounds of the NLSY79, the measures for psychological well-being, which is the main dependent variable in this study, are included in the surveys which were conducted in 1992, 1994, 1998, 2000, 2002 and 2004. Using these six panels of surveys, we constructed three measures of psychological well-being (depression). The first and second waves are based on the1992 and 1994 surveys, respectively. The third wave is based on the1998 to 2004 surveys because the NLSY79 asked the questions about psychological well-being in 1998 only if the respondent had reached age 40 and

asked thereafter only those who were at least 40 and had not answered these questions since 1998.

Depression scales are used to measure psychological well-being. Although the NLSY79 asked respondents to answer the full 20-items of the Center for Epidemiological Studies Depression (CES-D) Scale in 1992, the 1994, 1998 and 2000 surveys collected a reduced set of seven items from the original 20 items CES-D scale. In 2002 and 2004, the number of items increased to nine. To have a comparable variable, we used the seven items that were included consistently across the surveys from 1992 to 2004 and averaged. The result is a variable that ranges from 0 to 3 with higher scores indicating higher levels of depression. The alpha coefficients for the internal consistency among the seven items across waves are .80, .84 and .85 at Wave 1, Wave 2 and Wave 3, respectively.

Parental status is the main independent variable. We created one dichotomous variable to indicate whether a respondent had had a birth at the time of the survey (1=mother; 0=non-mother). Exploratory analyses revealed that the association between motherhood and depression varied by the age at which women begin childbearing. Those who had children prior to age 21 had much higher levels of depression. Consequently we also constructed a three-category measure of parental status, had no child (reference category), had a child prior to age 21, and had a child since age 21 at each time of interview. We also explored measures that allowed the association between motherhood and depression to vary by the ages of her children. To do this, we created a set of dichotomous variables for ages of children: 1) those who have any preschooler (age at 0-4); 2) those who have any school aged child (age at 5-12); 3) those who have any teenaged child (age at 13-17); and 4) those who have any adult child (age at 18 or

older). Another important independent variable is marital status[1]. Four dichotomous variables were coded based on current marital status at each interview: married; cohabiting; divorced or widowed; and never married.

A number of sociodemographic predictors were included in the analysis. They include age, race/ethnicity, and educational attainment. Age is measured in years. Race/ethnicity is defined with four categories: non-Hispanic Whites; non-Hispanic Blacks; Hispanics; and others. 'Others' category includes native American, Asian or pacific islander. Educational attainment is measured as four dichotomous variables (less than high school; high school diploma; some college education; and four year college degree or higher) based on the question about the highest grade or years of schooling that respondents have ever attended at the time of the interview. In addition to these predictors, we also include a control for age at first birth and whether or not respondent experienced parental divorce. For this family structure variable, we used information from the question, 'with whom did you live when you were at 14?' to create a dichotomous variable: 1) those whose parents didn't experience marital transition (coded 0); and 2) those whose parents experienced any marital transition (coded 1).

Results and Discussion

(Table 1 about here)

In Table 1, our results indicate that having an early childbearing is negatively associated with women's well-being over time. Moreover, the negative effect of being a parent at age 21 or younger increases until they were in their thirties even after controlling for sociodemographic information such as educational attainment, age, and family structure during adolescent. In

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[1] Marital status variables are not included in the models presented here because they can be viewed as exogenous when each wave is treated as cross sectional. However, we will control for marital status in a full model in the future analysis.

addition, it is surprising to see that the detrimental effect of having a child when they were age 21 or younger persists until age forties, although it is offset by sociodemographic status among women at Wave 3.

(Table 2 about here)

With respect to the effects of age of children on the association between motherhood and depression, results in Table 2 indicate that being a parent is associated with higher depression when women are in their late twenties or early thirties. However, it is not associated with higher depression among women who are in their late thirties or older. Results also show that the effects of being a parent vary by age of children. For example, the effect of having a school aged child has a positive effect on mother's well-being at Wave 3. We did additional analysis to compare this positive effect by educational attainment (the results are not shown here) and we found that this salutary effect is greater among women who do not have a high school diploma compared to women with more than high school education. It might be because they have financial strains and could work after sending a child to school.

On the other hand, while the coefficients of having any child who are younger than age 18 are not consistently significant across waves, the negative effects of having an adult child appear to be significant throughout the life course at least until women's age around 40. Considering that women who had an adult child probably had a birth prior to age 21 and decision to have an early childbearing might also be influenced by family structure when respondents were adolescent, we also included information about age at first birth after centered on 21 and living arrangement with parents while they grew up in the models. However, the strong negative effect of having an adult child on women's well-being persists and is even larger among those who are in their forties at Wave 3 compared to those who are in their thirties at Wave 2. When we

compare this effect across educational attainment, the negative effect of having an adult child on well-being is greater among women with college degree compared to women with less than four year college education at Wave 3 (the results are not shown here).

In sum, the results suggest that early childbearing experience could affect lower levels of well-being among women substantially over the life course regardless of their current social attainment. Our results also suggest that having a child is not always associated with women's depression. Rather, mothers in late twenties or early thirties are more likely to be depressed than women who do not have a child while mothers in their late thirties or who passed age 40 do not appear to be more depressed than women without a child. However, the effects of being a parent on well-being vary by age of children. Further analysis will be conducted to estimate to what extent changes in levels of women's depression across waves are accounted by parental status and changes of characteristics of being a parent.

Table 1. Depression Regressed on Age at First Birth by Waves (N=3,708)

| | Wave 1 | | | | Wave 2 | | | | Wave 3 | | | |
| | Model 1 | | Model 2 | | Model 1 | | Model 2 | | Model 1 | | Model 2 | |
Variable	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Age at first birth (never had a birth)												
First birth at age 21 or younger	0.1529 ***	0.0255	0.0511 †	0.0283	0.2091 ***	0.0276	0.0968 **	0.0300	0.1249 ***	0.0315	0.0206	0.0333
First birth at age 22 or older	-0.0394	0.0262	-0.0589 *	0.0265	0.0112	0.0278	-0.0042	0.0278	-0.0696 *	0.0311	-0.0686 *	0.0309
Age			-0.0025	0.0047			0.0014	0.0048			-0.0026	0.0149
Race/Ethnicity (Non-Hispanic Whites)												
Non-Hispanic Black			0.0360	0.0260			0.0381	0.0267			0.0826 **	0.0275
Hispanic			0.0277	0.0297			0.0161	0.0305			-0.0332	0.0314
Others			0.0193	0.0290			-0.0204	0.0298			0.0561 †	0.0306
Educational Attainment (College+)												
Less than high school			0.2884 ***	0.0394			0.3451 ***	0.0404			0.3096 ***	0.0414
High school			0.1584 ***	0.0296			0.1831 ***	0.0302			0.1686 ***	0.0309
Some college			0.0940 **	0.0311			0.0927 **	0.0318			0.0573 †	0.0326
Family structure (intact parents)												
Experienced parents' marital transition			0.0558 *	0.0224			0.0306	0.0230			0.0645 **	0.0236
Intercept	0.6303 ***	0.0200	0.5894 ***	0.1476	0.5537 ***	0.0223	0.3907 *	0.1608	0.5440 ***	0.0268	0.5127	0.6002
R-Square	0.0202		0.0398		0.0244		0.0485		0.0190		0.0446	

Note: The values in parenthesis are reference groups. †p<.10; *p<.05; **p<.01; ***p<.001.

Table 2. Depression Regressed on Parental Status by Waves (N=3,708)

Variable	Wave 1 Estimate		Wave 1 SE	Wave 2 Estimate		Wave 2 SE	Wave 3 Estimate		Wave 3 SE
Parental Status (never had a child)									
Have any child	9.2871	*	4.4789	10.4930	*	4.3080	0.0960		0.2146
Have any preschooler at age 0-4	0.0549	*	0.0260	0.1075	***	0.0278	0.0317		0.0366
Have any school aged child at age 5-12	0.0073		0.0284	-0.0211		0.0259	-0.0583	*	0.0247
Have any teenager at age 13-17	0.0266		0.0372	0.0251	**	0.0338	-0.0245		0.0226
Have any adult child at age 18+	0.2309	**	0.0776	0.0481	*	0.0504	0.0972	***	0.0262
Age	0.0033		0.0054	0.0020		0.0055	-0.0094		0.0144
Race/Ethnicity (Non-Hispanic Whites)									
Non-Hispanic Black	0.0280		0.0309	0.0320		0.0318	0.0742	*	0.0320
Hispanic	0.0053		0.0427	-0.0039		0.0441	-0.0243		0.0446
Others	0.0197		0.0236	-0.0139		0.0244	0.0533	*	0.0247
Educational Attainment (College+)									
Less than high school	0.3044	***	0.0415	0.3910	***	0.0428	0.2997	***	0.0424
High school	0.1607	***	0.0279	0.2182	***	0.0287	0.1182	***	0.0290
Some college	0.0667	*	0.0294	0.1203	***	0.0304	0.0194		0.0308
Age at first birth, centered on 21	-0.0092	*	0.0044	-0.0103		0.0042	-0.0001		0.0002
Family structure (intact parents)									
Experienced parents' marital transition	0.0595	**	0.0233	0.0315	*	0.0241	0.0686	**	0.0244
Intercept	-8.9534	*	4.5467	-10.1787	*	4.3790	0.6800		0.6275
R-Square	0.0425			0.0519			0.0480		

Note: The values in parenthesis are reference groups. *p<.05; **p<.01; ***p<.001.