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**Adverse Childhood Experiences, Early and Nonmarital Fertility, and Women’s Health at Midlife**

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**Appendix A: Measurement Details**

***Adverse Childhood Experiences***

Exposure to the following six adverse childhood experiences was retrospectively assessed at the 1979 baseline wave and responses were summed to create a 1–5 scale (as there were no respondents who experienced 6 ACEs):

(1) emotional neglect: “Before age 18, how much parental love and affection did you experience growing up (1 = a little or none at all; 0 = a great deal or quite a lot),

(2) physical abuse: “Before age 18, how often did a parent or adult in your home ever hit, beat, kick or physically harm you in any way? Do not include spanking.” (1 = more than once; 0 = never or once)

(3) alcoholism in home: “Before age 18, did you live with anyone who was an alcoholic or problem drinker?” (1= yes; 0 = no),

(4) mental illness in home: “Before age 18, did you live with anyone who was depressed, mentally ill, or suicidal?” (1 = yes; 0 = no),

(5) death of a biological parent before age 18 (1 = yes; 0 = no)

(6) parental absence, defined here as: (a) living with a biological or adoptive mother or father at birth but not living with that parent for greater than a four-month period at some point before age 19 or (b) never having lived with any biological or adoptive mother or father. The measure excludes parental absence due to parental death as this a separate ACE in our scale. It also excludes those who are in category (a) solely because they left home to live on their own at age 17 or 18.

***Health at Midlife***

Version 1 of the Physical Health Component Summary (PCS-12) of the 12-item Short Form Health Survey (SF-12) health scale includes the following indicators:

(1) self-assessed health assessed on a 1–5 scale from “poor” to “excellent”

(2) health limitations in moderate activities (e.g., moving a table, pushing a vacuum cleaner, bowling, or playing golf): limited a lot, limited a little, not limited at all.

(3) health limitations in climbing several flights of stairs: limited a lot, limited a little, not limited at all.

(4) accomplished less than you would have liked due to physical health in the past four weeks: yes or no

(5) limited in the kind of work or other activities that could be done in the past four weeks due to health: yes or no

(6) extent to which pain interfered with normal work including both work outside the home and housework, assessed on a 5-point scale from “not at all” to “extremely”

(7) frequency had a lot of energy over the past 4 weeks, assessed on a 6-point scale from “none of the time” to “all of the time.”

(8) accomplished less than would like over past 4 weeks as a result of an emotional problem, such as feeling depressed or anxious: yes or no

(9) during the last four weeks, had trouble doing work or other activities as a result of an emotional problem: yes or no

(10) frequency of feeling calm and peaceful over the last four weeks, assessed on a 6-point scale from “none” to “all of the time”

(11) frequency of feeling downhearted and blue over the last four weeks, assessed on a 6-point scale from “all of the time” to “none of the time.”

(12) how much of the time, during the last four weeks, that physical health or emotional problems interfered with social activities like visiting with friends or relatives assessed on a 6-point scale from “all of the time” to “none of the time.”

Items are coded so that higher values indicate better health and scored by the NLSY using a proprietary procedure described by Ware, Kosinski, and Keller (1995). Note that our analysis uses the physical component summary score (PCS). Although all items (including items 8–12) are included in its calculation, they are differentially weighted to create norm-based scores indicative of physical health in general populations.

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| **Appendix B:** ACEs Index (poisson) and Individual Items (Logistic) Regressed on Sociodemographic Covariates | | | | | | | |
|  | ACEs Index (IRR)a | Emotional Neglect (OR)b | Physical Abuse (OR) | Alcoholism (OR) | Mental Illness (OR) | Parental Absence (OR) | Parental Death (OR) |
|  |  |  |  |  |  |  |  |
| R’s mother’s education | .98 | .91\*\*\* | 1.01 | .96\* | 1.02 | 1.00 | .97 |
| *(years)* | (.96, 1.00) | (.77, .95) | (.96, 1.05) | (.92, .99) | (.97, 1.08) | (.96, 1.05) | (.91, 1.02) |
| R’s mother’s age at R’s birth | .98\*\*\* | .98\* | .96\*\*\* | .99 | 1.01 | .93\*\*\* | 1.07\*\*\* |
| *(years)* | (.97, .98) | (.96, .99) | (.94, .98) | (.97, 1.00) | (.99, 1.03) | (.91, .94) | (1.05, 1.09) |
| R’s mother foreign born | .28 | 1.64\* | 2.05\*\* | .98 | 1.46 | 1.13 | .96 |
| (*ref = native born)* | (.99, 1.63) | (1.04, 2.58) | (1.26, 3.37) | (.60, 1.62) | (.76, 2.79) | (.70, 1.83) | (.50, 1.88) |
| R born to married mother | .71\*\*\* | .57\*\* | .42\*\*\* | .72 | .74 | .94 | 1.46 |
| (*ref = unmarried mother)* | (.60, .84) | (.41, .81) | (.29, .61) | (.50, 1.04) | (.44, 1.22) | (.66, 1.35) | (.87, 2.45) |
| Number of siblings (1979) | 1.06\*\*\* | 1.09\*\* | 1.11\*\*\* | 1.06\* | 1.00 | 1.06\* | 1.07\* |
|  | (1.03, 1.08) | (1.04, 1.14) | (1.06, 1.17) | (1.01, 1.11) | (.93, 1.07) | (1.01, 1.11) | (1.01, 1.14) |
| Home environment age 14 |  |  |  |  |  |  |  |
| Urban | 1.07 | .99 | 1.05 | 1.02 | 1.07 | 1.40\*\* | 1.24 |
|  | (.94, 1.21) | (.77, 1.27) | (.80, 1.38) | (.80, 1.29) | (.77, 1.47) | (1.09, 1.81) | (.86, 1.78) |
| South | 1.02 | .95 | .96 | .99 | 1.24 | 1.00 | 1.09 |
|  | (.91, 1.15) | (.76, 1.20) | (.75, 1.22) | (.80, 1.23) | (.93, 1.65) | (.80, 1.23) | (.81, 1.47)) |
| No employed adult | 1.29\*\* | 1.05 | 1.23 | 1.13 | 1.58 | 2.67\*\*\* | 3.79\*\*\* |
|  | (1.09, 1.53) | (.74, 1.50) | (.83, 1.83) | (.79, 1.61) | (.98, 2.54) | (1.94, 3.67) | (2.56, 5.60) |
| Race/ethnicity (*ref = white)* |  |  |  |  |  |  |  |
| Hispanic | .74\*\*\* | .65\*\* | .76 | .56\*\*\* | .54\*\* | .83 | .80 |
|  | (.63, .87) | (.47, .90) | (.54, 1.06) | (.41, .76) | (.35, .83) | (.61, 1.14) | (.49, 1.29) |
| Black | .61\*\*\* | .55\*\*\* | .36\*\*\* | .46\*\*\* | .32\*\*\* | 1.21 | 1.28 |
|  | (.54, .69) | (.39, .66) | (.27, .49) | (.36, .60) | (.22, .47) | (.96, 1.54) | (.92, 1.79) |
| Constant | 2.39\*\*\* | 1.81 | .88 | .86 | .11\*\*\* | .95 | .01 |
|  | (1.65, 3.47) | (.83, 3.98) | (.37, 2.08) | (.41, 1.79) | (.04, .28) | (.44, 2.03) | (.00, .02) |
| *N*c | 3,273 | 3,427 | 3,449 | 3,450 | 3,451 | 3,712 | 3,893 |

*Source:* National Longitudinal Study of Youth (1979–2004).  
*Note:* ACEs = adverse childhood experiences; R = respondent.aIncident rate ratios (and 95% confidence intervals); bOdds ratios (and 95% confidence intervals)*;* cSample sizes vary because we use nonimputed ACEs variables as dependent variables. Imputed values are used for predictors/covariates.

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| **Appendix C:** OLS Estimates ofContinuous Measure of Age at First Birth (*N = 3,278)* and Conditional Odds Ratios from Multinomial Logistic Regression of Categorical Measure of Age at First Birth and Childlessness (*N = 3,893*) Regressed on 3-Category ACEs Scale and Covariates | | | | | | | |
|  |  | Age at First Birth  (Multinomial Logistic Regression)b | | | | | |
|  | Age at First Birth  (OLS)a | Adolescent  vs.  Later | Adolescent vs.  Young Adult | Adolescent  vs.  Childless | Young Adult  vs.  Later | Young Adult   vs. Childless | Later  vs.  Childless |
|  | (Model 1) | (Model 2a) | (Model 2b) | (Model 2c) | (Model 2d) | (Model 2e) | (Model 2f) |
| ACEs scale *(ref = 0)* |  |  |  |  |  |  |  |
| 1 or 2 | –1.04\*\*\* | 1.76\*\*\* | 1.15 | 1.41\* | 1.54\*\* | 1.23 | .80 |
|  | (.25) | (1.39, 2.24) | (.91, 1.45) | (1.07, 1.87) | (1.22, 1.94) | (.94, 1.62) | (.62, 1.03) |
| 3 or more | –1.19\*\* | 1.64\* | .99 | 1.28 | 1.65\* | 1.30 | .78 |
|  | (.41) | (1.11, 2.42) | (.67, 1.47) | (.81, 2.03) | (1.09, 2.50) | (.80, 2.08) | (.51, 1.19) |
| Parent died ACE | .20 | 1.04 | 1.12 | 1.42 | .92 | 1.27 | 1.37 |
|  | (.42) | (.71, 1.52) | (.76, 1.65) | (.89, 2.28) | (.61, 1.39) | (.79, 2.03) | (.86, 2.19) |
| *N* | 3,278 | 3,893 | 3,893 | 3,893 | 3,893 | 3,893 | 3,893 |
| *Source:* National Longitudinal Study of Youth (1979–2004) *Note:* ACEs = adverse childhood experiences  aUnstandardized regression coefficients (and standard errors);b Conditional odds ratios (and 95% confidence intervals);Adolescent 1st birth = age 14–19; Young adult 1st birth = age 20–24; Later 1st birth = age 25–39; Model controls for R’s mother’s years of education, R’s mother’s age at R’s birth, R’s mother’s nativity status, R’s mother’s marital status at R’s birth, number of siblings, urban residence at age 14, south residence at age 14, no employed adult in household at age 14, and race-ethnicity.  *\**p < .05; \*p < .01; \*\*\*p < .001 (two-tailed); | | | | | | | |

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| **Appendix D:** Conditional Odds Ratios from Multinomial Logistic Regression of Union Status at First Birth on 3-Category ACEs Variable and Covariates (*n = 3,893)*a | | | | | |
|  | Union status at first birth (or childless) | | | | |
|  | Unmarried and not cohabiting vs.  married | Unmarried and  cohabiting  vs.  married | Unmarried and not cohabiting vs. childless | Unmarried and cohabiting  vs. childless | Childless  vs.  married |
| ACEs scale *(ref = 0)* |  |  |  |  |  |
| 1 or 2 | 1.25 | 1.06 | 1.26 | 1.07 | .99 |
|  | (.95, 1.64) | (.69, 1.63) | (.90, 1.76) | (.68, 1.69) | (.78, 1.25) |
| 3 or more | 2.13\*\*\* | 1.03 | 1.96\* | .95 | 1.08 |
|  | (1.40, 3.23) | (.51, 2.08) | (1.15, 3.35) | (.45, 2.01) | (.73, 1.61) |
| Parent died ACE | 1.54\* | 1.13 | 1.93\*\* | 1.42 | .80 |
|  | (1.06, 2.22) | (.54, 2.34) | (1.19, 3.13) | (.65, 3.13) | (.52, 1.22) |
| *Source:* National Longitudinal Study of Youth (1979–2004) *Note:* ACEs = adverse childhood experiences; aConditional odds ratios (and 95% confidence intervals); Model controls for R’s mother’s years of education, R’s mother’s age at R’s birth, R’s mother’s nativity status, R’s mother’s marital status at R’s birth, number of siblings, urban residence at age 14, south residence at age 14, no employed adult in household at age 14, and race-ethnicity. No significant differences in estimated effect of ACEs on the conditional odds of 1st birth while unmarried and not cohabiting versus unmarried and cohabiting.  *\**p < .05; \*p < .01; \*\*\*p < .001 (two-tailed); | | | | | |

*\**p < .05; \*p < .01; \*\*\*p < .001 (two-tailed);

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| **Appendix E:** Coefficients From Re-estimation of Effect of ACEs on Age at First Birth (Table 2, Model 1) and Union Status at First Birth (Table 3) Among Women with First Births at Age 18 or Older | | | | | | | |
|  |  | | Union Status at First Birth  (Multinomial Logistic Regression)b | | | | |
|  | Age at First Birth (OLS)a | Unmarried and not cohabiting  vs.  married | | Unmarried and cohabiting  vs.  married | Unmarried and not cohabiting  vs. childless | Unmarried and cohabiting  vs.  childless | Childless  vs.  married |
| ACEs scale | –.38\*\*\* | 1.28\*\*\* | | 1.04 | 1.18\* | .96 | 1.08 |
|  | (.11) | (1.13, 1.45) | | (.84, 1.28) | (1.02, 1.37) | (.75, 1.22) | (.97, 1.20) |
| Parent died ACE | .04 | 1.44 | | 1.22 | 1.89\* | 1.60 | .76 |
|  | (.44) | (.96, 2.17) | | (.55, 2.71) | (1.13, 3.16) | (.69, 3.73) | (.50, 1.17) |
| *N* | 2,758 | 3,373 | | 3,373 | 3,373 | 3,373 | 3,373 |
| *Source:* National Longitudinal Study of Youth (1979–2004) *Note:* ACEs = adverse childhood experiences.aUnstandardized regression coefficients (and standard errors); bConditional odds ratios (and 95% confidence intervals); Model controls for R’s mother’s years of education, R’s mother’s age at R’s birth, R’s mother’s nativity status, R’s mother’s marital status at R’s birth, number of siblings, urban residence at age 14, south residence at age 14, no employed adult in household at age 14, and race-ethnicity. No significant differences in estimated effect of ACEs on nonmarital non-cohabiting first births versus nonmarital cohabiting first births. | | | | | | | |

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| **Appendix F:** Seemingly Unrelated Regression Estimation of Indirect Effect of ACEs on Age 40 Health Mediated by Nonmarital First Birth and Age at First Birth Among Mothers whose First Birth was at Age 18 or Older (*n = 2,758)* | | | | |
| Panel A: Regression of first birth context mediators (Model 1 and 2) and Age 40 health  (Model 3) on ACEs scale, covariates, and mediators (in Model 3) | | | | |
|  | Age at first birth (Model 1) | Nonmarital first birtha  (Model 2) | | Age 40 healthb  (Model 3) |
| ACEs scale | –.38\*\*\* | .01\* | | –.06\*\*\* |
|  | (.10) | (.01) | | (.02) |
| Age at first birth | --- | --- | | –.02\*\*\* |
|  |  |  | | (.00) |
| Nonmarital first birtha | --- | --- | | –.16\*\*\* |
|  |  |  | | (.05) |
| Panel B: Decomposition of effect of ACEs on Age 40 health via first birth context mediators | | | | |
|  | Indirect effect | | % of total effect mediatedc | |
| Indirect effect via age at first birth | –.006\*\* | | 8.5% | |
|  | (.002) | |  | |
| Indirect effect via nonmarital first birth | –.002 | | 3.1% | |
|  | (.001) | |  | |
| Total indirect effects | –.008\*\*\* | | 11.6% | |
|  | (.002) | |  | |
| *Source:* National Longitudinal Study of Youth (1979–2004) *Note:* ACEs = adverse childhood experiences; Indirect effects estimated using sureg in Stata/SE 15; Model controls for R’s mother’s years of education, R’s mother’s age at R’s birth, R’s mother’s nativity status, R’s mother’s marital status at R’s birth, number of siblings, urban residence at age 14, south residence at age 14, no employed adult in household at age 14, and race-ethnicity; aNonmarital first birth (1 = nonmarital not cohabiting; 0 = nonmarital cohabiting first birth, marital first births, and childless); ; bAge 40 health is standardized; c% of total effect mediated = indirect effect / (total indirect effects + direct effect of ACEs estimated in Panel B, using original unrounded coefficients)  *\**p < .05; \*p < .01; \*\*\*p < .001 (two-tailed); | | | | |