Divorce, Economic Resources, and Survival Among Older Black and White women

Objective: The aim of this study is to document the role of midlife economic resources in shaping the association between divorce and survival among older Black and White women.

Background: Despite evidence that divorced women have higher mortality risk due to loss of economic resources, the role of different components of income and wealth in shaping this association has received little attention. While education and occupation begin to stabilize in adulthood, economic resources continue to vary in response to within-occupation mobility, unobserved human capital, and life course adversities like divorce. Studying economic resources therefore provides unique insights into the pathways of influence that divorce has on the accumulation of disadvantages in adulthood.

Method: Fractional logistic regression and Gompertz proportional hazards models were estimated with data from the NLS-MW (N=4,726; https://www.nlsinfo.org) to examine the associations between divorce before age 45, economic resources between ages 45 and 64, and mortality risk for older Black and White women.

Results: Compared to their continuously married counterparts, White divorced women had lower wealth and household earnings but higher personal earnings in midlife, whereas Black divorced women only had lower vehicle wealth. With respect to survival, home wealth significantly reduced marital and racial differences in mortality risk.

Conclusion: Divorce impacts multiple economic resources, but the longevity of married White women appears primarily related to having more valuable homes than Black women and divorced White women. Our findings suggest that interventions aimed at reducing health disparities must first address inequalities in housing and other midlife economic resources.

Keywords: Divorce, economic well-being, wealth, socioeconomic status, health disparities, mortality

Divorced adults generally have shorter life expectancies than their married counterparts (Liu and Umberson 2008, Williams and Umberson 2004). One explanation for this disparity in survival is that those who experience a legal separation or divorce generally undergo steep declines in economic resources (Liu and Umberson 2008, Roxburgh 2014, Wilmoth and Koso 2002, Zagorsky 2005). Related, recent studies have found evidence that multiple economic resources related to income and wealth have independent associations with mortality risk (Boen and Yang 2016, Demakakos et al. 2015, Pool et al. 2018, Yilmazer, Babiarz and Liu 2015). Although divorce is a leading cause of wealth loss (Zagorsky 2005), research on divorce, midlife economic resources, and survival are largely separate with little discussion or empirical examination of how they may be related among older women.

Prior research, having found substantial racial variation in the health benefits of marriage (Dupre 2016, Liu and Reczek 2012), suggests that racial differences might also exist in the relationships between divorce, midlife economic resources, and survival in later adulthood. Due to institutional racism and discrimination in the U.S. labor force, Black families have historically been blocked from building wealth through traditional pathways (e.g., homeownership; Woldoff and Ovadia 2009). Although median wealth has increased by 14 percent for White households from 1983 to 2013, it declined by 75 percent for Black households, and today for every $100 in wealth held by White families, Black families hold just $5.04 (Asante-Muhammad et al. 2017). The lack of an economic pay-off for marriage may help explain why fewer marital inequalities in health and survival exist among Black women (Liu and Reczek 2012, Tucker 2003). However, prior research has not examined the full array of economic pathways that could potentially explain racial differences in the association between divorce and survival, as well as racial differences in survival among women.

To address these gaps, we investigate how divorce is related to multiple sources of economic well-being (i.e., personal earnings, household/family income, home value, vehicle value,

savings/checking, and investments), and whether different sources of income and wealth differentially shape the relationship between divorce and survival among older women. In the analysis, we examine a sample of "Silent Generation" women, a birth cohort born between the mid-1920s and mid-1940s, who were surveyed by the National Longitudinal Survey of Mature Women (NLS-MW) from 1967 until 2003, with a survival follow-up through 2012. Although we find that divorce has a significant relationship to multiple components of economic resources that influence mortality disparities, especially among White women, divorce had the largest association with reduced home wealth for White women and vehicle wealth for Black women. However, only home wealth significantly attenuated marital and racial inequalities in survival among older women.

BACKGROUND

In addition to sociological research on the family, we draw from life course, stratification, and health disparities scholarship in order to better contextualize divorce and its implication for the economic well-being and health of Silent Generation women. Based on a life course framework (Elder, Johnson and Crosnoe 2003), which notes that the historical period in which a person lives has a profound impact on their life chances, we situate our research questions within the social contexts of Black and White women in the Silent Generation. This cohort of women was born between the mid-1920s and mid-1940s and came into adulthood during a period of low divorce rates but profound gender- and race-based stratification.

The Price of Divorce for Silent Generation Women

We argue marriage is a key mechanism of economic resource accumulation in the U.S., espeically for older cohorts of women (Addo and Lichter 2013, Schwartz and Mare 2005, Schwartz and Han 2014). Through sharing a household and participating in economies of scale, married couples have fewer expenditures than single adults, increasing economic well-being (Waite 1995). Married couples also have the economic resources of two adults, and even if one

spouse is not in the labor market, unemployed spouses generally contribute to their families' economic stability through other processes (Becker 1973). Divorce, however, results in a substantial reduction in economic resources through splitting joint assets, the loss of spousal income, the cost of moving and new housing, and the costs of lawyers and other expenses (Zagorsky 2005).

The economic costs of divorce were steepest for women during the mid-1960s through the 1980s, most impacting Silent Generation women; in more recent years and for more recent cohorts, this cost has significantly lessened (McKeever and Wolfinger 2001, Smock 1993). Gender attitudes at this point in U.S. history often restricted women, especially White women, to a caregiving role in the family (see Cotter, Hermsen and Vanneman 2011). Opportunities to attain high-earning positions and accumulate personal wealth were extremely limited for this cohort of women (Goldin 2006), making their socioeconomic status (SES) and, in turn, their longevity somewhat dependent on their spouse (Brown, Hummer and Hayward 2014, Wolfe et al. 2018a, Wolfe 2019). Thus, for many women in this cohort, divorce could easily mean financial ruin and possibly a shorter life.

Economic Resources and Health

Although economic attainment is closely tied to educational and occupational attainments (Mirowsky and Ross 2003), income and wealth are still related to health and survival independent of their educational and occupational backgrounds (Backlund, Sorlie and Johnson 1996, Duncan et al. 2002, Herd, Goesling and House 2007, Kaplan et al. 1996, Wolfe 2015). One explanation for this finding is that, while education and occupation begin to stabilize in adulthood, economic resources continue to vary in response to within-occupation mobility, unobserved human capital, and unexpected life course adversities (Herd, Goesling, and House 2007). As a result, economic resources are increasingly important for SES with age and, as a result, health among adults as they enter midlife and old age.

In support of this view, a number of mortality studies have found that the association between economic resources and mortality among older adults is larger than the associations between other indicators of SES and survival (Duncan et al. 2002, Lantz et al. 1998, McDonough et al. 1997). Herd, Goesling and House (2007) also found that, while education primarily helps people avoid the onset of health problems, income primarily slows down the progression of health problems later adulthood. Likewise, wealth appears to reduce individuals' risks of health problems and mortality above and beyond income (Demakakos et al. 2015, Makaroun et al. 2017, Robert and House 1996). Taken together, these studies provide evidence that the relationship between SES and health manifests in later adulthood through the accumulation of income and wealth in midlife (Boen and Yang 2016, Herd, Goesling and House 2007, Robert and House 1996).

In sum, health disparities scholarship suggests that midlife economic resources are 1) key identifiers of adult SES and 2) differentially related to survival. Thus, to fully investigate the economic pathways underlying marital inequalities in survival, we disaggregate women's income into individual earnings and household/family income and their wealth into total net worth, the market value of homes, vehicle worth, savings/checking accounts, and investments. Below, we discuss in greater detail the theoretical and empirical justifications for disaggregating women's economic resources in this way in order to document the role of midlife economic resources in shaping the association between divorce and survival among older Black and White women.

Disaggregating Income

Unlike education, occupation, and most forms of wealth, income can be directly and immediately used to purchase any goods or services necessary to fight illness and promote health, e.g., expensive medications, healthier foods, and gym memberships (Marmot 2002). Most studies measure income as a summation of the earnings of family members living in the same

household, but the gap between women's earnings and their household incomes are closely tied to gendered and racial dynamics that may also shape marital inequalities in mortality risk. (McKeever and Wolfinger 2001, Smock 1993) Given these differences, we conceptualize personal earnings and household/family income as distinct components of income and therefore expect that individual earnings are uniquely relevant to marital inequalities in survival among older women.

Previous studies have found that women's reduction in family income is close to 50 percent for divorces in the 1960s and 1970s, with over one fourth of divorced women in the Silent Generation cohort entering poverty during the period following divorce (Morgan 1989, Smock 1993). But family income alone is an incomplete measure of economic well-being when comparing across marital statuses, as a husband leaving a marriage typically translates into losing a wage earner, automatically decreasing the household income (McKeever and Wolfinger 2001). Divorce has a more complicated relationship with individual earnings. In most circumstances, divorce increases women's personal earnings because they must enter (or re-enter) the labor force or increase their work hours in order to replace lost household income. In other circumstances, personal earnings may actually decrease if women have to cut back on hours or switch to lower paying jobs because of a lack of support at home (Tach and Eads 2015).

Disaggregating Wealth

As both a time-varying and cumulative measure of economic well-being, wealth offers a unique, if indirect, reflection of life events that happen later in adulthood, e.g., divorce (Benton and Keister 2017, Wilmoth and Koso 2002). Wealth also shields against the psychological distress and biological impact of life course adversities by providing financial and material resources that are relatively independent of earnings or position in the labor market (Hajat et al. 2010, Hajat et al. 2011). Large, sudden drops in wealth, however, increase mortality risk (Pool et al. 2018), and women who divorce experience an average drop of 77 percent in their wealth (Zagorsky 2005).

Yet how divorce impacts wealth and the impact of divorce on mortality is likely dependent on the component of wealth considered.

Divorce substantially reduces home wealth among older women (Addo and Lichter 2013), a key mechanism of wealth accumulation in adulthood (Killewald and Bryan 2016). Homes tend to appreciate with time and are a source of financial stability later in life. Using NLSY-79 data, Killewald and Bryan (2016) found that each additional year of homeownership increases midlife wealth in 2008 by about $6,800. Housing wealth also has use value, meaning that it carries a practical and instrumental purpose, namely providing a place for shelter. Houses with more initial worth tend to be made from building materials free of known carcinogens, located in safer neighborhoods with less crime, and—in terms of economic wellbeing—provide better returns when sold (Woldoff and Ovadia 2009). Because housing wealth is often the largest source of wealth for most older adults, it tends to drive differences in net worth among this group.

The value of savings/checking accounts and investments have notable similarities and differences with one another and other aspects of SES. The value of individuals' savings and checking accounts represent an easily accessed source of money in times of emergencies, whereas investments accrue value over time and serve as a source of income in later adulthood. The separation of households due to divorce often constitutes an emergency, or at least necessitates financial adjustments, and because two individuals now live separately, consumption needs increase, which can lead to a need so spend down on savings (Morgan 1989). However, higher levels of savings and investments both capture unobserved human capital, as larger values suggest a number of cognitive (e.g., successful implementation of money management strategies) and non-cognitive (e.g., forethought and delayed gratification) abilities.

Fewer studies have considered whether vehicle value is related to mortality, but there are theoretical reasons to expect it would be, albeit to a lesser extent than home value, savings accounts, or investments. Vehicle value provides a useful measure of disposable income, which

can vary substantially depending on, e.g., the baseline living expenses of respondents' geographic residence. Similar to homes, vehicles have a use-value, but cars are a quickly depreciating asset with few long-term financial benefits or health advantages. However, the value of vehicles may provide an indicator of individual's economic circumstances that other indicators of income and wealth do not completely capture. The value of vehicles also provide information on the racial differences in divorce outcomes. We discuss this issue in more detail in the following section on racial inequalities.

Racial Inequalities in Divorce, Economic Resources, and Mortality Risk

Prior studies find that the association between divorce and health outcomes among Black populations are small or nonexistent (Dupre 2016, Liu and Reczek 2012, Roxburgh 2014, Teachman 2010, Tucker 2003), although findings about divorce and economic resources are more mixed. The weak association between divorce and health for Black women appears to be related to racial inequalities in economic resources. Marriage as a path towards economic standing was less the case for Black women in the Silent Generation (Oliver and Shapiro 2006, Zagorsky 2005). Black men were given far fewer opportunities in the labor market than White men and were unable to provide the same financial stability for their families (Tomaskovic-Devey, Thomas and Johnson 2005). Perhaps as a result, Black women in this cohort made a greater income contribution to their households than married White women and their incomes were more likely to exceed their husbands (Fry and Cohn 2010).

Furthermore, although marriage tended to mean an accrual of wealth for white families (e.g., through purchasing a house or beneficial bank policies to build savings), Black families faced discrimination from multiple institutions (e.g., real estate companies and banks) that blocked these wealth-building benefits (Gabriel and Rosenthal 1991, Roscigno 2007). Marriage was also less normative—and divorce more so—among Black families, and Black women were less likely than White women to remarry after a marriage ended (Lichter and Qian 2004, Sweeney and

Phillips 2004). One study estimated that if Black women had the same marital histories as White women, the racial wealth gap would be reduced by roughly 10 percent (Addo and Lichter 2013). Currently, however, White households have about twice the median family income of Black households and 13 times the median wealth (Kochhar and Fry 2014).

Despite theoretical reasons to expect differences in economic resources by race and marital status, results from prior research have been mixed—likely reflecting the need to differentiate between multiple sources of economic resources and the need to focus within one specific cohort. While some studies find that economic resources decline more steeply for White women post-divorce than Black women (Addo and Lichter 2013), others find no difference by race or bigger declines for divorced Black women (Mott and Moore 1978, Smock 1993, Weiss 1984). Altogether, these studies seem to suggest that income declines are greatest for Black women, whereas wealth declines are greatest for White women.

Most of the wealth of single Black women can be attributed to their ownership of motor vehicles (Addo and Lichter 2013, Chang and Lui 2010). Homeowner rates declined among Black households after the recession, falling below 50 percent of households, while remaining close to 75 percent for White households. Home also provide a smaller return for Black men and women; Killewald and Bryan (2016) find that the wealth benefits of homeownership for Black men and women are only about half the size of the benefits White men and women receive. Furthermore, during and after the recession, housing worth remained suppressed, but financial assets like stocks quickly rebounded, benefitting White households that more often hold these assets compared to Black households (Killewald 2013). Thus, although cars have few long-term benefits, their value may still provide useful, but otherwise unobserved, information on the SES of Black women, perhaps especially when comparing across marital statuses.

METHOD

Our analyses rely on the NLS-MW, which began in 1967 with a nationally representative sample

of 5,083 noninstitutionalized women between the ages of 30 and 44. These data have several unique strengths. First, the NLS-MW had 20 follow-up interviews between 1968 and 2003, providing 36 years of information on women's economic well-being and marital transitions. Yet attrition remained low compared to many other longitudinal data collections. In the final 2003 survey, 62 percent of those still living were interviewed. Second, a key feature of the NLS cohorts was an oversample of Black Americans, which allows more detailed racial comparisons. Finally, these NLS data are linked to high-quality mortality information based on two waves of data collection. In the first wave, the Census obtained death certificates for 1966-1990 from state vital records departments or collected reports from widows or next of kin. The second wave of data collection began in 2009 with another round of linkages through the Demographic Survey Division of the United States Census Bureau and the National Center on Health Statistics (NCHS). The NLS-MW contains the age of death for all women who died prior to 2012.

We limit the analysis sample to women who divorced prior to entering midlife at 45 years old (N = 654), and women who remained married, never married, or widowed before 65 (N = 4,072). Related, we create measures of women's economic resources using information collected from women during the ages of 45 to 64, i.e., from the beginning of midlife until retirement. We use this age range because 1) 45 to 64 represents a critical period of wealth accumulation in midlife before people begin leaving the labor force (Hilton and Anderson 2009), 2) the majority of women in the sample divorced prior to 45 (72 percent of divorces), and 3) it accounts for age differences since respondents were 30 to 44 years old when the NLS-MW began in 1967. We drop women who divorced after 44 (N = 257) and 13 additional cases in which the type of marital dissolution women experienced could not be identified. In supplemental analyses, we replicated models without dropping women who divorced after 44, which yielded the same pattern of statistical significance and substantive conclusions we discuss here.

We address missing data using multiple imputation to construct 35 complete data sets, which

is the number recommended given the proportion of missing information in the analysis sample (Graham, Olchowski and Gilreath 2007). Most measures had low rates of missing data (roughly 15 percent or less) with the exception of car value, which was missing for approximately 35 percent of women because the NLS-MW did not ask about the value of cars in the 1967, 1982, 1987, or 1995 surveys. Diagnostic tests of the imputed data indicated that the values were similar to the distributions of the variables without imputations (Eddings and Marchenko 2012).

Measures

For income, we consider women's yearly earnings from employment and their total family income, which includes any other household member that contributes their earnings. For wealth, the NLS contains information on the value of homes; savings, stocks, investments, and bonds; businesses and farms; and vehicles in addition to money owed on real estate and vehicles and debts related to businesses and other lines of credit. Using this information, we created two sets of wealth measures: total net worth, which is measured as the sum of all wealth minus all debts, and then the components of wealth, including (1) the market value of the primary owner-occupied home or apartment, (2) the total value of checking and savings, (3) the market value of vehicles, and (4) the total value of stocks, bonds, and other investments. Following Hällsten and Pfeffer (2017), we use respondents' percentile ranking in the cumulative distribution function bounded by 0 and 1. We set a ceiling of one million dollars in order to reduce the influence of extreme outliers.

Our primary independent variable of interest is a binary indicator of women who divorced before the age of 45 (N=654). We also include binary controls for women who were widowed before the age of 65 (N = 851), women who never married (N = 216), and women who remarried (N = 367). In supplemental analyses, we tested the sensitivity of this operationalization of divorce. For both models that split divorces by age and models that split divorce by remarriage, results provided further evidence of the same overall conclusions that we present here.

The analysis also adjusts for several key sociodemographic variables related to marriage, wealth, and health. Educational attainment was operationalized as years of schooling. Educational attainment also has a strong relationship to marriage, race, wealth, and health (Prix and Pfeffer 2017). Adolescent SES and family structure are also negatively associated with health, the quality of romantic and peer relationships, and wealth in adulthood (Bernardi and Radl 2014, Bernardi, Boertien and Geven 2019, Umberson et al. 2014). We define adolescent family structure as living with both biological parents, living with mother but not biological father, or living in some other family structure at age 15, which is related to both adult family structure and wealth accumulation.

Because the occupation of Silent Generation women's fathers was the principal determinant of family SES prior to the expansion of education in the U.S. (Wolfe et al. 2018a, Wolfe et al. 2018b), we measure adolescent SES as both parental education and occupation. Parental occupation is measured as a set of categories, including manual (private household, service, operators, transportation, or laborers), farming (farmers and farm managers), skilled (technical and related support, sales, administrative support, protective services, or the military), and white-collar (managerial or professional occupations). We use fathers' information or, if fathers' information is missing, we use information about women's mothers (N=50).

Analysis

The analysis proceeded in two steps. First, we began by examining the relationship between marital status and components of wealth and income net of controls. Because components of wealth were measured as respondents' rank in the cumulative distribution function of wealth components, we use fractional logistic regression models, which are appropriate when the dependent variable takes values from 0 to 1 (StataCorp 2017). The models fit by Stata's command *fracreg* are quasi-likelihood estimators like generalized linear models. For a more detailed discussion of quasi-likelihood estimation and other applications of fractional regression

models see Papke and Wooldridge (1996) and Wooldridge (2010). For models predicting rank average economic resources between 45 and 64 (i.e., midlife adulthood prior to retirement), we also adjusted for women's average economic resources between the ages of 30 to 44, which is the age range of respondents when they began the survey in 1967.

After examining the associations between marital statuses and wealth, our final set of models considered women's mortality risk and the degree to which wealth and its components attenuate marital inequalities in survival. We used Gompertz proportional hazards models with age of entry defined by the respondent's age at the 1967 survey, and age of death, or age in 2012 for those still living, was measured in years. Gompertz models allow for an increasing hazard rate over time and are thus common when modeling survival (Preston, Heuveline and Guillot 2001).

Although parameters from fractional regression and survival models provide the significance of the relationship between covariates and outcomes, identifying the relative magnitude of effects in nonlinear models such as these required further investigation (Long 2009, StataCorp 2017). To gain a better sense of the relative sizes of associations, we used Stata's margins command to compare the differences in estimated percentile rank wealth between married and divorced women after fractional logistic regression models and differences in the median ages of death after Gompertz proportional hazards models.

Finally, to test the sensitivity of results, we also considered several supplemental analyses. We fit models with divorce during different age ranges (divorced before 30 or between 30 and 44) and models with the raw averages and the natural logs of economic resources rather than percentile rankings. In these supplemental analyses, we found further support that divorce is associated with housing wealth, and racial differences in the association between divorce and economic resources were also largest for housing and vehicle wealth. We also considered Cox models, which do not assume a specific distribution. The same substantive pattern of results emerged. Related, because Gompertz models are members of the proportional hazard family of

survival models that assume estimated hazard ratios are proportional over time, we tested the proportional hazard assumption using Schoenfeld residuals and found to hold for most variables (Kalbfleisch and Prentice 2011). Auxiliary analyses also relaxed the proportional hazard assumption for problematic variables and found the same conclusions regarding marital status and survival.

Endogeneity

A common problem for observational studies on family structure and economic resources involves endogeneity, i.e., selection effects (Bernardi, Boertien and Geven 2019). Non-random selection into family structures and socioeconomic attainment can lead to incorrect conclusions regarding relationships, or lack thereof, among model covariates. Any statistically significant relationships we observe between divorce and midlife economic resources could potentially reflect unobserved background factors that cause both divorce and lower socioeconomic attainment (Bernardi, Boertien and Geven 2019, McLanahan and Percheski 2008). We addressed potential endogeneity issues by controlling for adult economic resources prior to midlife, between ages 30 to 44, and several background characteristics, including women's education, parents' education and occupation, and women's family structure in adolescence. Nevertheless, we still interpret results cautiously as important, but still descriptive, information on divorce and the components of midlife economic resources among women. Likewise, although our survival analysis consists of a rigorous examination of the associations between divorce, economic resources, and mortality risk, these models should not be interpreted as a complete examination of the complex causal processes that determine age of death. Rather, we see this analysis as a first look into the midlife economic pathways that connect changes in adult family structure to mortality disparities in old age. In survival models, we control for the same set of background characteristics in survival models as we do in models predicting economic resources.

FINDINGS

Table 1 contains a full list of analysis variables with descriptive statistics (N=4,726). All economic indicators are displayed in 2017 constant dollars and units of $10,000. The age of respondents in 1967, ranging from 30 to 44, served as the age of entry into the risk set. By 2012, 44 percent of the sample was deceased, but this varied by race. A much larger percentage of the Black sample was deceased by 2012, 52 percent compared to 42 percent of the White sample. After splitting the sample by women who were continuously married and women who experienced a divorce (not shown), we also found that divorced White women had similar percentages of deaths, 47 percent, as married and divorced Black women, 54 and 48 percent, respectively. Only 40 percent of married White women were deceased, though. Indicators of economic resources and family structure had a similar pattern. That is, White married women are notably more advantaged than divorced White women and both married and divorced Black women.

-- Table 1 here --

Figure 1 displays the predicted differences between married and divorced women in their percentile rank economic resources. Predicted differences were calculated using several different fractional logistic regression models that controlled for women's marital statuses, years of schooling, parents' years of schooling and occupation, adolescent family structure, respondents' age in 1967, and average economic resources between the ages of 30 to 44 (see Table A1 in the appendix for model coefficients). The y-axis in Figure 1 represents differences in percentile rankings, and the x-axis refers to midlife economic resources. For example, the difference in the percentile rankings of midlife personal earnings between married and divorced White women (Model 1) is -.05, i.e., 5 percentage points lower for married women, because the conditional predicted rank for divorced women is .56 (56^{th} percentile earnings) and .51 (51^{st} percentile earnings) for married women, while holding other variables at their observed values.

-- Figure 1 here --

Figure 1 highlights two notable findings about the relationship between divorce and economic resources among older women. First, compared to their married counterparts, White women who divorced had significantly higher earnings than their married counterparts (51st compared to 56th percentile, respectively) but similar rank family income (approximately the 50th percentile). This suggests that divorced White women increased their personal earnings in middle adulthood to maintain the same overall income they had when married. For Black women, we found no evidence of differences in rank personal earnings or family income by divorce status ($p > .05$).

Second, we found that both Black and White women who divorce had significantly lower vehicle wealth than their married counterparts. Married Black and White women are in the 45th and 55th percentile in vehicle wealth, respectively, whereas divorced Black and White women are in the 40th and 45th percentile. In other words, divorce is related to a 5-point difference in rank vehicle wealth for Black women and a 10-point difference for White women. These differences in percentile rankings, in addition to the difference in differences, are all significant ($p < 0.001$). Aside from vehicle wealth, however, we found little evidence that divorce is related to Black women's wealth in midlife.

Third, we found significant differences in midlife home wealth between married and divorced White women but not between married and divorced Black women. Married White women were in the 53rd percentile for housing wealth, whereas divorced White women were in the 47th percentile. This 6-point difference in rank housing wealth was significant ($p < 0.001$). We also found evidence that divorce is associated with lower rank savings and investments for White women, but these differences were relatively small compared to differences in home and vehicle wealth.

Table 2 contains hazard ratios from Gompertz proportional hazards models stratified by race. In Model 1, we began with a base model that does not include any measure of economic

resources. We found that divorced White women have a mortality risk 1.42 ($p < 0.001$) times higher than the risk for continuously married White women, net of years of education, parents' education and occupation, and adolescent family structure, as well as age in 1967 and average economic resources between 30 to 44 years old (not shown). The survival of Black women was unrelated to their marital status across all four models, and the difference between Black and White women in terms of the association between divorce and survival is significant in every model (see Table A3 in the appendix).

-- Table 2 here --

In Models 2 through 4 of Table 2, we considered the components of income and wealth in relation to marital status and mortality risk. Although each of the economic resources had an inverse relationship with mortality risk, marital and racial inequalities were most attenuated in models that adjusted for women's housing wealth (Models 3 and 4). We tested the significance of differences between coefficients across models in Table 2 using the *suest* command in Stata 15.1 (see Table A2 in the appendix). We observed significant reductions in the coefficient for divorce after including net worth (Model 1 compared to Model 3) and wealth components (Model 1 compared to Model 4).

-- Figure 2 here --

To provide a visualization of inequalities in survival and the degree to which inequalities are influenced by components of economic resources, Figure 2 displays the predicted median age of death across several different Gompertz proportional hazards models with interactions between race and marital status (see Table A3 in the appendix for coefficients). In Models 2 through 7, each measure of wealth reduced marital and racial differences in the predicted median age of death. Once again, however, mortality inequalities were smallest when models included home wealth (Models 4 and 7). In both Models 4 and 7, point estimates and confidence intervals were nearly overlapping regardless of race or marital status. Thus, home wealth appears to be

especially important in reducing not only the association between divorce and survival for White women but also overall racial inequalities in survival.

DISCUSSION

The close relationships between divorce and economic resources, economic resources and mortality, and divorce and mortality are all well-established (Liu and Umberson 2008, Roxburgh 2014, Wilmoth and Koso 2002). Nevertheless, these literatures have been largely separate, with relatively little empirical research on how exactly they are interrelated. To address this gap, we considered marital and racial inequalities in economic resources and survival among Silent Generation women—a group which came into adulthood during a period of relatively low divorce rates but profound gender and racial inequalities (Goldin 2006, Meier, Stewart and England 1989). Below, we discuss the major contributions of this study, limitations of the analysis, and possible directions for future scholarship and policy.

The principal contribution of this study was the identification of the midlife economic pathways linking divorce to mortality risk for women entering old age. Despite prior studies suggesting that divorced women have higher mortality risk due to a loss of economic resources, research has not examined how different components of income and wealth differentially shape marital inequalities in survival. Drawing from multiple lines of sociological scholarship, we argued that marriage is a mechanism of midlife stratification given its relationship to wealth accumulation (Addo and Lichter 2013, Schwartz and Mare 2005). For Silent generation White women, we found evidence that a retreat from marriage through divorce was related to substantially less wealth (including net worth, home wealth, vehicle wealth, savings, and investments) but higher personal earnings. For Black women, only vehicle wealth was significantly lower among divorced women.

Although divorce was generally related to fewer economic resources for White women in midlife, housing wealth had the most influence on mortality differences between married and

divorced White women, as well as between Black and White women. As an appreciating asset, housing wealth is able to gain value over time (Killewald and Bryan 2016), but it also has present-day use value, which is unique even among appreciating assets. Housing not only provides a place for shelter, but a house with more value represents better quality neighborhoods with less crime, better quality schools, senior centers, and medical resources, and perhaps even more involved neighbors (Woldoff and Ovadia 2009, Yilmazer, Babiarz and Liu 2015)—all of which lower mortality risk (Lochner et al. 2003). Many studies of adults in later life control for whether one owns a home within their models (Mudrazija, Thomeer and Angel 2015, Silverstein and Angelelli 1998), and some studies only consider non-housing wealth (Gallo et al. 2006, Lahey and Kim 2001). However, our findings suggest that studies should more often consider housing wealth as a separate measure—above and beyond net worth or homeownership. Housing wealth also seems to have a uniquely strong association with mortality differences, whereas women's earnings and family income, vehicle wealth, savings, and investments did relatively little to reduce differences in survival. Thus, our results provide further evidence that home wealth is an important identifier of midlife economic and health-related advantages.

A second notable contribution of this study is our comparisons of Black and White women. Overall, divorce had few economic consequences for Black women, the exception being that married Black women generally had greater vehicle wealth than their divorced counterparts. Vehicle wealth, however, had no association with Black women's mortality risk. This result supports past studies that find marital status matters less for the wealth and health of Black adults (Dupre 2016, Liu and Reczek 2012, Roxburgh 2014). The privileges afforded to the married, including health and longevity, seem to be reserved for White women in the Silent generation. In general, divorce brought greater economic change to the lives of these White women—in terms of both an increase in earnings and a decrease in wealth—than to Black women. Black women,

due to the broader context of institutionalized racism in the U.S., had less to gain from marriage and less to lose from divorce.

Marital status is an important marker of inequality within the U.S., but our results suggest that race matters more with respect to economic resources and survival among Silent Generation women. Nevertheless, we should not disregard marital status in the lives of Black women, as race and marital status are inherently intertwined in the U.S. (Marks et al. 2008, Umberson, Liu and Powers 2009). Furthermore, we found that divorced Black women have a notable economic disadvantage with respect to vehicle wealth, which is consequential as personal transportation availability and reliability is important for employment and overall well-being. Overall, however, our results suggest that marriage is not a primary source of inequality within the broader Black population in the same way as it is within the White population of women in the Silent generation.

Limitations and Opportunities for Future Research

Our study is unique in its ability to examine the connections between marital and racial inequalities in economic resources and longevity, but our findings are still limited. First, although informed by health disparities and stratification scholarship on wealth and status (Killewald, Pfeffer and Schachner 2017, Phelan, Link and Tehranifar 2010), our analysis should not be interpreted in causal terms. Even though we adjust for a number of potential confounders, including women's average economic resources prior to midlife, we suspect that at least some portion of the associations we find are caused by unobserved characteristics in women and their social contexts. Related, although our interest in women's survival and economic resources made the NLS-MW the ideal dataset, the NLS began when women were between the ages of 30 to 44, and data collection skipped several years. This means that we are unable to accurately measure the timing of all marital dissolutions or economic loss or acquisition.

Regardless of threats to causality, our results provide important new information by unpacking the economic factors related to marital and racial inequalities in women's survival. In supplemental analyses, we also replicated the association between divorce and economic resources using both random and fixed-effects models. Nevertheless, new causal methods for examining mediation processes within survival models offer promising new avenues of study (VanderWeele 2011). Future research could extend our findings by exploring earlier periods of the life course that help explain which groups of women are more likely to have marital interruptions, and how these underlying characteristics may also shape their accumulation of wealth regardless of marital status.

Second, we did not consider the emotional and behavioral problems that are often related to divorce. This issue is related to our first limitation in that mental health and substance abuse are another important set of unobserved characteristics that future work should consider in more detail. Future research should consider whether behavioral problems, depression, and substance abuse early in life create recurring relationship problems, damage health, and eventually increase mortality risk. Future research should also consider whether the distress and isolation that follow marital strain and divorce act as more proximate determinants of poor health in later adulthood. In other words, are marital inequalities the catalyst of health disparities or the final results of a lifelong cumulative disadvantage process.

Conclusion

That divorce hurts women financially is well-known, but our study provides further evidence that this pattern is not universal. Silent Generation Black women, regardless of marital status, had lower rates of economic resources than both married and divorced White women. This holds true across all economic resources considered in this study and suggests that a focus on economic disparities across marital statuses could lead us to overlook the much more sizable racial gap in economic resources. National headlines point to the growing issue of the racial wealth gap, with

some even calling it “America’s most pressing epidemic” (Thompson 2018). The wealth gap stands alongside a long-existing racial income gap—both the products of systemic racism (Greenman and Xie 2008). By separating components of economic resources, we add further evidence and detail to the assertion that Black women’s economic well-being is less tied to marital status than White women’s (Oliver and Shapiro 2006, Roxburgh 2014, Teachman 2010).

We focused on the experiences of Silent Generation women, identifying the racial and marital status disparities around economic resources and mortality within this population. Future research should extend our findings by incorporating information on men and more recent cohorts. A large body of research suggests that the benefits of marriage vary for men and for more recent cohorts as traditional gender attitudes have given way to more egalitarian views of women’s role in the family and labor market (Goldin 2014). Thus, women’s wealth is less dependent on spousal attainment and vice versa, which suggests that the economic and health-related consequences of divorce are likely increasing for men and decreasing for women.

The processes we have identified are likely still relevant for more recent birth cohorts, as Black women continue to have lower rates of marriage and higher rates of divorce as well as lower survival and fewer economic resources (Greenman and Xie 2008, Olshansky et al. 2012, Sweeney and Phillips 2004). As research moves forward into more recent cohorts of women, we can learn from the experiences of the previous generations and begin to develop policies and interventions that improve the lives of Black women and divorced White women without exacerbating racial disparities. Given that housing wealth was a was strongly related to racial inequalities in survival, programs targeted at improving homeownership and home value for Black women could help reduce the profound mortality gap we see between racial groups in the U.S. today.

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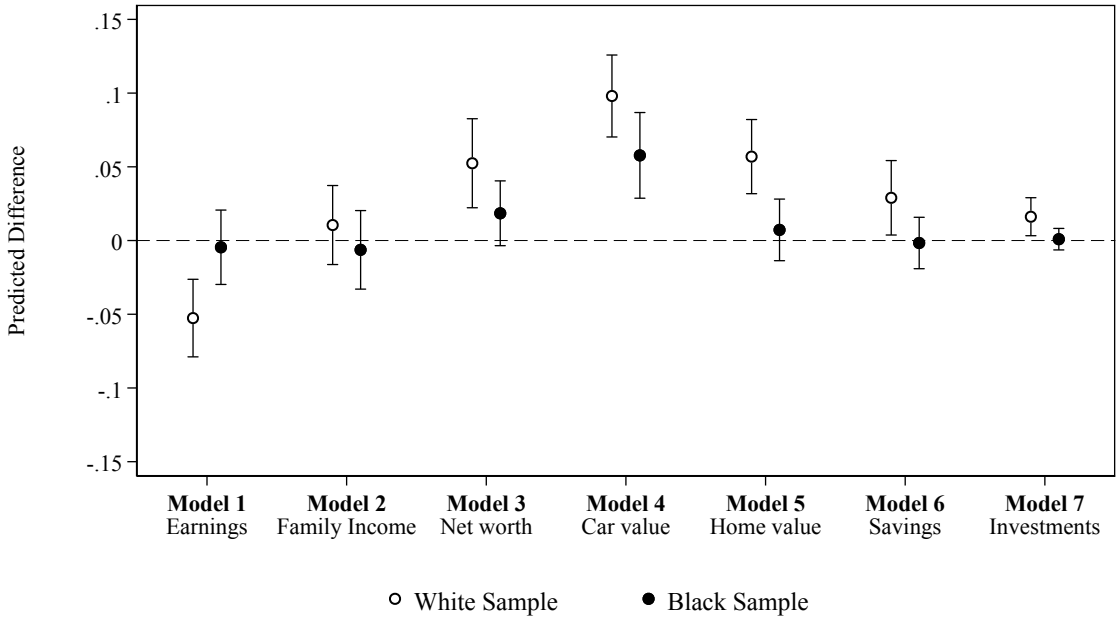
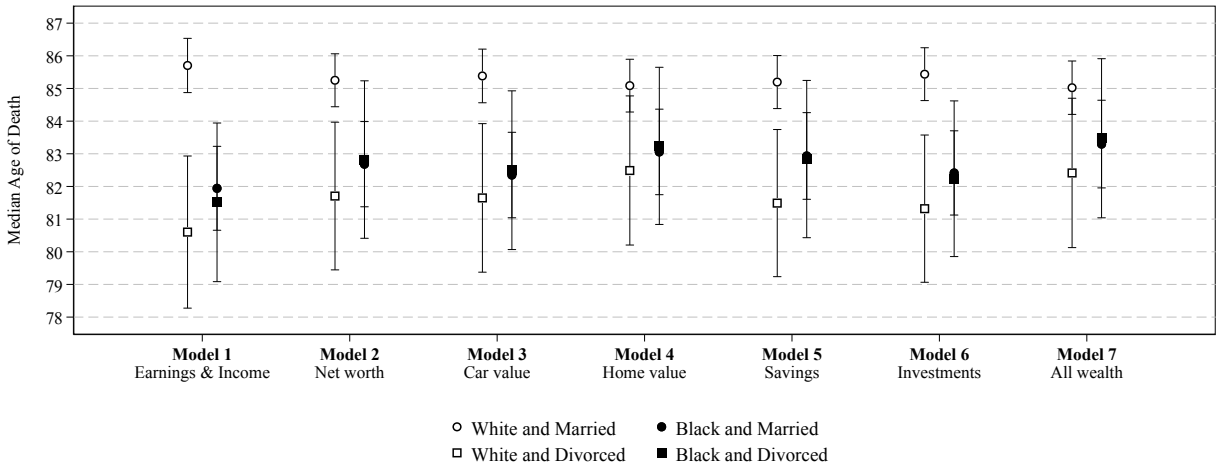
Figure 1: Predicted Differences Between Married and Divorced Women in Percentile Ranking of Average Income and Wealth with 95 Percent Confidence Intervals from Fractional Logistic Regression Models



Note: Post-estimation values were calculated using parameter estimates from fractional logistic regression models predicting economic resources (see Table A1 in the appendix). Positive values mean married women have, on average, higher rank wealth than divorced women. Differences with confidence intervals that overlap 0 are not significant. Differences were estimated while holding other variables at their observed values. All models control for age in 1967, average economic resources between the ages of 30 and 44, years of schooling, parents' years of schooling and occupation, and adolescent family structure.

Figure 2: Predicted Median Age of Death by Race and Marital Status with 95 Percent Confidence Intervals



Note: Post-estimation values were calculated using parameter estimates from Gompertz proportional hazards models adjusting for components of income and wealth (see Table A3 in the appendix). All models control for age in 1967, average economic resources between the ages of 30 and 44, education, parents' occupation, and family structure at 15. Model 7 includes home value, vehicle value, savings, and investments, i.e., all four components of wealth.

Table 1. Averages or Proportions of Analysis Variables by Race (*N*=4,726)

			Black women (*N*=1,305)	White women (*N*=3,421)
	Min	Max	Average or Proportion	Average or Proportion
Deceased by 2012	0	1	0.52	0.42
Marital History				
Continuously married	0	1	0.54	0.72
Ever divorced	0	1	0.22	0.11
Ever widowed	0	1	0.26	0.15
Never married	0	1	0.06	0.04
Remarried	0	1	0.07	0.08
Economic Resources [a]				
Personal earnings	0	19.75	1.24	1.47
Family income	0	20.90	2.42	4.69
Total net worth	-1.50	100	2.90	11.92
Home value	0	100	4.59	13.82
Car value	0	13.72	0.44	1.20
Savings and checking	0	67.26	0.32	3.78
Investments	0	97.40	0.05	1.39
Controls				
Years of schooling	0	18	9.80	11.39
Parents' years of schooling	0	18	5.59	7.97
Parents' occupation				
Manual labor	0	1	0.54	0.35
Farming	0	1	0.35	0.20
Skilled	0	1	0.11	0.27
White collar	0	1	--	0.18
Adolescent family structure				
Lived with both parents	0	1	0.55	0.78
Lived with mother but not father	0	1	0.23	0.13
Other family structure	0	1	0.22	0.09

[a] Economic resources are in 2017 dollars and displayed in units of $10,000. Due to extreme outliers, the maximum value is set to $1,000,000.

Table 2: Hazard Ratios from Gompertz Proportional Hazards Models (*N*=4,726)

	Model 1		**Model 2**		**Model 3**		**Model 4**	
	White	Black	White	Black	White	Black	White	Black
Marital status								
Married (reference)								
Ever divorced	1.42***	1.01	1.38**	0.94	1.32**	0.97	1.23*	0.96
	(0.13)	(0.10)	(0.14)	(0.10)	(0.13)	(0.10)	(0.12)	(0.10)
Ever widowed	1.06	0.93	1.07	0.91	1.06	0.93	1.01	0.92
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Never married	1.42**	1.01	1.36*	0.93	1.31*	0.94	1.20	0.92
	(0.18)	(0.17)	(0.18)	(0.16)	(0.17)	(0.16)	(0.16)	(0.16)
Remarried	0.85	0.87	0.81	0.89	0.87	0.90	0.88	0.90
	(0.10)	(0.15)	(0.09)	(0.16)	(0.10)	(0.16)	(0.10)	(0.16)
Personal earnings			0.48***	0.39**				
			(0.08)	(0.13)				
Family income			1.13	1.17				
			(0.18)	(0.39)				
Total net worth					0.63***	0.55		
					(0.08)	(0.17)		
Home value							0.52***	1.23
							(0.09)	(0.43)
Car value							0.93	0.74
							(0.15)	(0.20)
Savings & checking							0.90	0.33*
							(0.18)	(0.16)
Investments							0.68	0.97
							(0.25)	(1.22)
Years of schooling	0.93***	0.96**	0.94***	0.98	0.94***	0.97*	0.96***	0.98
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parents' schooling	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parent occupation								
Manual (reference)								
Farming	0.85*	0.78*	0.83*	0.78*	0.86*	0.79*	0.83*	0.80*
	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)
Skilled	0.89	0.91	0.90	0.91	0.91	0.91	0.94	0.90
	(0.07)	(0.13)	(0.07)	(0.13)	(0.07)	(0.13)	(0.07)	(0.13)
White collar	1.07		1.06		1.06		1.12	
	(0.09)		(0.09)		(0.09)		(0.10)	
Adolescent family structure								
Both parents (reference)								
Lived with mother only	1.08	0.85	1.08	0.86	1.07	0.86	1.07	0.86
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Other family structure	1.14	1.03	1.14	1.04	1.13	1.03	1.12	1.03
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)

Note: Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed tests). Models include controls for age in 1967 and average economic resources between the ages of 30 and 44.

APPENDIX

Table A1: Fractional Logistic Regression Models Predicting Percentile Rank in Wealth Among Silent Generation Women (N=4,726)

	Model 1 Personal Earnings	**Model 2** Family Income	**Model 3** Net Worth	**Model 4** Car Value	**Model 5** Home Value	**Model 6** Savings & Checking	**Model 7** Invest-ments
Marital Status							
Married (ref.)							
Divorced	0.25***	-0.05	-0.23***	-0.43***	-0.27***	-0.13*	-0.08*
	(0.06)	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)	(0.03)
Widowed	0.12*	-0.37***	-0.09	-0.23***	-0.27***	-0.01	0.00
	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.02)
Never married	0.18*	-0.28**	-0.33***	-0.72***	-0.40***	-0.20*	0.02
	(0.09)	(0.09)	(0.10)	(0.09)	(0.09)	(0.09)	(0.05)
Remarried	-0.26***	0.17*	0.17*	0.38***	0.13	0.11	0.05
	(0.07)	(0.08)	(0.08)	(0.07)	(0.07)	(0.07)	(0.04)
Black women	0.01	-0.17***	-0.41***	-0.42***	-0.35***	-0.41***	-0.12***
	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.03)	(0.02)
Black X divorced	-0.22**	0.08	0.15	0.17	0.23**	0.14	0.07*
	(0.09)	(0.09)	(0.08)	(0.09)	(0.08)	(0.07)	(0.03)
Black X widowed	-0.14*	0.11	0.12	0.10	0.20***	0.02	0.02
	(0.07)	(0.07)	(0.06)	(0.08)	(0.06)	(0.06)	(0.03)
Black X never married	-0.22	-0.01	-0.07	0.16	0.07	0.03	-0.04
	(0.13)	(0.14)	(0.12)	(0.14)	(0.11)	(0.11)	(0.06)
Black X remarried	0.37**	0.03	0.03	-0.02	0.10	-0.13	-0.04
	(0.11)	(0.13)	(0.10)	(0.14)	(0.10)	(0.09)	(0.05)
Years of schooling	0.08***	0.08***	0.06***	0.08***	0.06***	0.05***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Parents' years of schooling	0.01	0.01	0.01*	0.01*	0.01**	0.01*	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Parents' Occupation							
Manual (ref.)							
Farming	-0.03	-0.04	-0.02	0.09*	-0.05	-0.02	-0.02
	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.02)
Skilled	0.02	-0.00	0.04	0.08	0.07	0.02	0.01
	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.02)
White collar	-0.06	-0.02	-0.02	0.06	0.09	-0.02	0.09**
	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)	(0.03)
Family structure at 15							
Both parents (ref.)							
Mother but not father	0.00	-0.02	0.00	0.02	0.04	-0.05	-0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.02)
Other structure	-0.04	-0.11*	-0.04	-0.06	-0.03	-0.05	-0.02
	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.02)

Note: Standard errors in parentheses. Models include controls for age in 1967 and average economic resources between the ages of 30 and 44.

Table A2. Differences in Coefficients across Gompertz Hazards Models, White women (N=4,726)

	Model 1 – Model 2	Model 1 – Model 3	Model 1 – Model 4	(Model 1–Model 4) – (Model 1–Model 2)	(Model 1–Model 4) – (Model 1–Model 3)
Divorced	0.02	0.07***	0.13***	0.11**	0.06*
	(0.04)	(0.02)	(0.03)	(0.04)	(0.02)
Never married	0.05	0.08***	0.17**	0.12	0.09
	(0.05)	(0.02)	(0.05)	(0.07)	(0.04)

Note: Models control for women's marital statuses, years of schooling, parents' years of schooling and occupation, adolescent family structure, respondents' age in 1967, and average economic resources between the ages of 30 and 44. To compare coefficients across models, we use the *suest* command in Stata 15.1. We first have the differences between each base model. For the white sample, we observe significant reductions in the coefficients for both ever divorced and never married after we control for housing wealth in Models 3 and 4 of Table 2 in the manuscript.

Table A3: Parameter Estimates from Gompertz Proportional Hazards Models (N=4,726)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Marital Status							
Married (ref.)							
Divorced	0.31**	0.27**	0.28**	0.20*	0.28**	0.31***	0.20*
	(0.10)	(0.09)	(0.10)	(0.10)	(0.09)	(0.09)	(0.10)
Widowed	0.08	0.07	0.04	0.01	0.07	0.07	0.02
	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Never married	0.27*	0.25	0.24	0.12	0.30*	0.34**	0.16
	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)
Remarried	-0.23*	-0.15	-0.12	-0.14	-0.14	-0.16	-0.13
	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Black women	0.30***	0.24***	0.27***	0.18**	0.21**	0.27***	0.16*
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)	(0.07)
Black X divorced	-0.34*	-0.28*	-0.29*	-0.21	-0.27*	-0.30*	-0.21
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Black X widowed	-0.20	-0.17	-0.16	-0.13	-0.17	-0.17	-0.13
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Black X never married	-0.32	-0.29	-0.29	-0.19	-0.31	-0.33	-0.22
	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)
Black X remarried	0.10	0.02	0.01	0.02	0.00	0.02	0.01
	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)	(0.21)
Years of schooling	-0.04***	-0.05***	-0.05***	-0.04***	-0.04***	-0.05***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parents' schooling	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Parents' Occupation							
Manual (ref.)							
Farming	-0.22***	-0.20**	-0.19**	-0.21***	-0.20***	-0.21***	-0.21***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Skilled	-0.12	-0.11	-0.12	-0.09	-0.11	-0.12	-0.08
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
White collar	0.02	0.01	0.02	0.06	0.03	0.05	0.07
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Family structure at 15							
Both parents (ref.)							
Mother but not father	-0.01	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Other structure	0.10	0.09	0.10	0.09	0.10	0.10	0.09
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Earnings	-0.79***						
	(0.15)						
Family Income	0.14						
	(0.14)						
Total net worth		-0.51***					
		(0.12)					
Car value			-0.51***				-0.13
			(0.12)				(0.13)
Home value				-0.72***			-0.55***
				(0.14)			(0.15)
Savings & checking					-0.57***		-0.21
					(0.14)		(0.19)
Investments						-1.03***	-0.36
						(0.27)	(0.36)

Note: Models include controls for age in 1967 and average economic resources between the ages of 30 and 44.