Racial Stratification, Union Formation, and Health Risk Indicators

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Abstract
I utilize four waves of data from the National Longitudinal Study of Adolescent Health and fixed-effects regression analysis to assess whether the consequences of marriage and cohabitation for body mass index, binge drinking, and tobacco use differ for non-Hispanic White, non-Hispanic Black, and Hispanic men and women. Results indicate that marriage and cohabitation are associated with increases in BMI that are greatest in magnitude for Blacks, followed by Hispanics, followed by Whites. Further, Blacks experience increases in tobacco use following cohabitation, whereas Whites and Hispanics do not. I situate my results in the context of the U.S. racial stratification system, speculating that 1) the effects of racism and discrimination limit prospects for high quality, stable unions, and 2) chronic exposure to discrimination places strain on otherwise healthy relationships, thereby lowering relationship quality and moderating the impact of intimate union involvement on health risks.

Racial Stratification, Union Formation, and Health Risk Indicators

Intimate unions affect individuals in ways that both reduce and intensify health risks. For instance, marriage and cohabitation encourage reductions in binge drinking and tobacco use (Duncan et al 2006; Umberson 1987), both of which cause premature death and collectively account for over 500,000 deaths in the US per year (Adhikari et al 2008; Kanny et al 2012). However, marriage and cohabitation also foster gains in body mass index (BMI), thereby increasing the risk of becoming overweight/obese and consequently the risk of developing chronic ailments such as type-2 diabetes, heart disease, and cancer (Averett et al 2008; The and Gordon-Larsen 2009). Despite abundant research linking intimate union status to health risk indicators, scholars know little regarding racial/ethnic variations in such relationships. Collectively, studies examining racial/ethnic differences in the effects of union status on health risk indicators yield conflicting results and often are restricted to one or two racial groups, are representative of earlier cohorts, and/or utilize cross-sectional data.

Yet widely divergent patterns of intimate union involvement for different racial/ethnic groups in the US as well as evidence of racial/ethnic variations in the quality of intimate unions provide ample reasons to expect racial/ethnic heterogeneity in the effects of intimate union status on health risks (Bryant et al 2010; Guzzo 2009). Race/ethnicity is a core source of stratification in the US that influences individual outcomes across multiple domains, including the family (Burton et al 2010). As McLanahan and Percheski (2008) have argued, the family is an important institution through which social inequality is maintained and transmitted within and across generations, but scholars are only beginning to understand the processes through which such transmission occurs. Racial/ethnic differences in the consequences of union status for health risk indicators may play an important role in this process. In the current study, I utilize contemporary longitudinal data and fixed effects analyses to estimate the influence of union status on BMI, binge drinking, and tobacco use as well as determine whether these effects differ for non-Hispanic white, non-Hispanic black, and Hispanic[1] men and women.

Theory and Previous Research

Union Status and Health Risk Indicators

Intimate unions such as marriage and cohabitation have multifaceted consequences for health. In part, intimate unions minimize health risks, as exemplified by the lower mortality, better self-reported health, and lower prevalence of depression and anxiety among married and cohabiting individuals compared to their unmarried, non-cohabiting counterparts (Liu and Reczek 2012; Molloy et al 2009; Williams 2003). For instance, marriage and cohabitation promote decreases in binge drinking and tobacco use (Bachman et al 2002; Duncan et al 2006), thereby lowering risks for conditions such as heart disease or cancer that are caused by use of these substances (Adhikari et al 2008; Kanny et al 2012).

But through what mechanisms do intimate unions reduce health risks? First, intimate unions allow individuals to pool their economic resources, and increases in economic resources curtail health risks (Braveman et al 2010; Link and Phelan 1995). Second, intimate unions influence health risks through their provision of social support and social control (Turner and Marino 1994; Umberson 1987). Because of its more formal social contract, marriage is often thought to provide more social support and social control than cohabitation. Social support is

important for health risks in multiple ways, and especially through its ability to buffer the effects of stress (Thoits 2011). The influence of social control on health risk indicators stems in part from the social roles associated with intimate unions, e.g. entering a committed relationship might symbolize a step towards adulthood that demands responsibility and obligation (Duncan et al 2006; Umberson 1987). Further, intimate unions provide individuals with purpose and a sense of belonging that might encourage abandonment of unhealthy substance use (Thoits 2011). Partners can also exert social control over one another directly, through monitoring and encouraging one another to adopt healthy behaviors or discard unhealthy behaviors (Umberson 1987).

At the same time, the social support and social control provided by intimate unions increase some health risks. In particular, the social roles associated with intimate unions foster lifestyle changes that increase body mass index, such as more regular meals, a more sedentary lifestyle, and more social obligations to attend functions that involve food (Averett et al 2008; Umberson et al 2009). In addition to increasing the risk of becoming overweight or obese and developing a number of chronic health conditions associated with overweight/obesity, even small gains in body mass index during early adulthood can have serious consequences for future morbidity patterns. For example, higher BMI in young adulthood is associated with more health care costs later in life (Daviglus et al 2004). Further, one study finds that each BMI unit gained in early adulthood increases the risk of developing Type 2 diabetes between ages 40 and 55 by 15% among men and 11% among women (Schienkiewitz et al 2006).

Making Sense of Racial Inequalities, Union Status, and Health Risks

Why might there be differences in the effects of union status on health risks by race/ethnicity? In this paper, I conceptualize racial/ethnic variations in the effects of union status on health risks as consequences of the U.S. racial stratification system. Relative to non-Hispanic whites, research indicates that experiences with racism, discrimination, and segregation are most prevalent among blacks, followed by Hispanics (Iceland and Nelson 2008; Lichter et al 2007; Lichter and Qian 2004; Pager 2007; Pérez et al 2008; Rosebaum and Friedman 2007). Among individuals from historically disadvantaged racial/ethnic groups, the effects of racism, discrimination, and segregation might strain potential prospects for high quality unions. Prominent scholars argue that the legacy of racism targeting black Americans has led to high percentages of unemployment, incarceration, and homicide among black men, effectively limiting the pool of available partners for black women that are of 'marriage-material' (Wilson 1987). Relatedly, both marital and cohabiting unions are less stable among blacks than nonblacks (Guzzo 2009), and these patterns have grown stronger over time (Clarkwest 2007; Corra et al 2009; Raley and Bumpass 2003). Blacks also report more multi-partner fertility compared to their nonblack counterparts (Guzzo and Furstenberg 2007a, b)(Broman 2005) as well as higher proportions of single parent households (Blau and van der Klaauw 2008). Insofar as economic resources are responsible for the union status-health link (Oppenheimer 1997), higher rates of poverty and economic disadvantage among blacks and Hispanics compared to whites also limit opportunities for forming relationships that might benefit health (Kaiser Family Foundation 2012). That is, more economic disadvantage denotes fewer economic resources to pool with potential partners, thereby reducing the economic gains from marriage and any resulting benefits to health risks (Patterson 1998).

In addition to posing structural limitations on relationship prospects, chronic exposure to discrimination and racism can place strain on otherwise healthy marriages, leading to low marital

quality (Bryant et al 2010; Lincoln and Chae 2010; Trail et al 2011). Research clearly shows that marriages of poorer quality do not confer the same level of social support as do high quality marriages (Williams 2003). In fact, low quality relationships can be harmful for individual well-being (Umberson et al 2006). Moreover, the lower levels of social support in strained relationships means that such unions are less effective in protecting individuals from the negative effects of stress exposure in other domains. For instance, perceived racism and discrimination are significantly associated both with increases in psychological distress and with increases in smoking, binge drinking, unhealthy eating, and body weight (Brodish et al 2011; Ornelas and Hong 2012; Purnell et al 2012; Shariff-Marco et al 2010; Torres et al 2012).

It is possible that any racial differences found concerning the effects of union status on BMI, binge drinking, and tobacco use might also vary by gender. Race and gender are entangled statuses that cannot be examined independently of one another (Roxburgh 2009). Further, it is possible that the effects of racism and discrimination on BMI, binge drinking, and tobacco use vary by gender. Research indicates that for both blacks and Hispanics, perceived discrimination increases substance use more so for men than women (Brodish et al 2011; Ornelas and Hong 2012; Wiehe et al 2010). In contrast, perceived discrimination increases disordered eating more so in women than men (Piquero et al 2010). To consider variations by gender in any racial differences found concerning the effects of union status on BMI, binge drinking, and tobacco use, I estimate all models separately for men and women.

In sum, In the current study, I argue that the effects of racism, discrimination, and segregation that accompany the racial hierarchy in the United States jointly limit prospects for high quality, stable unions and place strain on otherwise healthy relationships among individuals in historically disadvantaged racial/ethnic groups. Specifically, because research suggests that blacks and Hispanics experience more discrimination than whites, and that blacks experience more racism and discrimination than whites or Hispanics, I hypothesize that 1) involvement in marriage and cohabitation will be associated with an increase in BMI that will be greatest for blacks, followed by Hispanics, followed by whites; and 2) involvement in marriage and cohabitation will be associated with decreases in tobacco use and binge drinking that will be greatest for whites, followed by Hispanics, followed by blacks.

Methodological Contributions

Existing research yields conflicting results regarding race/ethnicity, union status, and health risks, and often focuses on blacks specifically or on comparisons between whites and blacks. Some of these studies examining mental or physical health outcomes find that, among blacks, marriage is indeed beneficial for health risks (Roxburgh 2009; Shortridge and James 2010). However, these benefits are often limited to select subsamples, such as to marriages that endure over the life course (Green et al 2012). Other studies focusing on mental or physical health outcomes find few to no benefits of union status for health risks among blacks (Brown and Cochran 2003; Liu and Umberson 2008; Schwandt et al 2010).

Studies focused specifically on identifying racial/ethnic differences in the influence of union status on health risk indicators are more limited, and also yield conflicting results. For instance, some studies find that union status predicts similar increases in BMI for white, black, and Hispanic men and women (Averett et al 2008), while others find that the consequences of marriage for BMI are steepest among black women (Shafer 2010), while yet others find that the first several years of marriage predict increases in BMI among whites but decreases in BMI among blacks (Umberson et al 2009). Similarly, there are conflicting results as to whether

involvement in marriage or cohabitation reduces substance use among blacks (Ali and Ajilore 2011; Harris 2009). These conflicting results are likely tied to differences across studies in data selection, sample specification and analytic methods. As a result, limited generalizable knowledge exists of racial/ethnic differences in the effects of union status on health risk indicators.

In this study, I aim to strengthen this knowledge via three main methodological contributions. First, I utilize contemporary data representative of adults transitioning into marriage and cohabitation in the 21st century and consider racial/ethnic variations in the relationship between union status and health risk indicators across a sample of non-Hispanic white, non-Hispanic black, and Hispanic men and women – an important contribution given the growing importance of the Hispanic population to the demographic landscape in the United States (Ennis et al 2011). Second, I utilize fixed effects regression analysis, an analytic method that has garnered much support for demonstrating causal relationships, and formally test for racial/ethnic differences concerning the impact of union status on health risk indicators (Allison 2009; Stock and Watson 2011). Though scholars can never truly prove causality, the increasing availability of longitudinal data and sophisticated statistical methods has made it possible for researchers to minimize the risks of selection bias. A central strength of fixed effects regression analysis is that it estimates within-individual change over time, thus implicitly controlling for all time-invariant characteristics such as race/ethnicity and gender and therefore eliminating omitted variable bias that stems from characteristics that do not change over time. While preventing any direct estimation of time-invariant effects, scholars can easily incorporate subgroup differences through the use of interaction terms (i.e. by interacting time-invariant indicators with the time-varying independent variables of interest).

Third, I include as few time-varying controls in my models as possible so that I can better assess the extent to which the effects of union status on health risk indicators differ by race/ethnicity. There are various racial/ethnic differences in socioeconomic outcomes (such as income, employment, and education) that can be tied to institutional racism and discrimination. For instance, both blacks and Hispanics are systematically more economically disadvantaged compared to whites. If scholars predict effects of race/ethnicity on a given outcome and argue that the predicted effects will work through racial stratification, and then control for the ways that racial stratification works, then they risk underestimating the full effects. Moreover, although social scientists often put a lot of weight on control variables, methodologists are becoming increasingly precautious about the dangers of over-controlling (Lieberson and Lynn 2002). In the words of Lieberson and Lynn: "There is always the possibility that "controlling" for an additional attribute might completely alter the conclusions previously reached. Carried to the extreme, we are not in danger of approaching a slippery slope—we are on it." (page 8).

Data and Method

I analyze data from the National Longitudinal Study of Adolescent Health (Add Health), a nationally representative sample of young adults aged 24 to 32 by the most recent wave (Harris 2009). The first wave of Add Health was collected in 1995, and included students in grades 7 through 12 from a sample of 145 U.S. middle, junior high, and high schools. In addition to conducting an in-school survey, there were separate in-home surveys given to both the respondents and their parents. Subsequent in-home interviews with the respondents were collected in 1996, 2001-2002, and 2007-2008. Parent interviews were not repeated beyond the first wave. The longitudinal sample contains data on 9,421 respondents. My analytic sample

contains 5541 respondents[2] and is drawn from the 6032 respondents in the longitudinal sample that were observed in a first marriage or current cohabitation in at least one of the four waves. While it would have been ideal to include as many racial groups as possible in the analysis, upon examination of non-missing values on key variables and cell sizes for union status by gender, there were too few Asians or 'other' race respondents for inclusion in the analysis. Therefore, from these respondents I included non-Hispanic white, non-Hispanic black, and Hispanic respondents (N = 5551) who were not missing on any key variables (N = 5541). Finally, I selected those who had at least one observation on each dependent variable both before and after their union transition (N = 5414).

Key Variables

Race/ethnicity and Gender. Race/ethnicity is self-reported, and includes categories for non-Hispanic white (65%), non-Hispanic black (18%), and Hispanic (17%). Race/ethnicity is asked at Waves 1 and 3. I use the value reported at Wave 3, and substitute the Wave 1 value if the Wave 3 value is missing. All multivariate analyses test for interactions by race/ethnicity and are ran separately for women (56%) and men (44%).

Union Status. At each wave, respondents are categorized as 1. never-married and not currently cohabiting (i.e. single), 2. never married and currently cohabiting, or 3. currently in their first marriage. At Wave 1, all respondents are single. By Wave 4, all respondents are married or cohabiting, or have been censored from the sample if they are no longer in their first marriage or in a current cohabitation. Note that it is possible for individuals to be single, then be observed in cohabitation, and finally be observed in a first marriage. Among women in the analytic sample, approximately 71% of whites, 73% of Hispanics, and 50% of blacks eventually marry. Among men in the analytic sample, approximately 65% of whites, 63% of Hispanics, and 48% of blacks in eventually marry. Across racial/gender groups, very few (between 0% and 2%) marry between Waves 1 and 2, while the majority (between 33% and 47%) marries between Waves 3 and 4. Note that some individuals were observed only in marriage, whereas others (between 6% and 11% across race/gender groups) were observed in both cohabitation and marriage. Among those observed in both cohabitation and marriage, 69% of whites, 67% of Hispanics, and 53% of blacks cohabit and then marry the same partner. Among those who never marry but are observed in cohabitation, 82% are observed at one wave and 18% are observed at two waves. With the exception of 17 individuals who cohabited in Wave 2, were single in Wave 3, and were again cohabiting in Wave 4, all individuals who cohabit twice do so in consecutive waves. By Wave 4, between 6% and 11% of each racial/gender group sample has been censored from the sample due to ending their first marriage, while between 4% and 8% has been censored because they are no longer observed in a current cohabitation.

Body Mass Index. For Waves 2 through 4, BMI is calculated using height and weight measures taken by the interviewers themselves, with the formula used by the Centers for Disease Control: weight (lb) / [height(in)] X 703 (Center for Disease Control 2012). Because BMI is only self-reported at Wave 1, I begin tracking BMI at Wave 2, when it is first measured. Because it is measured at W2 as baseline, individuals who become marry between waves 1 and 2 (N= 37) are not included in models for BMI. When the measured height and weight were missing, these values were replaced with the height and weight reported by the respondent. Results did not change when omitting these self-reported cases.

Binge Drinking Frequency, Past Year. At each wave, respondents are asked, "Over the past 12 months, on how many days did you drink five or more drinks in a row?" They are given the following categories to choose from: never, 1 or 2 days in the past 12 months, once a month

or less (3-12 times in the past 12 months), 2 or 3 days a month, 1 or 2 days a week, 3 to 5 days a week, and every day or almost every day (0 = never, 6 = every day).

Any Tobacco Use, Past Month. At each wave, I measure any tobacco use with a dichotomous indicator, equal to 1 if the respondent reported any tobacco use in the past month. Tobacco use includes smoking cigarettes, as well as the use of smokeless tobacco, such as snuff or chewing tobacco.

Time-Varying Controls. In order to account for potentially curvilinear patterns in the outcome variables that occur as respondents age, I control for age and age-squared in all models. Further, because many respondents are becoming parents at the same time they are cohabiting or married and because parenthood is also associated with the outcome variables of interest (Umberson 1987), I control for parental status in all models (coding respondents as parents once their first biological or adoptive child is present). Finally, for women I also control for *current respondent pregnancy* in all models, as research indicates significant variations by race/ethnicity regarding substance use during pregnancy (Perreira and Cortes 2006), as well as because of the natural increases in BMI that will occur for women who are pregnant.

[TABLE 1 ABOUT HERE]

Analytic Method

I utilize fixed effects regression models (Allison 2009; Stock and Watson 2011) to estimate within-individual change in BMI, binge drinking, and tobacco use as functions of change in union status. The basic fixed effects regression equations is:

$$Y_{it} = \beta X_{it} + \gamma Z_i + \alpha_i + \varepsilon_{it}$$

where Y_{it} is the dependent variable observed for individual i at time t, , X_{it} refers to a row vector of time-varying regressors, Z_i refers to a row vector of time-invariant regressors, α_i refers to all unobserved individual-specific characteristics, and ε_{it} refers to random error associated with individual i at time t (Allison 2009). Recall that fixed effects regression analysis estimates within-individual change over time, and as such all time-invariant observed (contained in Z_i) and unobserved (contained in α_i) characteristics are implicitly controlled. As such, my regression equations directly estimate time-varying regressors only (contained in vector X). For instance, in analyses modeling the linear indicators, BMI and binge drinking, the following equation is first estimated[3]:

$$\boldsymbol{Y_{it} = \beta Married_{it} + \beta Cohabiting_{it} + \beta Age_{it} + \beta Age\text{-}Squared_{it} + \beta Parental\ Status_{it} + \beta\ Current\ Pregnancy_{it}}$$

In the above equation, the coefficients for 'married' and 'cohabiting' would estimate the difference in the outcome between time-points when the respondent was in that specific union status compared to time points when the respondent was single. Then, in order to examine differences in these patterns by race/ethnicity, I interact the time-invariant race/ethnicity variables with the time-varying union status indicators.

Because tobacco use is a dichotomous indicator, analyses modeling change in tobacco use utilize fixed effects logistic regression. The goal is the same as with linear regression:

examining within person change. But the method and interpretation vary slightly. First, the following equation is estimated:

$$log(P(Tobacco\ Use_{it}= 1)/1- P(Tobacco\ Use_{it}= 1) = \beta Married_{it} + \beta Cohabiting_{it} + \beta Age_{it} + \beta Age\text{-}Squared_{it} + \beta Parental\ Status_{it} + \beta\ Current\ Pregnancy_{it}$$

where *P* represents the probability that tobacco use has a value of 1 for individual *i* at time *t*. Then, as is the case with the linear outcomes, subsequent models interact the coefficients for union status with those for race/ethnicity. One significant difference between fixed effects regression analysis for linear compared to dichotomous outcomes is that, because individuals are changing across two distinct categories, individuals must have at least one value of 0 and at least one value of 1. Individuals who do not use any tobacco across waves or who use tobacco all waves are excluded from the regression analysis. After excluding individuals who did not change their tobacco use across waves, 41% of women and 52% of men from the full analytic sample are included in this analysis. These percentages were similar for white (51%), black (54%), and Hispanic (54%) men, and for white (41%) and Hispanic (38%) women. The differences in sample inclusion were greater in magnitude for white (41%) and black (34%) women.

Fixed Effects Regression Results

For each outcome variable examined, a regression table is presented consisting of 4 models. The first model contains the effect of union status on the given outcome variable for the entire sample, controlling for age, parental status, and current pregnancy (among women). Models 2 through 4 contain interaction terms for race/ethnicity * union status. Each model switches the reference category, such that the coefficients for marriage and cohabitation represent the main effect of entering that union type for each racial/ethnic group. Then, the interaction terms represent the difference between the main effect for the given reference category and the main effect for each other racial/ethnic group. That is, in Model 2, the 'Into Marriage' coefficient is the main effect for non-Hispanic black individuals (the reference group for that model). In Model 3, the 'Into Marriage' coefficient is the main effect for Hispanic individuals. In Model 4, the 'Into Marriage' coefficient is the main effect for non-Hispanic white individuals[4].

Table 2 presents the fixed effects regression of BMI on union status. Model 1 indicates that entering marriage is associated with a significant increase in BMI among both men and women. Entering cohabitation is associated with a significant increase in BMI for women but not men. Regarding racial differences among women, entering marriage is associated with an average increase of 2.29 BMI units among black women (Model 2) and 1.17 BMI units among Hispanic women (Model 3). However, entering marriage is not significantly associated with an increase in BMI among white women (Model 4). The interaction terms in these models indicate that the observed racial differences in the impact of entering marriage on BMI are statistically significant. The association between entering marriage and increase in BMI is largest for black women, followed by Hispanic women, and is not significant for white women. Entering cohabitation is associated with an average increase of 1.55 BMI units among black women and .78 BMI units among Hispanic women. There is no association of entering cohabitation with increase in BMI among white women. The interaction terms suggest that cohabitation is associated with an increase in BMI that is significantly greater for both black and Hispanic

women compared to white women. However, black and Hispanic women do not significantly differ from one another.

Regarding racial differences among men, entering marriage is associated with a significant increase in BMI across all racial/ethnic groups. More specifically, entering marriage is associated with an average increase of 1.36 BMI units among black men (Model 2), 1.19 BMI units among Hispanic men (Model 3), and .37 BMI units among white men (Model 4). The coefficients for black and Hispanic are both significantly different from that the coefficient for whites, but not significantly different from one another. Entering cohabitation is associated with an average increases of 1.11 BMI units among Hispanic men (Model 3), but is not significantly associated with BMI among black (Model 2) or white men (Model 4). The coefficient for Hispanics is significantly different from the coefficients for black and white men.

[TABLE 2 ABOUT HERE]

Table 3 illustrates fixed effects regression estimates for the reported frequency of binge drinking in the past year. This measure captures respondent accounts of how often they had five drinks or more in the past year. Values range from 0 (never) to 6 (every day or nearly every day). Model 1 indicates that among men and women, entering either marriage or cohabitation is associated with a significant decrease in reported binge drinking frequency over the past year, controlling for the effects of aging, becoming a parent, or current pregnancy (for women).

Models 2 through 4 indicate that, with the exception of entering cohabitation among black men (Model 2), entering either marriage or cohabitation is associated with significant reductions in reported binge drinking frequency over the past year for both men and women, regardless of racial/ethnic group. However, the coefficient for entering cohabitation among black men is not significantly different from those for white and Hispanic men, and the magnitude of the effect is similar to the association cohabitation with binge drinking frequency among white women and men. Among women, the association between entering cohabitation and reducing binge drinking is significantly larger among Hispanic women than it is for white women. In fact, the coefficient for entering cohabitation is more than double in size among Hispanic women compared to their white counterparts.

[TABLE 3 ABOUT HERE]

Table 4 presents the fixed effects logistic regression of whether respondents engaged in any tobacco use in the past month. Models for this these estimates only include individuals who change across waves, and as such illustrate the impact of union status on change in tobacco use, above and beyond that associated with aging, becoming a parent, and/or current pregnancy (for women). Moreover, because the measure captures *any* tobacco use (even one cigarette or chew) over the past month, any negative associations between union status and tobacco use will represent the impact of union status on the complete cessation of tobacco use. After excluding individuals who did not change their tobacco use across waves, 41% of women and 52% of men from the full analytic sample are included in this analysis.

Model 1 indicates that entering marriage is associated with a 41% (1 – exp(-.53)) reduction in the odds of any tobacco use in the past month among women. Entering marriage is not significantly associated with tobacco use among men, nor is entering cohabitation among men or women. Concerning racial differences, entering marriage is associated with reduced odds

of tobacco use for Hispanic women (Model 3) and white women (Model 4), but not black women (Model 2). The estimates for white and Hispanic women entering marriage are not significantly different from one another, but are significantly different from the non-significant effect of entering marriage on tobacco use among black women. Moreover, entering cohabitation is significantly associated with increased odds of tobacco use for black men and women.

In contrast, entering cohabitation is not significantly associated with tobacco use among Hispanic men, Hispanic women, or white women. It is actually associated with decreased odds of tobacco use among white men, though this effect does not differ considerably from that for Hispanic men. The interaction terms indicate that the effect of entering cohabitation among black men and women is significantly different from those among white and Hispanic men and women.

[TABLE 4 ABOUT HERE]

Conclusions and Discussion

Despite general associations between union status and health risk indicators, it remains unclear whether these associations significantly differ by race/ethnicity. Existing research on this topic often uses cross-sectional data and/or data that is representative of select populations, and this hinders our understanding of any racial/ethnic variations in the influence of union status on health. In this paper, I argued that among individuals in historically disadvantaged racial/ethnic groups, the effects of racism, discrimination, and segregation would limit prospects for high quality, stable unions as well as place strain on otherwise healthy relationships (Bryant et al 2010; Lincoln and Chae 2010; Trail et al 2011). More specifically, I hypothesized that union status would be associated with a greater increase in BMI and a smaller reduction in tobacco use for blacks compared to whites and Hispanics, and for Hispanics compared to whites. My empirical results lead to three central conclusions.

First, consistent with my hypotheses, blacks experience the fewest union status benefits for health risk indicators relative to whites or Hispanics. For example, blacks were the only group for which entry into cohabitation was associated with an increase in tobacco use. Further, weight gain following marriage is higher for blacks relative to whites or Hispanics. For instance, black women experience an increase in BMI that is almost 2 units greater than that for whites, and over 1 unit greater than that for Hispanics. Though not as large in magnitude as the disparity for women, black men entering marriage also gain significantly more weight compared to their white counterparts. Moreover, black women gain significantly more weight following entry into marriage and cohabitation than do men in any of the racial/ethnic subgroups (confirmed by supplemental analysis). These patterns are consistent with studies indicating that marriage predicts an increase in BMI for white, black, and Hispanic men and women, but only increases risk of obesity among blacks (Shafer 2010). This is especially concerning given the prevalence of obesity among black women. For instance, estimates for 2006-2008 indicate that obesity rates for blacks were over 50% and 30% higher compared to their white and Hispanic counterparts, respectively (Center for Disease Control 2010b). It is possible that black women experience more chronic stress related to union status than do other groups given factors such as the aforementioned “shortage of marriageable men” facing black women (Wilson 1987). In addition to leading to overeating (Adam and Epel 2007), chronic stress is hypothesized to initiate a series of hormonal changes in the body that encourage weight gain (Kyrou and Tsigos 2009).

Second, in contrast to my hypotheses, the estimates for Hispanics did not neatly fall between those for whites and blacks. For instance, Hispanic men entering marriage and Hispanic women entering cohabitation did not significantly differ from blacks concerning effects of union status on BMI increase, and Hispanic men entering cohabitation actually gained more weight than their black counterparts. That is, with respect to BMI, the effects of union status on health risk indicators among Hispanics 'looked' more similar to blacks than whites. At the same time, the effects of union status on declines in tobacco use among Hispanics were more similar to those for whites compared to blacks. It is possible that these varied patterns are in part an indication that the US racial order is changing, thereby causing changes in any racial/ethnic variations observed concerning the effects of union status on health risk indicators. Specifically, some scholars argue that the US is becoming more like some Latin American countries that define race not by distinct heritage categories, but by phenotype (Bonilla-Silva and Dietrich 2008; Dovidio et al 2010; Frank et al 2010; Pérez et al 2008). Indeed, Hispanics represent a heterogeneous group with regards to skin color. In a racial order defined by phenotype, lighter skinned Hispanics would experience less racism and discrimination compared to their darker skinned counterparts. Consequently, combining Hispanics into one group regardless of phenotype would not be appropriate, and would likely produce a chaotic mix of results. Future studies should consider this possibility by testing various racial/ethnic schemas that account for phenotypic differences. For instance, scholars might use an indicator for skin color, or categorize Hispanics both by ethnicity and race, resulting in categories for white-Hispanic, black-Hispanic, and nonwhite/nonblack Hispanic individuals.

Third, in contrast to tobacco use, involvement in marriage and cohabitation lead to reductions in binge drinking for all men and women, regardless of race/ethnicity. Future studies should empirically test why reductions in binge drinking associated with union status seem particularly robust to subgroup variations, at least in the case of gender and race/ethnicity. Though I can only speculate here, it is possible that social norms and laws governing substance use in the US make reductions in binge drinking that are associated with union status more universal than reductions in tobacco use. For instance, most people who binge drink are not alcoholics (Center for Disease Control 2010a), but rather binge drink as a social activity done with friends. Further, laws prevent individuals from drinking while driving or working, leaving drinking as an activity that is restricted to bars/restaurants or within someone's home. Individuals who have entered into committed relationships and are responsible to a partner may go out less often as well as drink more responsibly on the occasions they do go out. In contrast, tobacco use is a highly addictive substance that is not prohibited while driving or working situations. Even with more stringent smoking laws in recent years, individuals can still largely use tobacco during their morning commute as well as within allotted areas at work during their breaks. As such, even if tobacco use is reduced at home after entering a committed relationship, individuals can easily use tobacco daily when their partners are not watching, and without major detriments to their sobriety.

My study has limitations. First, while fixed effects analysis allowed me to assess a causal link between union status and health risk indicators, my dichotomous measure for tobacco use did not allow for the inclusion of individuals who practiced negative health behaviors across all waves. That is, if an individual was a smoker at Waves 1 and 2, got married between Waves 2 and 3, and continued to smoke at Waves 3 and 4, they would not be included in the fixed effects analysis. Because of this, the estimated effect of union status on a binary outcome variable may be biased, because it does not include individuals in unions who maintained their negative health

behaviors or maintained their positive health behaviors. Further, because fewer black women selected into the dichotomous model than white women, this could introduce additional bias when considering differences between white and black women with regards to tobacco use. To fully assess the moderating impact of race/ethnicity on the relationship between union status and tobacco use, scholars should continue to study this topic with the use of various methods for analyzing longitudinal data. For example, one could utilize event history analysis with a sample of newly married smokers, and could treat tobacco cessation as an event. Then, they could see if the patterns found vary by race/ethnicity. Second, despite the many strengths of Add Health for this particular analysis, the number of years between interviews (6 between Waves 2 and 3, 6 between Waves 3 and 4) limits the inclusion of cohabitations and marriages that end in divorce. That is, as detailed in Table 1, over 1,000 people who had cohabited at some point in their lives were not included in this analysis because they were never observed in a current cohabitation. Moreover, half of all marriages that ended in divorce started and ended between Waves, excluding those individuals from the analysis.

Despite any limitations, this study makes a potentially important contribution to literatures on families and health, and race/ethnicity and health. Specifically, I establish a base knowledge concerning racial/ethnic variations in the causal effects of union status on health risk indicators through the use of contemporary, nationally representative data, fixed effects analyses, and parsimonious models with minimal controls for potentially intervening variables. Future work should carefully build upon this base knowledge by continuing to use longitudinal, contemporary data, and by incorporating controls into models to identify the mechanisms through which union status affects health risk indicators among contemporary young adults.

Notes

1. This project considers differences in the effects of union status on health risk indicators across three racial/ethnic groups: non-Hispanic white, non-Hispanic black, and Hispanic. While 'white' and 'black' signify racial categories, Hispanic technically refers to an ethnicity (and a pan-ethnicity at that). However, research indicates that Hispanics self-identify separately from non-Hispanic racial categories (Vaquera and Kao 2006), in addition to being treated as an exclusive racial group by much of society. As such, social scientists generally categorize Hispanics as a separate racial group, regardless of skin color. Note that while the white and black individuals in this analysis are non-Hispanic, from this point on in the text I will refer to non-Hispanic whites and non-Hispanic blacks simply as 'white' or 'black'.

2. All respondents are followed from Wave 1, when they are all single, to the Wave in which they are last observed in a union. For individuals who enter marriage, this means they are observed until the last Wave that they are observed in their first marriage. If the marriage did not dissolve, then individuals are followed until Wave 4. If the marriage did dissolve, individuals are censored from the analysis once the marriage is no longer intact. For individuals who never marry but who are observed in current cohabitations, these individuals are followed until the last Wave that they are observed in a current cohabitation. Under these criteria, nearly 88% of the sample was observed in all four waves, over 12% was observed in three waves, and less than .5% was observed in only two waves. The number of observations available for analysis varies across the outcome variables. As previously mentioned, respondents needed at least two observations on each outcome variable to be included in the analysis, but there was some variation across variables regarding who had two, three, or four observations. For binge drinking and tobacco use, between 85% and 87% of respondents who had non-missing values for all four waves, and had less than 1% was observed only twice. For BMI, over 87% of respondents had non-missing values at all three waves.

3. For ordinal binge drinking, I ran supplementary probit models. Results were similar to the OLS fixed effects estimates, so OLS estimates are reported here for ease of interpretation.

4. Note that for the linear outcomes BMI and binge drinking, a constant is reported. The constant in this case is a nuisance parameter. That is, while fixed effects analysis estimates within person change, thus having each person serve as their own constant, the estimation procedure in STATA initiated by *xtreg* produces an estimate that represents the average value of all constants across individuals, and reports this as the constant. I report the constant in the tables to provide the reader with all output, but do not discuss it in results. There is no constant reported for dichotomous outcomes, which are estimated with conditional maximum likelihood estimation.

References

Adam, Tanja C., Epel, Elissa S. 2007. "Stress, Eating and the Reward System." *Physiology and Behavior* 91: 449-58

Adhikari, B, Kahende, J, Malarcher, A, Pechacek, T, Tong, V. 2008. "Smoking-Attributable Mortality, Years of Potential Life Lost, and Productivity Losses—United States, 2000–2004." *Morbidity and Mortality Weekly Report, Centers for Disease Control and Prevention* 57(45): 1226-28

Ali, Mir M., Ajilore, Olugbenga. 2011. "Can Marriage Reduce Risky Health Behavior for African-Americans?" *Journal of Family and Economic Issues* 32(2): 191-203

Allison, Paul D. 2009. *Fixed Effects Regression Models*. Sage Publications.

Averett, Susan L., Sikora, Asia , Argys, Laura M. 2008. "For Better or Worse: Relationship Status and Body Mass Index." *Economics and Human Biology* 6(3): 330-49

Bachman, Jerald G., O'Malley, Patrick M., Schulenberg, John E., Johnston, Lloyd D., Bryant, Alison L., Merline, Alicia C. 2002. "The Decline in Substance Use in Young Adulthood: Changes in Social Activities, Roles, and Beliefs." Lawrence Erlbaum.

Blau, David M., van der Klaauw, Wilbert. 2008. "A Demographic Analysis of the Family Structure Experiences of Children in the United States." *Review of Economics of the Household* 6(3): 193-221

Bonilla-Silva, Eduardo, Dietrich, David R. 2008. "The Latin Americanization of Racial Stratification in the U.S.". *Racism in the 21st Century.* R. E. Hall editor.

Braveman, Paula A. , Cubbin, Catherine , Egerter, Susan , Williams, David R. , Pamuk, Elsie 2010. "Socioeconomic Disparities in Health in the United States: What the Patterns Tell Us." *American Journal of Public Health* 100(S1): S186-S96

Brodish, AmandaB, Cogburn, CourtneyD, Fuller-Rowell, ThomasE, Peck, Stephen, Malanchuk, Oksana, Eccles, JacquelynneS. 2011. "Perceived Racial Discrimination as a Predictor of Health Behaviors: the Moderating Role of Gender." *Race and Social Problems* 3(3): 160-69

Brown, Diane R., Cochran, Donna L. 2003. "Multiple Social Roles and Multiple Stressors for Black Women." Pp. 207-20. *In and Out of Our Right Minds: The Mental Health of African American Women.* Diane R. Brown and Verna M. Keith editors. Columbia University Press.

Bryant, Chalandra M., Wickrama, K. A.S., Bolland, John, Bryant, Barlynda M., Cutrona, Carolyn E., Stanik, Christine E. 2010. "Race Matters, Even in Marriage: Identifying

Factors Linked to Marital Outcomes for African Americans." *Journal of Family Theory & Review* 2: 157-74

Burton, Linda M., Bonilla-Silva, Eduardo, Ray, Victor, Buckelew, Rose, Hordge Freeman, Elizabeth. 2010. "Critical Race Theories, Colorism, and the Decade's Research on Families of Color." *Journal of Marriage and the Family* 72: 440-59

Center for Disease Control. 2010a. "Alcohol and Public Health, Fact Sheets: Binge Drinking." *Volume 2012.*

Center for Disease Control. 2010b. "Obesity Rates: Racial and ethnic disparities in obesity rates." *Volume 2012.*

Center for Disease Control. 2012. "Overweight and Obesity." *Volume 2012.* Center for Disease Control editor.

Clarkwest, Andrew. 2007. "Spousal Dissimilarity, Race, and Marital Dissolution." *Journal of Marriage & Family* 69: 639-53

Corra, Mamadi , Carter, Shannon K. , Carter, J. Scott, Knox, David 2009. "Trends in Marital Happiness by Gender and Race, 1973 to 2006." *Journal of Family Issues* 30(10): 1379-404

Daviglus, Martha L., Liu, Kiang, Yan, Lijing L., Pirzada, Amber, Manheim, Larry, Manning, Willard, Garside, Daniel B., Wang, Renwei, Dyer, Alan R., Greenland, Philip, Stamler, Jeremiah. 2004. "Relation of Body Mass Index in Young Adulthood and Middle Age to Medicare Expenditures in Older Age." *The Journal of the American Medical Association* 292(22): 2743-49

Dovidio, John F., Gluszek, Agata, John, Melissa-Sue, Ditlmann, Ruth, Lagunes, Paul. 2010. "Understanding Bias toward Latinos: Discrimination, Dimensions of Difference, and Experience of Exclusion." *Journal of Social Issues* 66(1): 59-78

Duncan, Greg J. , Wilkerson, Bessie , England, Paula 2006. "Cleaning up their Act: The Effects of Marriage and Cohabitation on Licit and Illicit Drug Use." *Demography* 43: 691-710

Ennis, Sharon R. , Ríos-Vargas, Merarys , Albert, Nora G. . 2011. "The Hispanic Population: 2010." *2010 Census Briefs, Volume C2010BR-04.* U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau

Frank, Reanne, Akresh, Ilana Redstone, Lu, Bo. 2010. "Latino Immigrants and the U.S. Racial Order: How and Where Do They Fit In?" *American Sociological Review* 75(3): 370-401

Green, Kerry M., Doherty, Elaine E., Fothergill, Kate E., Ensminger, Margaret E. 2012. "Marriage Trajectories and Health Risk Behaviors Trhoughout Adulthood Among Urban African Americans." *Journal of Family Issues*: 1-24

Guzzo, K. 2009. "Marital Intentions and the Stability of First Cohabitations." *Journal of Family Issues* 30(2): 179

Guzzo, Karen B., Furstenberg, Frank F. 2007a. "Multipartnered Fertility Among American Men." *Demography* 44(3): 583-601

Guzzo, Karen B., Furstenberg, Frank F. 2007b. "Multipartnered Fertility Among Young Women With a Nonmarital First Birth: Prevalence and Risk Factors." *Perspectives on Sexual and Reproductive Health* 39(1): 29-38

Harris, Kathleen Mullan. 2009. "The National Longitudinal Study of Adolescent Health (Add Health), Waves I & II, 1994–1996; Wave III, 2001–2002; Wave IV, 2007-2009 [machine-readable data file and documentation]." Carolina Population Center, University of North Carolina at Chapel Hill.

Iceland, John, Nelson, Kyle Anne. 2008. "Hispanic Segregation in Metropolitan America: Exploring the Multiple Forms of Spatial Assimilation." *American Sociological Review* 73(5): 741-65

Kaiser Family Foundation. 2012. "United States: Poverty Rate by Race/Ethnicity, states (2009-2010), U.S. (2010)." *Volume 2012.*

Kanny, Dafna, Liu, Yong , Brewer, Robert D. 2012. "Vital Signs: Binge Drinking Prevalence, Frequency, and Intensity Among Adults — United States, 2010." *Morbidity and Mortality Weekly Report,* *Centers for Disease Control and Prevention* 61(1): 14-19

Kyrou, Ioannis , Tsigos, Constantine 2009. "Stress Hormones: Physiological Stress and Regulation of Metabolism." *Current Opinion in Pharmacology* 9(6): 787-93

Lichter, Daniel T., Parisi, Domenico, Grice, Steven Michael, Taquino, Michael C. 2007. "National Estimates of Racial Segregation in Rural and Small-Town America." *Demography* 44(3): 563-81

Lichter, Daniel T., Qian, Zhenchao. 2004. "Marriage and Family in a Multiracial Society." *The American People: Census 2000.* Reynolds Farley and John Haaga editors. Russell Sage Foundation.

Lieberson, Stanley, Lynn, Freda B. 2002. "Barking Up the Wrong Branch: Scientific Alternatives to the Current Model of Sociological Science." *Annual Review of Sociology* 28(1): 1-19

Lincoln, Karen. D., Chae, David H. 2010. "Stress, Marital Satisfaction, and Psychological Disress Among African Americans." *Journal of Family Issues* 31(8): 1081-105

Link, Bruce G. , Phelan, Jo C. 1995. "Social Conditions as Fundamental Causes of Disease." *Journal of Health and Social Behavior* 35(1): 80-94

Liu, Hui, Reczek, Corinne. 2012. "Cohabitation and U.S. Adult Mortality: An Examination by Gender and Race." *Journal of Marriage and Family* 74(4): 794-811

Liu, Hui, Umberson, Debra. 2008. "The Times They are a Changin': Marital Status and Health Differentials from 1972 to 2003." *Journal of Health and Social Behavior* 49(3): 239-53

McLanahan, Sara, Percheski, Christine. 2008. "Family Structure and the Reproduction of Inequalities." *Annual Review of Sociology* 34(1): 257-76

Molloy, G.J., Stamatakis, E., Randall, G., Hamer, M. 2009. "Marital Status, Gender and Cardiovascular Mortality: Behavioural, Psychological Distress and Metabolic Explanations." *Social Science and Medicine* 69(2): 223-28

Oppenheimer, Valerie K. 1997. "Women's Employment and Gain to Marriage: The Specialization and Trading Model." *Annual Review of Sociology* 23: 431-53

Ornelas, India J., Hong, Seunghye. 2012. "Gender Differences in the Relationship Between Discrimination and Substance Use Disorder Among Latinos." *Substance Use & Misuse* 47(12): 1349-58

Pager, D. 2007. "The use of field experiments for studies of employment discrimination: Contributions, critiques, and directions for the future." *Annals of the American Academy of Political and Social Science* 609: 104-33

Patterson, Orlando. 1998. "Broken Bloodlines: Gender Relations and the Crisis of Marriage and Families Among Afro-Americans." Pp. 1-168. *Rituals of Blood: Consequences of Slavery in Two American Centuries*. Basic Books.

Pérez, Debra Joy, Fortuna, Lisa, Alegría, Margarita. 2008. "Prevalence and correlates of everyday discrimination among U.S. Latinos." *Journal of Community Psychology* 36(4): 421-33

Perreira, Krista M. , Cortes, Kaiena E. . 2006. "Race/Ethnicity and Nativity Differences in Alcohol and Tobacco Use During Pregnancy." *American Journal of Public Health* 96: 1629-36

Piquero, N. L., Fox, K., Piquero, A. R., Capowich, G., Mazerolle, P. 2010. "Gender, General Strain Theory, negative emotions, and disordered eating." *J Youth Adolesc* 39(4): 380-92

Purnell, Jason Q. , Peppone, Luke J. , Alcaraz, Kassandra , McQueen, Amy , Guido, Joseph J. , Carroll, Jennifer K. , Shacham, Enbal , Morrow, Gary R. 2012. "Perceived Discrimination, Psychological Distress, and Current Smoking Status: Results From the Behavioral Risk Factor Surveillance System Reactions to Race Module, 2004–2008." *American Journal of Public Health* 102: 844-51

Raley, R. Kelly, Bumpass, Larry L. 2003. "The Topography of the Plateau in Divorce: Levels and Trends in Union Stability after 1980." *Demographic Research* 8: 246-58

Rosebaum, Emily , Friedman, Samantha 2007. *The Housing Divide: How Generations of Immigrants Fare in New York's Housing Market*. New York University Press.

Roxburgh, Susan. 2009. "Untangling Inequalities: Gender, Race, and Socioeconomic Differences in Depression." *Sociological Forum* 24(2): 357-81

Schienkiewitz, Anja, Schulze, Matthias B, Hoffmann, Kurt, Kroke, Anja, Boeng, Heiner. 2006. "Body mass Index History and Risk of Type 2 Diabetes: Results from the European Prospective Investigation into Cancer and Nutrition (EPIC) Potsdam Study." *The American Journal of Clinical Nutrition* 84(427-433)

Schwandt, Hilary M., Coresh, Josef, Hindin, Michelle J. 2010. "Marital Status, Hypertension, Coronary Heart Disease, Diabetes, and Death Among African American Women and Men: Incidence and Prevalence in the Atherosclerosis Risk in Communities (ARIC) Study Participants." *Journal of Family Issues* 31(9): 1211-29

Shafer, Emily Fitzgibbons. 2010. "The Effect of Marriage on Weight Gain and Propensity to Become Obese in the African American Community." *Journal of Family Issues* 31(9): 1166-82

Shariff-Marco, Salma , Klassen, Ann C. , Bowie, Janice V. . 2010. "Racial/Ethnic Differences in Self-Reported Racism and Its Association With Cancer-Related Health Behaviors." *American Journal of Public Health* 100: 364-74

Shortridge, Emily, James, Cara V. 2010. "Marriage and End-Stage Renal Disease: Implications for African Americans." *Journal of Family Issues* 31(9): 1230-49

Stock, James H., Watson, Mark W. 2011. *Introduction to Econometrics*. Addison-Wesley.

The, N.S., Gordon-Larsen, P. 2009. "Entry Into Romantic Partnership Is Associated With Obesity." *Obesity* 17(7): 1441-47

Thoits, Peggy A. 2011. "Mechanisms Linking Social Ties and Support to Physical and Mental Health." *Journal of Health & Social Behavior* 52(2): 145-61

Torres, Lucas, Driscoll, Mark W., Voell, Maria. 2012. "Discrimination, acculturation, acculturative stress, and Latino psychological distress: A moderated mediational model." *Cultural Diversity and Ethnic Minority Psychology* 18(1): 17-25

Trail, Thomas E. , Goff, Phillip Atiba , Bradbury, Thomas N. , Karney, Benjamin R. . 2011. "The Costs of Racism for Marriage: How Racial Discrimination Hurts, and Ethnic Identity Protects, Newlywed Marriages Among Latinos " *Personality and Social Psychology Bulletin*

Turner, R. Jay, Marino, Franco. 1994. "Social Support and Social Structure: A Descriptive Epidemiology." *Journal of Health & Social Behavior* 28(3): 306-19

Umberson, Debra. 1987. "Family Status and Health Behaviors: Social Control as a Dimension of Social Integration." *Journal of Health and Social Behavior* 28: 306-19

Umberson, Debra , Liu, Hui , Powers, Daniel 2009. "Marital Status, Marital Transitions, and Body Weight." *Journal of Health and Social Behavior* 50: 327-43

Umberson, Debra, Williams, Kristi, Powers, Daniel, Liu, Hui, Needham, Belinda. 2006. "You Make Me Sick: Marital Quality and Health Over the Life Course." *Journal of Health & Social Behavior* 47: 1-16

Vaquera, Elizabeth , Kao, Grace. 2006. "The Implications of Choosing "No Race" on the Salience of Hispanic Identity: How Raccial and Ethnic Backgrounds Intersect among Hispanic Adolescents." *The Sociological Quarterly* 47: 375-96

Wiehe, Sarah E. , Aalsma, Matthew C. , Liu, Gilbert C. , Fortenberry, J. Dennis 2010. "Gender Differences in the Association Between Perceived Discrimination and Adolescent Smoking." *American Journal of Public Health* 100: 510-16

Williams, Kristi. 2003. "Has the Future of Marriage Arrived? A Contemporary Examination of Gender, Marriage, and Psychological Well-Being." *Journal of Health and Social Behavior* 44: 470-87

Wilson, William J. 1987. *The truly disadvantaged : the inner city, the underclass, and public policy / William Julius Wilson*. University of Chicago Press.

Table 1. Descriptive Statistics for Key Variables, by Race/Ethnicity

	White				Hispanic				Black			
	Women		Men		Women		Men		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Union Status at W2												
Single	0.987		0.996		0.976		0.983		0.998		0.993	
Cohabiting	0.003		0.002		0.006		0.007		0.002		0.003	
Married	0.010		0.002		0.018		0.010		0.000		0.005	
Union Status at W3												
Single	0.516		0.614		0.466		0.590		0.636		0.636	
Cohabiting	0.205		0.205		0.189		0.163		0.207		0.219	
Married	0.273		0.182		0.342		0.244		0.157		0.145	
Censored, Divorced	0.006		0.000		0.004		0.002		0.000		0.000	
Union Status at W4												
Cohabiting	0.253		0.304		0.226		0.322		0.435		0.443	
Married	0.624		0.590		0.621		0.566		0.417		0.414	
Censored, Divorced	0.088		0.060		0.114		0.063		0.078		0.062	
Censored, No Cohabitation	0.036		0.047		0.039		0.049		0.070		0.081	
Body Mass Index												
Wave 2	22.51	4.99	23.19	4.81	23.12	4.39	23.82	5.02	24.06	5.68	23.53	4.71
Wave 3	25.90	6.45	26.67	5.80	26.95	6.26	27.78	5.81	28.67	7.70	26.69	5.86
Wave 4	28.15	7.59	29.19	6.83	29.90	7.93	30.82	6.83	32.05	8.99	29.73	7.32
Ordinal Binge Drinking												
Wave 1	0.99	1.31	1.17	1.50	0.94	1.26	1.21	1.65	0.72	1.26	0.91	1.54
Wave 2	0.66	1.24	1.02	1.58	0.58	1.21	1.02	1.68	0.27	0.97	0.44	1.23
Wave 3	1.04	1.35	1.83	1.74	0.61	1.04	1.39	1.67	0.31	0.93	0.89	1.53
Wave 4	0.90	1.29	1.39	1.56	0.56	1.03	1.22	1.56	0.41	1.03	0.94	1.52
Any Tobacco Use												
Wave 1	0.33		0.37		0.20		0.27		0.12		0.20	
Wave 2	0.43		0.47		0.27		0.37		0.15		0.27	
Wave 3	0.39		0.48		0.24		0.31		0.15		0.33	
Wave 4	0.32		0.50		0.18		0.40		0.22		0.47	
Respondent Age												
Wave 1	15.59	1.54	15.94	1.54	16.07	1.57	16.31	1.62	15.70	1.50	16.08	1.62
Wave 2	16.51	1.55	16.86	1.55	16.97	1.57	17.24	1.63	16.61	1.50	17.02	1.62
Wave 3	21.92	1.54	22.30	1.56	22.42	1.58	22.71	1.65	22.03	1.51	22.45	1.65
Wave 4	28.39	1.53	28.75	1.55	28.84	1.57	29.20	1.63	28.52	1.53	28.91	1.65
R is Parent												
Wave 1	0.01		0.00		0.01		0.01		0.04		0.01	
Wave 2	0.02		0.00		0.04		0.02		0.08		0.02	
Wave 3	0.25		0.14		0.38		0.22		0.43		0.22	
Wave 4	0.55		0.47		0.65		0.55		0.64		0.50	
R is Pregnant												
Wave 1	0.00				0.00				0.00			
Wave 2	0.01				0.03				0.03			
Wave 3	0.05				0.05				0.04			
Wave 4	0.09				0.09				0.09			
Number Respondents	1983		1545		509		410		561		406	

Note: Standard deviations not reported for dichotomous outcomes

Table 2. Fixed Effects Regression of Body Mass Index on Union Transition, Interacted with Race/Ethnicity

	Model 1		Model 2[a]		Model 3[b]		Model 4[c]	
	Women	Men	Women	Men	Women	Men	Women	Men
Union Transition								
Into First Marriage	0.74***	0.65***	2.29***	1.36***	1.17***	1.19***	0.37	0.37*
	(0.18)	(0.18)	(0.30)	(0.30)	(0.27)	(0.27)	(0.19)	(0.19)
Into Cohabitation	0.41*	0.21	1.55***	-0.17	0.78*	1.11***	-0.12	0.09
	(0.17)	(0.16)	(0.27)	(0.26)	(0.34)	(0.30)	(0.19)	(0.18)
Union Transition * Race/Ethnicity								
First Mar * Black					1.12***	0.17	1.92***	0.99***
					(0.34)	(0.34)	(0.28)	(0.28)
First Mar * Hispanic			-1.12***	-0.17			0.80**	0.82**
			(0.34)	(0.34)			(0.25)	(0.25)
First Mar * White			-1.92***	-0.99***	-0.80**	-0.82**		
			(0.28)	(0.28)	(0.25)	(0.25)		
Cohab * Black					0.78	-1.28***	1.67***	-0.26
					(0.40)	(0.36)	(0.28)	(0.27)
Cohab * Hispanic			-0.78	1.28***			0.90*	1.02***
			(0.40)	(0.36)			(0.35)	(0.30)
Cohab * White			-1.67***	0.26	-0.90*	-1.02***		
			(0.28)	(0.27)	(0.35)	(0.30)		
Respondent Age	1.22***	1.33***	1.27***	1.34***	1.27***	1.34***	1.27***	1.34***
	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)
Respondent Age-Squared	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Respondent is Parent	0.99***	-0.06	0.93***	-0.06	0.93***	-0.06	0.93***	-0.06
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Respondent is Pregnant	1.23***	---	1.27***	---	1.27***	---	1.27***	---
	(0.22)		(0.22)		(0.22)		(0.22)	
Constant	7.64***	6.33***	7.11***	6.17***	7.11***	6.17***	7.11***	6.17***
	(0.86)	(0.86)	(0.86)	(0.86)	(0.86)	(0.86)	(0.86)	(0.86)
Number Waves	8644	4433	---	---	---	---	---	---
Number Respondents	3025	2351	---	---	---	---	---	---
F[d]	8.78***	10.02***	---	---	---	---	---	---

[a]Black = Reference Category; [b]Hispanic = Reference Category; [c]White = Reference Category

[d]Model 1: F(3024, 5613); Model 2: F(2351, 4433); ***p<.001; **p<.01; *p<.05

Table 3. Fixed Effects Regression of Ordinal Binge Drinking Frequency in the Past Year on Union Transitionn, Interacted with Race/Ethnicity

	Model 1		Model 2[a]		Model 3[b]		Model 4[c]	
	Women	Men	Women	Men	Women	Men	Women	Men
Union Transition								
Into First Marriage	-0.34***	-0.42***	-0.31***	-0.39**	-0.41***	-0.49***	-0.34***	-0.41***
	(0.05)	(0.08)	(0.09)	(0.12)	(0.08)	(0.11)	(0.05)	(0.08)
Into Cohabitation	-0.24***	-0.25***	-0.30***	-0.20	-0.40***	-0.34**	-0.19***	-0.24**
	(0.05)	(0.07)	(0.08)	(0.11)	(0.10)	(0.12)	(0.06)	(0.08)
Union Transition * Race/Ethnicity								
First Mar * Black					0.10	0.10	0.02	0.02
					(0.10)	(0.14)	(0.08)	(0.12)
First Mar * Hispanic			-0.10	-0.10			-0.07	-0.08
			(0.10)	(0.14)			(0.07)	(0.10)
First Mar * White			-0.02	-0.02	0.07	0.08		
			(0.08)	(0.12)	(0.07)	(0.10)		
Cohab * Black					0.1	0.14	-0.12	0.04
					(0.11)	(0.15)	(0.08)	(0.11)
Cohab * Hispanic			-0.10	-0.14			-0.21*	-0.10
			(0.11)	(0.15)			(0.10)	(0.13)
Cohab * White			0.12	-0.04	0.21*	0.10		
			(0.08)	(0.11)	(0.10)	(0.13)		
Respondent Age	0.18***	0.55***	0.18***	0.55***	0.18***	0.55***	0.18***	0.55***
	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)
Respondent Age-Squared	-0.00***	-0.01***	-0.00***	-0.01***	-0.00***	-0.01***	-0.00***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Respondent is Parent	-0.56***	-0.21***	-0.55***	-0.21***	-0.55***	-0.21***	-0.55***	-0.21***
	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)	(0.06)
Respondent is Pregnant	-0.29***	---	-0.29***	---	-0.29***	---	-0.29***	---
	(0.06)		(0.06)		(0.06)		(0.06)	
Constant	-1.40***	-5.03***	-1.37***	-5.02***	-1.37***	-5.02***	-1.37***	-5.02***
	(0.21)	(0.29)	(0.21)	(0.29)	(0.21)	(0.29)	(0.21)	(0.29)
Number Waves	11769	9151	---	---	---	---	---	---
Number Respondents	3053	2361	---	---	---	---	---	---
F[d]	2.31***	2.63***	---	---	---	---	---	---

[a]Black = Reference Category; [b]Hispanic = Reference Category; [c]White = Reference Category

[d]Model 1: F(3052, 8710); Model 2: F(2360, 6785); ***p<.001; **p<.01; *p<.05

Table 4. Fixed Effects Logistic Regression of Any Tobacco Use in the Past Month on Union Transition, Interacted with Race/Ethnicity

	Model 1		Model 2[a]		Model 3[b]		Model 4[c]	
	Women	Men	Women	Men	Women	Men	Women	Men
Union Transition								
Into First Marriage	-0.53***	-0.25	0.39	0.29	-0.73**	-0.37	-0.56***	-0.28
	(0.15)	(0.16)	(0.28)	(0.27)	(0.24)	(0.23)	(0.15)	(0.17)
Into Current Cohabitation	-0.02	-0.13	0.67**	0.74**	0.02	-0.34	-0.25	-0.37*
	(0.14)	(0.14)	(0.23)	(0.22)	(0.26)	(0.23)	(0.15)	(0.15)
Union Transition * Race/Ethnicity								
First Marriage * Black					1.12***	0.66*	0.96***	0.58*
					(0.32)	(0.30)	(0.26)	(0.25)
First Marriage * Hispanic			-1.12***	-0.66*			-0.17	-0.09
			(0.32)	(0.30)			(0.22)	(0.21)
First Marriage * White			-0.96***	-0.58*	0.17	0.09		
			(0.26)	(0.25)	(0.22)	(0.21)		
Cohabitation * Black					0.65*	1.08***	0.92***	1.11***
					(0.31)	(0.28)	(0.23)	(0.23)
Cohabitation * Hispanic			-0.65*	-1.08***			0.27	0.03
			(0.31)	(0.28)			(0.27)	(0.24)
Cohabitation * White			-0.92***	-1.11***	-0.27	-0.03		
			(0.23)	(0.23)	(0.27)	(0.24)		
Respondent Age	0.50***	0.42***	0.53***	0.44***	0.53***	0.44***	0.53***	0.44***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Respondent Age-Squared	-0.01***	-0.01***	-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)
Respondent is Parent	-0.46***	0.08	-0.49***	0.05	-0.49***	0.05	-0.49***	0.05
	(0.11)	(0.12)	(0.11)	(0.12)	(0.11)	(0.12)	(0.11)	(0.12)
Respondent is Pregnant	-1.46***	---	-1.46***	---	-1.46***	---	-1.46***	---
	(0.20)		(0.20)		(0.20)		(0.20)	
Number Waves Observed	4806	4781	---	---	---	---	---	---
Number Respondents	1247	1226	---	---	---	---	---	---
Likelihood Ratio Chi-Squared[h]	205.93***	193.11***	---	---	---	---	---	---

[a]Black = Reference Category; [b]Hispanic = Reference Category; [c]White = Reference Category

[h]Model 1: df(6); Model 2: df(5); ***p<.001; **p<.01; *p<.05