An Unequal Start: The Bundling of Education and Smoking in Families of Origin

Vida Maralani*
Yale Sociology

*PO Box 208265, New Haven, CT 06520-8265
vida.maralani@yale.edu
Tel. 203-436-4187

AKNOWLEDGEMENTS

I am grateful to the Robert Wood Johnson Foundation's Health & Society Scholars program for its financial support. I owe many thanks to Douglas McKee, Richard Breen, Vincent Fu, Sam Preston, Sam Stabler, and Lloyd Grieger for their valuable comments and advice, and to Shalini Roy, Luke Wagner, and Kate Bradley for excellent research assistance.

ABSTRACT

This study examines how the bundling of education and smoking in families of origin has changed across birth cohorts of Americans. I describe trends in assortative marriage by smoking and education for cohorts born from the 1920s to the 1950s. I also describe educational differences in the probability of quitting smoking between first marriage and first birth across birth cohorts. The results show that resemblance in smoking status increased across cohorts. Couples in the 1942-1953 cohort are three times more likely to match on smoking status than to have different smoking statuses. Moreover, spousal resemblance in the joint occurrence of education and smoking also increased across cohorts, net of changes in population composition. Over time, highly educated men become more likely to marry nonsmoking women, and husbands are more likely to be nonsmokers in couples in which both spouses are highly educated. A growing divergence in the likelihood of quitting smoking by education between marriage and first birth further amplifies the alignment of education and smoking in families of origin. Taken together, the results show that families of origin have become systematically more unequal across two important domains of wellbeing.

Key words: smoking, education, marriage, cohort change, family

An Unequal Start: The Bundling of Education and Smoking in Families of Origin

ABSTRACT

This study examines how the bundling of education and smoking in families of origin has changed across birth cohorts of Americans. I describe trends in assortative marriage by smoking and education for cohorts born from the 1920s to the 1950s. I also describe educational differences in the probability of quitting smoking between first marriage and first birth across birth cohorts. The results show that resemblance in smoking status increased across cohorts. Couples in the 1942-1953 cohort are three times more likely to match on smoking status than to have different smoking statuses. Moreover, spousal resemblance in the joint occurrence of education and smoking also increased across cohorts, net of changes in population composition. Over time, highly educated men become more likely to marry nonsmoking women, and husbands are more likely to be nonsmokers in couples in which both spouses are highly educated. A growing divergence in the likelihood of quitting smoking by education between marriage and first birth further amplifies the alignment of education and smoking in families of origin. Taken together, the results show that families of origin have become systematically more unequal across two important domains of wellbeing.

Introduction

Families of origin serve many functions. Families produce, shelter, and nurture children, transmit social, economic, and cultural values and statuses, and serve as the starting point from which each life course begins. Early in life, the socioeconomic statuses of parents and families determine those of the individual. Then, as individuals age, they begin to accumulate their own statuses such that we can eventually distinguish between individuals' socioeconomic origins and their destinations. Decades of research in social stratification and demography shows that the characteristics of families of origin can benefit or impinge on children in numerous ways. This is the case across numerous domains including education, family structure, income, wealth, neighborhood, occupation, and health (Maralani 2013; Currie and Moretti 2007; Sharkey and Elwert 2011; Duncan et al 2005; Conley 2001; McLanahan and Sandefur 1994; Featherman and Hauser 1978; Jencks et al. 1972). Although from the perspective of studying social inequality any one of these family characteristics is interesting, what can be especially potent is when these characteristics come together in systematic ways such that some families offer a particularly

beneficial bundle of statuses (high education, high wealth, good neighborhood, nonsmoking) while other families offer systematically less advantageous bundles.

There are several ways in which families of origin might come to have a set of systematically advantageous or disadvantageous characteristics. First, for a given individual, many socioeconomic statuses are correlated—people with more education have, for example, both more income and better health (Smith 2007). Second, individuals may match on these characteristics in dating and marriage markets such that these statuses are clustered not just for one partner but potentially for both partners as well (Schwartz 2013; Kalmijn 1998). Third, for marital births, the characteristics of couples can converge between marriage and childbearing to reinforce such clustering (Demers, Bisson, and Palluy 1999; Homish and Leonard 2005). In a world in which couples exhibit no systematic pattern of matching or convergence on traits and statuses, children are exposed to a diverse set of family characteristics. But as partners come to have bundles of more or less advantageous characteristics, then families of origin become differentiated systematically as well. This systematic grouping of characteristics can increase inequality between families both within and across generations (Schwartz 2013).

This study examines whether statuses across two distinct and important domains—education and health—have become systematically aligned in families of origin. Specifically, the analyses consider the bundling of post-secondary schooling and nonsmoking status in marriage. If sorting on education and smoking in marriage becomes more homogamous, then the families in which children are born become more unequal. If children become more likely to be born into a family that has both high education and nonsmoking parents, or alternatively, low education and currently smoking parents, then the joint occurrence of the education and smoking status of parents concentrates disadvantage in certain types of families compared to when these traits are

distributed more randomly. This alignment of statuses in families can increase inequality across multiple domains of wellbeing.[1]

The analyses describe how the bundling of education and smoking in families of origin formed by marriage has changed across birth cohorts of Americans. I examine trends in assortative marriage by education and smoking status as well educational differences in quitting smoking in the window between first marriage and first birth. To preview the results, spousal resemblance in smoking and the bundling of smoking and education in marriage have increased across cohorts, net of changes in population composition. A growing divergence in the likelihood of quitting smoking by education between marriage and first birth further amplifies the alignment of educational and smoking statuses in families. Taken together, the results show that families of origin have become more unequal across important predictors of social status and health.

The Bundling of Statuses in Families of Origin

Couples match on a variety of characteristics. These include age and IQ as well as social and economic characteristics such as religion, education, race, ethnicity, wages, earnings, and occupational status (Schwartz 2010; Schwartz and Mare 2005; Sweeney and Cancian 2004; Fu 2001; Kalmijn 1991; Mare 1991; Hout 1982; Robert Johnson 1980; Ronald Johnson 1980). Couples also match on biological and health-related attributes such as alcohol and drug use, personality, psychiatric disorders, height, and obesity (Di Castelnuovo 2009; Speakman et al. 2007; Meyeler 2007; McLeod 1995). Whether biological, genetic, or socially-based, sorting on status reinforces social boundaries and can create or amplify other dimensions of inequality as

[1] Although cohabitation and non-marital unions have become important contexts for childbearing, data limitations make it impossible to extend the current analysis to include these types of families.

well. Moreover, given the close ties between the social statuses of parents and those of their children, sorting in marriage and dating markets can also reinforce social inequality across generations (Schwartz 2013).

Most studies on assortative mating in the U.S. consider matching on only one characteristic. A few studies, however, have examined matching on two dimensions. These dimensions have included race and education; ethnicity and religion; father's occupation and own education; and women's physical attractiveness and men' occupational status (Kalmijn 1993; Kalmijn 1991a; Kalmijn 1991b; Schoen and Wooldredge 1989; Taylor and Glenn 1976; Blau and Duncan 1967). The existing studies have generally examined one of three hypotheses. The first, the "by-product" hypothesis, posits that because social statuses are correlated within individuals, certain observed patterns of assortative mating, such as resemblance in social origins, are by-products of a more systematic behavior, that of matching on one's own education (Kalmijn 1998). A similar argument has been made about ethnic intermarriage. Ethnic groups who share the same religion are more likely to intermarry than those who have different faiths. This intermarriage is the by-product of sorting on religion (Kennedy 1944; Alba and Golden 1986).

The second hypothesis, the "competing statuses" hypothesis, examines whether, over time, one social dimension replaces another previously important one in the process of spouse selection. For example, matching on achieved characteristics such one's own education may eventually replace a previous pattern of matching on ascriptive characteristics such as social class origins (Kalmijn 1991a). Scholars have also examined whether changes in religious intermarriage show a decline in the importance of religious boundaries and an increase in the importance of educational boundaries (Kalmijn 199b). The third hypothesis, the "exchange"

hypothesis, examines whether individuals trade characteristics in the marriage market, such as exchanging (a woman's) beauty for (a man's) occupational prestige (Kalmijn 1998). The intersection of black-white racial intermarriage and matching on educational status has also been described in the language of exchange. Women who marry interracially, for example, are more likely to marry men who have more education than they have, compared to women who marry a man of the same race (Kalmijn 1993; Schoen and Wooldredge 1989).

Few existing studies, however, have considered whether couples sort in a way that systematically accumulates multiple advantageous statuses in both spouses, such as high education and good health, when matching in marriage. We might call this type of behavior a "bundling" hypothesis. In this type of matching, individuals try to find a spouse who shares one's portfolio of life chances and can reinforce one's ability to create a (marital) family of origin that is systematically advantaged in its particular bundle of statuses. In contrast to the by-product hypothesis, the bundling hypothesis is purposeful matching across multiple domains. Couples are trying to match on *both* education and smoking status, rather than only on education. In addition to preferring healthier behaviors, the evolution of smoking from a status that is shared broadly across the population to one that is highly stigmatized and concentrated among certain groups (Bayer and Stuber 2006), might also change individuals' preferences for matching on this attribute. In the analyses that follow, I examine whether this type of bundling of statuses in marriage increased across birth cohorts in the United States.

In the case of marital fertility, couples can also become more alike in the window between getting married and having children. Spouses, for example, can encourage each other to adopt healthier behaviors (Umberson 1987; Umberson 1992; Falba and Sindelar 2008). Smokers who are married to nonsmokers are more likely to quit smoking and also feel more confident that

they can remain nonsmokers once they quit (McBride et al. 1998; Severson et al. 1995). Spouses exert particular influence on their smoking partners with regards to quitting during pregnancy and upon giving birth. Women and their partners are more likely to quit smoking during pregnancy and upon the birth of a new child. And those with more schooling are both more likely to quit smoking overall, and more likely to quit smoking during pregnancy and upon having a child (Coleman and Joyce 2003; Kahn, Certain, and Whitaker 2002). Thus, highly educated couples might try to ensure that they are also nonsmoking couples by the time they conceive and bear children.[2]

In addition to the bundling of social statuses, sorting in marriage might produce an alignment in genetic traits as well. If smoking has a genetic component that is related to biological heterogeneity in the ability to metabolize nicotine, or if there is a genetic basis for addiction, then smoking status may also be heritable (Munafo et al. 2004; Lehrman et al. 1999; Sabol et al. 1999). Sorting on this trait in the marriage market means that this genetic heritability might become reinforced in the same way that sorting on education might reinforce the genetic heritability of cognitive ability. Of course, the transmission of education and smoking has a clear social component as well, such that even in the absence of any genetic mixing, matching and convergence between spouses on these characteristics has important implications for the joint distribution of education and health in families of origin.

Educational gradients in smoking

Smoking causes cancer and coronary heart disease. It doubles a person's risk of stroke and increases more than ten-fold the risk of dying from chronic obstructive lung disease. It is also

[2] Spousal resemblance in smoking and education can also increase between marriage and first birth because one spouse acquires more schooling in this window. The contribution of educational upgrading to educational homogamy, however, appears to be minimal (Schwartz and Mare 2012).

associated with many negative reproductive and early childhood outcomes including infertility, preterm delivery, stillbirth, low birth weight, and sudden infant death syndrome (Centers for Disease Control and Prevention (CDC) 2012). Given these adverse effects, the steep educational gradients in smoking that exist in the United States represent one of the deadliest examples of social inequalities in our population's health. In 2009, about a quarter of those with high school or less completed were current smokers compared to 20% of those with an associate degree, 11% of those with an undergraduate degree, and 5.6% of those with a graduate degree (CDC 2010).

This pattern of smoking by education, however, has changed dramatically over time. Before the 1950s, smoking rates were relatively high among all education groups. Smoking was seen as a habit that was modern and cultured, and people from across the social strata smoked. Indeed, tobacco companies capitalized on the fact that the highly educated smoked as a way to sell more cigarettes. In 1946, for example, Camel cigarettes ran an advertising campaign with the slogan: "More doctors smoke Camels than any other cigarette" (Brandt 2007:185). It was only after the 1950s when the scientific literature came to a shared consensus that smoking caused lung cancer that an educational gradient in smoking took shape. By the mid 1960s, smoking rates began to decline for all education groups but dropped especially rapidly for college graduates. Over the next 30 years, declines in smoking by college graduates far outpaced those of the other education groups and a steep educational gradient in smoking emerged (Pampel 2009; de Walque 2010).

Although differences in smoking cessation played an important part in the initial decline in smoking by the highly educated, it is the differential rise in never smoking by education that accounts for much of the educational gradient in smoking status (Maralani 2013). This is true across the life course, whether measured at age 25 or age 50, and for both men and women. For

men, this pattern emerged with the 1940-1949 birth cohort and for women it emerged with the 1950-1959 birth cohort (Maralani 2013). Our understanding of the mechanisms that produce these educational gradients in smoking, however, is quite limited. Although the association between summary measures of schooling (years or level completed) and smoking status is extremely robust, the time ordering of these statuses is problematic. Smoking regularly is a habit that begins in adolescence, well before schooling is completed. Nearly all adult smokers started smoking regularly before age 20 (Chen and Kandel 1995), and inequalities in smoking initiation by the education individuals go on to complete emerge as early as age 12 (Maralani 2014).

Taken together, these patterns suggest that educational gradients in smoking are rooted early in life, at a time when families of origin play an important role in children's lives. This underscores the importance of understanding early life contexts and characteristics as determinants of both education and smoking status later in life (Maralani 2014). Early life contexts include both the characteristics of children and the characteristics of their families of origin. Parents' educational attainment and smoking status, for example, play a key role in predicting children's statuses (e.g., Shenassa et al. 2003). An important question, then, is whether the joint distribution of education and smoking in families of origin has changed over time.

The Mechanisms Linking Education and Smoking

The existing literature contains numerous theories explaining the potential mechanisms linking education and smoking. Most of these are conceptualized at the individual level and thought to operate in adulthood, with the mechanisms running from education to health. For example, individuals with more education have more money, power, prestige, and information with which to produce or secure better health. They also have better social networks and are more socially

integrated within their networks (Cutler and Lleras-Muney 2010; Link 2008, Grossman 2006, Mirowsky and Ross 2003). Smoking, however, has a distinct life course trajectory that begins early in life. Because individuals are embedded in families of origin in childhood and adolescence, the potential mechanisms linking education and smoking must also operate at an earlier point in life and include family-level pathways in addition to individual-level ones (Maralani (2013; 2014). There are at least two potential family-level mechanisms that can explain how education and smoking become linked in families of origin: sorting in marriage and convergence in behavior between marriage and first birth.

At the family level, sorting on education and smoking at the time of marriage suggests that, for children, these characteristics of their parents are jointly determined. The convergence of education and nonsmoking between marriage and first birth is instead consistent with the mechanisms running from education to health. This pattern would be consistent with research showing that adults with more education are more likely to quit smoking (de Walque 2010; Sander 1995). This individual behavior (a parent-to-be quitting smoking in anticipation of birth), however, is intertwined with a family-level mechanism (having no smoking partners in a marriage). The combination of sorting and convergence in marriage on education and smoking creates a jointly determined family environment in which children begin their lives and go on to acquire their own educational and smoking statuses.

Data and Methods

Data

Although several surveys record the smoking behavior of both husbands and wives, there is little cohort data on trends in these statuses within marriage. It is possible, however, to use

retrospective marriage, fertility, and smoking histories from the Health and Retirement Study cohorts to piece together three birth cohorts from the mid 1920s to the early 1950s (most of whom first married from the early 1940s to the 1970s). The HRS provides a representative sample of those born: 1924-1930; 1931-1941; 1942-1947; and 1948-1953. To maximize the sample size and make the cohorts groupings comparable, I combine the latter two cohorts into one group and analyze a sample of three birth cohorts of men (1924-1930; 1931-1941; 1942-1953) and their wives.

I restrict the sample to couples in which both spouses are either in their first or second marriage (N=5,889). Nearly all respondents (91%) were either in their first of second marriage in these cohorts. I omit those with third and higher order marriages to limit the unobserved heterogeneity of the analytic sample with regards to families of origin. Because the share of second marriages increased across cohorts, restricting the sample to include only first marriages would also introduce a potentially important source of heterogeneity across cohorts. Another reason to include second marriages is that these occur relatively early in life. Even if children are not born into these marriages, these marriages serve as an important social context in children's lives. In this sample, the average age of first marriage is 24 for men and 21.6 for women. The average age of second marriage is 38.8 for men and 34.8 for women. Restricting the sample to couples who are in their first and second marriages captures those marriages that are most likely to produce children.

The HRS recorded smoking, marriage, and fertility histories for each spouse in all but the first survey wave. In 1992, the survey did not ask respondents who were current or previous smokers the age they first started to smoke. In the next wave, this question was added but only for new respondents. In order to use the first data wave one must make an assumption about the

age by which individuals who smoke had taken up regular smoking. For this wave, I assume that people who smoked started smoking by age 20. I selected this age based on the smoking histories reported by men and women from these birth cohorts in the National Health Interview Survey (NHIS), which is a large, population-based sample of respondents. In the NHIS, the median age of smoking initiation for these birth cohorts is about 18, with an interquartile range of 16 to 20 (author's calculations). This age cut off is also consistent with the data from the other HRS waves. The vast majority of those who smoke in the other HRS cohorts had started to smoke before this age.

Once the smoking histories are interleaved with the marriage and fertility histories, it is possible to determine the smoking status of each spouse (defined as current, former, or never smoker) at the time of marriage and when each of the couple's children was born (measured in whole years of age). Smoking is a status that changes over the life course. In this study, however, smoking status is measured at two specific points in time: the year in which the coupled married and the year in which the couple had their first child. As in most surveys, the designation of whether someone is a "smoker" is self-reported, and left open to interpretation by the respondent. The survey simply asked if the respondent is a current or former smoker. In the analyses below, I combine former and never smokers into one "nonsmoker" group. The substantive results, however, do not change if the former smokers are grouped instead with the current smokers and compared to never smokers.

I measure education in categories. The summary tables describe education in three categories: less than high school completed; high school only; at least some college completed (13 or more years of schooling). The multivariate models use a binary definition of schooling (<13 years of schooling versus ≥13 years completed) in order to minimize the number of cells

with very small counts. The substantive results, however, are similar between the two- and three-category classifications of schooling. The educational status of individuals is measured at the time of the survey rather than the time of marriage or the time of the first birth. That is, the analyses assume that individuals had their ultimate level of schooling (defined in the broad education categories) at the time of marriage and first birth. Although for most members of these cohorts high school completion and college entry preceded marriage and childbirth, it is possible that a small portion entered college later in life. The analyses abstract from this complication by assigning individuals their highest level of education obtained.

Analytical Approach

I assess trends in assortative marriage by smoking and educational status using log linear models, which account for the changing marginal distributions of education and smoking across these cohorts (Agresti 2002). This is important to do because these cohorts lived during a time when education was increasing for all groups and smoking patterns were shifting rapidly but differentially by education. The model is purely descriptive. The primary goal is to determine if the associations between husbands' and wives' statuses (education and smoking) have changed over cohorts net of changes in population composition. I describe the models in more detail below.

I also examine whether the educational and smoking statuses of husbands and wives become further aligned in the interval between marriage and first birth. For these cohorts, the time between marriage and first birth was a fairly short window of about two to three years. But these cohorts married and had children in the midst of rapidly emerging information about the negative health effects of smoking. Thus, those with more schooling could change their behavior

in the marriage market or they could change their behavior before having children. Using a binary logit model, I examine differences in quitting smoking (among couples with at least one smoking spouse) in the window between first marriage and first birth. I restrict the analysis to first marriages and first births in order to obtain a sample of parents for whom I can determine the smoking status of both partners at the time of marriage and at the time of their first birth.

The analyses described below ignore selective mortality. The HRS is a sample of older adults and respondents had to survive to middle age in order to appear in the sample. This fact is likely to make respondents positively selected. Selective mortality might reduce the number of couples where both spouses smoke as well as couples with one smoker. Couples in which neither spouse smokes are the most likely to survive. The effect of selective mortality is likely strongest for two-smoker couples (these couples are more likely to die at younger ages), which would understate the likelihood of smoking resemblance. Selective mortality, however, is also taking an early toll on couples where only one spouse smokes, which would overstate the likelihood of smoking resemblance. The quantitative import of these biases is unclear, as is the direction of the net bias created by these offsetting effects of selective mortality.

Results

Table 1 describes the sample of husbands and wives by the birth cohort of husbands. Education expanded rapidly for both husbands and wives in these cohorts. For husbands, the share of high school dropouts declined from 29% to 11% across cohorts while the share of college graduates increased from 25% to 38%. For wives, the share of high school dropouts decreased from 23% to 10% and the share of college graduates increased from 18% to 30%. The prevalence of current smoking among husbands declined from 63% in the 1924-1930 cohort to 41% in the 1942-1953

cohort. Among wives, the prevalence of current smoking remained constant across cohorts, although this flat trend conceals important offsetting differences by education, which I describe below. In these cohorts, most husbands and wives were in their first marriage, but the share of second marriages increased for husbands from 15% in the 1924-1930 cohort to 24% in the 1942-1953 birth cohort.

Table 2 shows the distribution of smoking status at the time of marriage by education and birth cohort. For husbands, the share of current smokers decreased across birth cohorts for all education categories. This decline was substantial for men with at least some college completed (19 percentage points) and moderate for those with high school or less completed (7 to 8 percentage points). Among wives, the share of smokers increased across cohorts among women who did not complete high school (11 percentage points). For wives with at least some college schooling, in contrast, the share of smokers declined by six percentage points. These patterns mirror findings from other datasets and studies that show that while men's smoking declined steadily from the late 1960s onward across all education groups, women's smoking actually increased in the 1950s and 1960s and did not begin to decline until the 1970s. This increase in women's smoking was concentrated among women with less than college schooling (de Walque 2010; Maralani 2013).

Table 3 shows resemblance in smoking status between spouses for different combinations of educational resemblance for each birth cohort. Among couples in which neither spouse has any college schooling, the proportion with the same smoking status (i.e., both are smokers or both are nonsmokers) increased eight percentage points from the 1924-1930 cohort to the 1942-1953 cohort (from 47% to 55%). This change was due to an increase both in marriages in which neither spouse smoked as well as marriages in which both spouses smoked. Among couples with

at least one spouse with some college education, the share of couples with the same smoking status increased by seven percentage points (from 56% to 63%). But this change reflects an offsetting pattern. This group had an 11 percentage point increase in marriages in which neither spouse smoked and a four percentage point decrease in the proportion of marriages in which both spouses smoked.

This pattern was even stronger for couples in which both partners had some college education. This high-high education group had a 19 percentage point increase in resemblance in nonsmoking across birth cohorts and a seven percentage point decrease in resemblance in smoking. Together, these offsetting patterns produced a 12 percentage point increase in smoking resemblance across birth cohorts (56% to 68%). Overall, although smoking resemblance increased across birth cohorts for all couples, it increased the most for highly educated couples. This increase was dominated by the increase in spousal resemblance in nonsmoking at the time of marriage. Only those couples in which neither spouse had any college schooling showed an increase across cohorts in having two smoking partners at the time of marriage.

Cohort Change in the Strength of Association between Education and Smoking in Marriage

The results summarized in the preceding tables conflate two trends: changes in the distributions of smoking and education in the population, and changes in the strength of the association between the smoking and educational statuses of partners. These birth cohorts experienced large compositional shifts in both education and smoking for both women and men. In order to see if spousal resemblance changed across cohorts net of these compositional changes, I estimate a series of loglinear models that cross-classify husband's and wife's education and smoking status at the time of marriage by husband's birth cohort.

In these models, the data are collapsed into a group structure. Husbands' and wives' education are dichotomized as having some college versus no college schooling (≥13 years versus <13 years). Each spouse's smoking status is dichotomized as being a nonsmoker versus current smoker in the year the marriage began. Spouses' smoking and education are then cross-classified by birth cohort, producing a 2x2x2x2x3 table (his education by her education by his smoking by her smoking by birth cohort). The cell counts in this table (the number of each type of pairing) are the dependent variable in the loglinear model (Agresti 2002). I estimate the parameters of this model using a general linear model (GLM) with a Poisson function and log link. These models are evaluated using goodness of fit statistics from a set of nested models that are increasingly more complex. The aim is to determine which dimensions and interactions are needed to capture the meaningful patterns present in the observed data.

Table 4 shows goodness of fit statistics for a series of models describing the joint distribution of education and smoking at the time of marriage by birth cohort. The first three models capture compositional changes the distribution of education and smoking across cohorts. Model 4 adds changes across cohorts in resemblance between spouses on education and resemblance on smoking status (three-way interactions of his education by her education by cohort and his smoking by her smoking by cohort). Model 5 adds the association between the couple's joint educational status and the husband's smoking status (his education by her education by his smoking). Model 6 adds the association between the couple's joint educational status and the wife's smoking status. Model 7 allows the association between the husband's education and the wife's smoking status to change across cohorts. Model 8 allows the association between husband's education and his own smoking status to change across cohorts. Model 9 allows the association between wife's education and her own smoking to change across cohorts.

Model 10 allows the association between wife's education and husband's smoking status to change across cohorts. Model 11 includes all possible three-way interactions among the five dimensions.

Table 4 reports the deviance (G^2) for each model, the p-value for the chi-squared statistic that the given model fits at least as well as the saturated model, and the BIC statistic. I also include the delta statistic, which shows how much of the observed data are misclassified given the model. The results from Models 1 to 4 show that even after accounting for changes across cohorts in educational resemblance and smoking resemblance, the model does not fit the observed patterns. Model 5 shows that accounting for the association between husband's (college) education, wife's (college) education and husband's nonsmoking status greatly improves the model fit. Accounting for the association between the education of the both spouses and the wife's nonsmoking status (Model 6) does not improve the fit. Instead, accounting for the changing association across cohorts between husband's education and the wife's smoking status (Model 7) significantly improves the fit and produces a model that fits the patterns in the data very well (p=.37). The next possible additional significant improvement in fit comes from accounting for changes over cohorts in the association between wife's education and her own smoking status (Model 9) but this model over-fits the data. The simpler model (Model 7) captures the patterns in the observed data sufficiently well.

Table 5 shows the coefficients from Model 7. The results show that the odds of smoking resemblance (Husband Nonsmoker * Wife Nonsmoker) are about twice the odds of smoking intermarriage in the oldest cohort and have increased significantly across cohorts. The odds of smoking resemblance increase to 2.8 times the odds of smoking intermarriage in the 1931-1941 cohort (2.113*1.344) and to 3.3 times in the 1942-1953 cohort (2.113*1.558). Not only do

couples match on smoking, but they also match on both education *and* smoking status. The odds that a college educated husband will have a nonsmoking wife are less than one (0.669) in the oldest cohort but increase to 1.12 by the 1942-1953. The association between husband's education and wife's nonsmoking status goes from negative to positive across these three birth cohorts. Finally, the odds that a highly-educated couple will also have a nonsmoking husband are higher than the odds that a couple will not match on these three statuses (1.360).

These results show that marital sorting on smoking and the joint distribution of education and smoking has been increasing across cohorts net of compositional changes in the marginal distributions of education and smoking for men and women. Not only has matching on smoking status at the time of marriage increases across cohorts, but it's joint association with educational status has also increased across cohorts. Nonsmoking men have become far more likely to marry nonsmoking women. In addition, highly educated couples are more likely to have a nonsmoking husband, and there has been an increasing trend for highly educated husbands to marry nonsmoking wives.

Changes between First Marriage and First Birth

The results from the preceding section show increased population sorting by education and smoking in a way that bundles smoking and education status in families of origin. Although this alignment of education and smoking in marriage could create an environment for the genetic transmission of smoking status, children exposure to the social transmission of smoking and educational status depends on whether individuals who smoke quit before the birth of their children. If this is the case, then quitting between marriage and birth might offset the increased

sorting observed at the time of marriage. In this section, I consider whether educational differences in smoking resemblance grow or shrink between first marriage and first birth.

Table 6 summarizes the observed patterns for men and women for the HRS cohorts. For both men and women, the fraction of current smokers at marriage who quit smoking by their first birth increases across cohorts. This increase in quitting by first birth is larger for women than men (13 percentage points versus 6). The fraction of those who initiate smoking between marriage and first birth increased in the 1931-1941 cohorts, which likely reflects the increasing rates of smoking in the 1940s and 1950s (and for women in the 1960s). The share of those who start smoking between marriage and first birth declines substantially in the 1942-1953 cohort.

The results in Table 7 show the odds of quitting smoking before the first birth for couples with at least one currently smoking spouse at the time of first marriage (N=2,772). The model adjusts for husband and wife's education, birth cohort, and the interaction of husband's education and cohort. The interaction of wife's education and birth cohort is not significant and not included in the model. Holding husband's education and birth cohort constant, wives with at least high school completed are about 2.5 times more likely than women with less schooling to have at least one of the spouses quit smoking before the couple's first birth. The interaction of husband's education and birth cohort shows that husbands with more than 12 years of school completed are much more likely to have at least one of the spouses quit smoking before the couple's first birth in the 1942-1953 cohort relative to the oldest cohort (about 9 times for those with 12 years of education and about 18.5 times for those with some college completed).

Figure 1 displays the predicted probabilities of quitting (conditional on smoking at the time of first marriage) based on the regression summarized in Table 7. In the 1924-1930 cohort, couples' educational differences in quitting are small and not statistically significant. The

probability that a spouse quits smoking before the first birth ranges from .03 for couples where both partners have less than high school completed to .05 for couples in which both have some college completed. By the 1931-1941 cohort, however, differences in quitting by education widen dramatically. In this cohort, the probability of quitting is again .03 for couples with the lowest levels of schooling but more than .10 for those with the most schooling. Differences grow even more by the 1942-1953 cohort. In this cohort, couples with the lowest levels of schooling have a predicted probability of quitting of .006 compared to a probability of .19 for couples in which both have some college completed. Educational differences in quitting smoking between first marriage and first birth amplify further the bundling of education and smoking in families of origin.

Discussion and Conclusion

Research on sorting in marriage has a long tradition in sociology. Most of this research conceptualizes how couples sort with regards to social characteristics as a sign of social closure. The literature aims to understand the nature of these social boundaries, whether they are rigid or fluid, and how they differ for groups or change over time. The systematic bundling of characteristics within marriage is also important, however, from the perspective of inequalities in families of origin. Do men and women match on characteristics across multiple domains of socioeconomic status or wellbeing in order to establish a family of origin that is uniformly advantaged in certain regards? The current study finds that couples indeed sort in this way, and that this type of sorting has increased across birth cohorts in the United States.

The analyses above focus on marriage because data on the smoking histories of cohabiting and non-martial partners are quite limited. This data limitation is unfortunate,

however, because non-marital unions are an important context for childbearing, especially for African Americans. Understanding sorting on smoking and education in non-marital unions is an important area for future research. Moreover, the much higher rate of relationship churn in non-marital unions increases the complexity of measuring children's exposure to the joint distribution of smoking and education in their families of origin.

The findings of this study extend the existing literature on several fronts. First, I show that nonsmokers prefer to marry nonsmokers, and that the strength of this resemblance between spouses has increased across three representative birth cohorts of Americans. Couples in the 1942-1953 cohort are three times more likely to share the same smoking status than to have different smoking statuses. Second, not only do couples sort on smoking status in marriage but they sort jointly on both education *and* smoking status. Over time, highly educated men are more likely to marry women who do not smoke, and highly educated couples are more likely to have a husband who does not smoke. This bundling of education and smoking in marriage is amplified by educational inequalities in the likelihood of quitting smoking between the time of marriage and first birth. When both spouses are college-educated, the predicted probability of quitting smoking before first birth increases dramatically across cohorts. In contrast, couples with less schooling experience much smaller gains. Taken together, the results show that families of origin have become more unequal across important predictors of social status and health.

This type of sorting is particularly important for children's life chances because it concentrates disadvantages across multiple domains of wellbeing within certain families. Some children will be born to parents who are both highly educated and nonsmoking while others will be born to parents who have not gone to college and are also more likely to smoke. If the statuses of parents are important predictors of the statuses of children—and the literature shows strong

evidence that with regards to education and smoking status they are—then this bundling of socioeconomic statuses gives children an unequal start in life. The alignment of education and health behaviors such as smoking suggests that couples use the marriage market and the years preceding childbearing as a way of establishing a certain lifestyle or type of family in which to raise their children. Although families of origin evolve and change over the years they exist as a unit, the results above demonstrate that they begin on an uneven playing field with regards to education and smoking.

In addition to showing how education and smoking become intertwined in families of origin, the results also capture the emergence of strong norms about nonsmoking among the highly educated in the context of marriage. The HRS cohorts studied here came of age in the mid-1950s to the early 1970s, just as the information about the negative health effects of smoking was spreading. Among those born from 1924-1930, the association between husband's education and wife's smoking status was in fact negative. But by the 1942-1953 cohort, this association turns positive, suggesting that smoking had turned from a neutral or even positive characteristic to a negative one among the highly educated. Not only were the highly educated themselves giving up smoking, but they were also changing their preferences about whether they married someone who smoked. The increase in resemblance between spouses on both education and smoking provides additional evidence for the transformation of smoking from a desirable behavior to a stigmatized one (Bayer and Stuber 2006) and a widespread cultural shift in lifestyles by socioeconomic status.

Social class, family statuses, cultural beliefs, and lifestyles are interrelated (Weeden and Grusky 2005; Bourdieu 1984). Indeed, if we were to imagine where smoking might fall in Bourdieu's integrated schema of social positions and life styles, it would belong in distinctly

different spaces for the 1924-1930 cohort versus the 1942-1953 cohort. This cultural shift itself matters for children's choices and life chances. As smoking becomes increasingly associated with having lower socioeconomic status, children in families with high socioeconomic status internalize that highly educated people do not smoke. Long before they go to college and actually become highly educated themselves, children adopt the cultural frame of where smoking as a behavior fits in the broader social hierarchy. Moreover, having two highly educated parents who are both nonsmokers also reduces the availability of cigarettes in the home, the normalization of smoking as an activity, and exposure to second-hand smoke.

The bundling of education and smoking in marriage and families of origin also has important implications for understanding the mechanisms linking education and health. Although much of the literature explaining the correlation between education and health conceptualizes the mechanisms as running from education to health, the results described above show evidence for the joint occurrence of education and smoking in families of origin. Our existing theories conceptualize education as a resource that gives individuals more power, prestige, economic resources, information, and social support for producing and maintaining health. The relationship between education and smoking, however, is tethered to adolescence, when individuals are embedded in their families of origin. Thus, the mechanisms linking education and this facet of health must operate at the family level as well, suggesting that these statuses are linked across generations in more systematic and jointly determined ways than we have understood them so far.

References

Agresti, Alan. 2002. Categorical Data Analysis, Second Edition. Hoboken, NJ: John Wiley and Sons, Inc.

Alba, Richard D., and Reid M. Golden. "Patterns of ethnic marriage in the United States." *Social forces* 65.1 (1986): 202-223.

Bayer, Ronald and Jennifer Stuber. 2006. "Tobacco Control, Stigma and Public Helath: Rethinking the Relations" *American Journal of Public Health* 96:28-32.

Blau, Peter M. and Otis Dudley Duncan. 1967. *The American Occupational Structure*. New York: John Wiley & Sons, Inc.

Brandt, Allan M. "The cigarette century." *The rise, fall, and deadly persistence of the product that* (2007).

Bourdieu, Pierre. 1984. *Distinction: A Social Critique of the Judgment of Taste*. Cambridge, MA: Harvard University Press.

Centers for Disease Control and Prevention, Office on Smoking and Health. 2009. "Health Effects of Cigarette Smoking." http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/ accessed June 24, 2015.

Chen, Kevin, and Denise B. Kandel. "The natural history of drug use from adolescence to the mid-thirties in a general population sample." *American journal of public health* 85.1 (1995): 41-47.

Colman, Gregory J., and Ted Joyce. "Trends in smoking before, during, and after pregnancy in ten states." *American journal of preventive medicine* 24.1 (2003): 29-35.

Conley, Dalton. 2001. "Capital for College: Parental Assets and Postsecondary Schooling." *Sociology of Education* 74:59-72.

Currie, Janet & Enrico Moretti, 2007. "Biology as Destiny? Short- and Long-Run Determinants of Intergenerational Transmission of Birth Weight," Journal of Labor Economics, University of Chicago Press, vol. 25, pages 231-264.

Cutler, D.M. and A. Lleras-Muney 2010. "Understanding differences in health behaviors by education." *Journal of Health Economics* 29:1-28.

Demers, Andrée, Jocelyn Bisson, and Jézabelle Palluy. 1999. "Wives' convergence with their husbands' alcohol use: Social conditions as mediators." *Journal of Studies on Alcohol and Drugs* 60: 368-377.

de Walque, Damien. 2010. “Education, Information, and Smoking Decisions: Evidence from Smoking Histories in the United States, 1940-2000. *Journal of Human Resources*, 45:;682-717.

Di Castelnuovo, Augusto, et al. "Spousal concordance for major coronary risk factors: a systematic review and meta-analysis." *American journal of epidemiology* 169.1 (2009): 1-8.

Duncan, Greg, Ariel Kalil, Susan E. Mayer, Robin Tepper, and Monique R. Payne. 2005. “The Apple Does Not Fall Far from the Tree,” in *Unequal Chances: Family Background and Economic Success*, S. Bowles, H. Gintis, and M. Osborne Groves, eds., pp.23-79.

Falba, Tracy A., and Jody L. Sindelar. "Spousal concordance in health behavior change." *Health services research* 43.1p1 (2008): 96-116.

Farrell, Phillip and Victor R. Fuchs. 1982. "Schooling and Health." *Journal of Health Economics* 1:217-230.

Featherman, David L. and Robert M. Hauser. 1978. *Opportunity and Change*. New York: Academic Press.

Fu, Vincent Kang. 2001. “Racial Intermarriage Pairings.” *Demography* 38(2):147-159.

Grossman, M. 2006: “Education and Nonmarket Outcomes.” In Handbook of the Economics of Education, edited by Eric Hanushek and Finis Welch. Amsterdam: North-Holland, Elsevier Science.

Hout, Michael. "The association between husbands' and wives' occupations in two-earner families." *American Journal of Sociology* (1982): 397-409.

Jencks, Christopher, Marshall Smith, Henry Acland, Mary Jo Bane, David Cohen, Herbert Gintis, Barbara Heyns, and Stephan Michelson. 1972. *Inequality: A Reassessment of the Effect of Family and Schooling in America*. New York: Basic Books, Inc.

Johnson, Robert A. 1980. *Religious Assortative Mating in the United States*. New York: Academic Press.

Johnson, Ronald C., Frank M. Ahern, and Robert E. Cole. "Secular change in degree of assortative mating for ability?." *Behavior genetics* 10.1 (1980): 1-8.

Kahn, Robert S., Laura Certain, and Robert C. Whitaker. "A reexamination of smoking before, during, and after pregnancy." *American Journal of Public Health* 92.11 (2002): 1801-1808.

Kalmijn, Matthijs. 1991a. “Status Homogamy in the United States.” *American Journal of Sociology* 97(2):496-523.

Kalmijn, Matthijs. 1991b. “Shifting Boundaries: Trends in Religious and Educational Homogamy” *American Sociological Review* 56:786-800

Kalmijn, Matthijs. 1994. “Assortative Mating by Cultural and Economic Occupational Status.” *The American Journal of Sociology* 100(2):422-452.

Kalmijn, Matthijs. 1998. “Intermarriage and Homogamy: Causes, Patterns, Trends.” Annual Review of Sociology 24:395-421.

Kennedy, Ruby Jo Reeves. "Single or triple melting-pot? Intermarriage trends in New Haven, 1870-1940." *American Journal of Sociology* (1944): 331-339.

Lerman, Caryn, Neil E. Caporaso, Janet Audrain, David Main, Elise D. Bowman, Benjamin Lockshin, Neal R. Boyd, and Peter G. Shields. 1999. “Evidence Suggesting the Role of Specific Genetic Factors in Cigarette Smoking.” *Health Psychology* 18:14-20.

Link, B.G. 2008. “Epidemiological Sociology and the Social Shaping of Population Health.” *Journal of Health and Social Behavior* 49(4): 367-384.

Maralani, Vida. 2013. “The Demography of Social Mobility: Black-White Differences in Educational Reproduction.” American Journal of Sociology 118:1509-1558.

Maralani, Vida. 2013. “Educational Inequalities in Smoking: The Role of Initiation versus Quitting.” Social Science and Medicine 84:129-137.

Maralani, Vida. 2014. “Understanding the Links between Education and Smoking.” Social Science Research 48:20-34.

Mare, Robert D. 1991. “Five Decades of Educational Assortative Mating.” *American Sociological Review* 56(1):15-32.

McBride, Colleen M., et al. "Partner smoking status and pregnant smoker's perceptions of support for and likelihood of smoking cessation." *Health Psychology* 17.1 (1998): 63.

McLanahan, Sara S., and Gary D. Sandefur. 1994. *Growing Up With a Single Parent*. Cambridge: Harvard University Press.

McLeod, Jane D. 1995. “Social and Psychological Bases of Homogamy for Common Psychiatric Disorders.” *Journal of Marriage and the Family* 57:201-14.

McGinnis, J., Michael Foege, William H. Foege. 1993. "Actual Causes of Death in the United States." *JAMA* 270(18):2207-2212.

Meyler, Deanna, Jim P. Stimpson, and M. Kristen Peek. "Health concordance within couples: a systematic review." *Social science & medicine* 64.11 (2007): 2297-2310.

Mirowsky, J. and C.E. Ross. 2003. *Education, Social Status and Health.* New York: Aldine De Gruyter.

Munafo, Marcus. R, Taane G. Clark, Elaine C. Johnstone, Michael F. G. Murphy, and Robert T. Walton. 2003. "The Genetic Basis for Smoking Behavior: A Systematic Review and Meta-analysis." *Nicotine and Tobacco Research* 6:583-597.

Pampel, Fred C. 2009. "The Persistence of Educational Disparities in Smoking" *Social Problems* 56:526-542.

Sabol, Sue Z., Mark L. Nelson, Craig Fisher, Lorraine Gunzerath, Cindy L. Brody, Stella Hu, Leo A. Sirota, Stephen E. Marcus, Benjamin D. Greenberg, Frank R. Lucas IV, Jonathan Benjamin, Dennis L. Murphy, and Dean H. Hamer. 1999. "A Genetic Association for Cigarette Smoking Behavior." *Health Psychology* 18:7-13.

Sander, William. 1995. "Schooling and Quitting Smoking." *The Review of Economics and Statistics* 77(1): 191-199.

Schoen, Robert, and John Wooldredge. "Marriage choices in North Carolina and Virginia, 1969-71 and 1979-81." *Journal of Marriage and the Family* (1989): 465-481.

Schwartz, Christine. 2013. "Trends and Variation in Assortative Mating; Causes and Consequences." *Annual Review of Sociology* 39:451-470.

Schwartz, Christine. 2010. "Earnings Inequality and the Changing Association between Spouses' Earnings." *American Journal of Sociology* 115:1524-1557

Schwartz, Christine and Robert Mare. 2012. "The Proximate Determinants of Educational Homogamy: The Effects of First Marriage, Marital Dissolution, Remarriage, and Educational Upgrading." *Demography* 49:629–650

Schwartz, Christine and Robert Mare. 2005. "Trends in Educational Assortative Marriage from 1940 to 2003." *Demography* 42:621-646.

Severson, Herbert H., et al. "Predictors of smoking during and after pregnancy: a survey of mothers of newborns." *Preventive medicine* 24.1 (1995): 23-28.

Sharkey, Patrick and Felix Elwert. 2011. "The Legacy of Disadvantage: Multigenerational Neighborhood Effects on Cognitive Ability." *American Journal of Sociology* 116: 1934-1981.

Shenassa, Edmond D., Jeanne M. McCaffery, Gary E. Swan, Taline V. Khroyan, Sohaila Shakib, Caryn Lerman, Michael Lyons, Michelle Mouttapa, Raymond S. Niaura, Stephen L. Buka, Frances Leslie, and Susan L. Santangelo. 2003. "Intergenerational Transmission of Tobacco Use and Dependence: A Transdisciplinary Perspective." *Nicotine & Tobacco Research* 5:S55-S69.

Smith, James A. 2007. “The Impact of Socioeconomic Status on Health over the Life-Course.” *Journal of Human Resources* 42:739-764.

Speakman, John R., et al. "Assortative mating for obesity." *The American journal of clinical nutrition* 86.2 (2007): 316-323.

Sweeney, Megan M., and Maria Cancian. "Placing patterns of economic assortative mating in context: A reply to Press (2004) and England (2004)." *Journal of Marriage and Family* 66.4 (2004): 1038-1041.

Taylor, Patricia Ann, and Norval D. Glenn. "The utility of education and attractiveness for females' status attainment through marriage." *American Sociological Review* (1976): 484-498.

Tenn, S. D.A. Herman, B. Wendling. 2010. “The Role of Education in the Production of Health: An Empirical Analysis of Smoking Behavior.” *Journal of Health Economics*29:404-417.

Umberson, Debra. "Gender, marital status and the social control of health behavior." *Social science & medicine* 34.8 (1992): 907-917.

Umberson, Debra. "Gender, marital status and the social control of health behavior." *Social science & medicine* 34.8 (1992): 907-917.

Weeden, Kim A. and David B. Grusky 2005. “The Case for a New Class Map” *American Journal of Sociology* 111: 141-212.

Table 1. Descriptive Statistics by Birth Cohort, HRS (N=5,889)

	1924-1930	1931-1941	1942-1953
Husbands			
Years of education	12.4	12.7	13.7
	(.14)	(.06)	(.08)
<12 years	0.29	0.23	0.11
12 years	0.28	0.34	0.26
13-15 years	0.17	0.18	0.24
≥16 years	0.25	0.26	0.38
Smoking Status at most recent marriage			
Current	0.63	0.59	0.47
Former	0.08	0.08	0.12
Never	0.30	0.33	0.41
In first marriage	0.85	0.79	0.76
In second marriage	0.15	0.21	0.24
Age married (first marriages)	23.9	23.7	24.2
Age married (second marriages)	50.2	38.8	37.3
Wives			
Years of education (mean)	12.4	12.5	13.5
	(.12)	(.05)	(.07)
<12 years	0.23	0.19	0.1
12 years	0.38	0.43	0.32
13-15 years	0.22	0.21	0.29
≥16 years	0.18	0.17	0.3
Smoking Status at most recent marriage			
Current	0.32	0.33	0.32
Former	0.03	0.03	0.09
Never	0.65	0.63	0.60
In first marriage	0.83	0.81	0.82
In second marriage	0.17	0.19	0.18
Age married (first marriages)	21.9	21.1	22.0
Age married (second marriages)	41.5	34.3	34.0
N	1,309	3,083	1,497

Notes: Smoking status measured at time of marriage. Data are weighted using respondent-level weights.

Table 2. Percent Current Smokers at Time of Marriage by Husband's Birth Cohort, HRS (N=5,889 couples)

	1924-1930	1931-1941	1942-1953
Husband's Education			
<12 years	68	68	61[d]
12 years	64	58	56[b]
13+ years	59	56	40[a,c]
Wife's Education			
<12 years	27	29	38[b,d]
12 years	31	32	34
13+ years	35	37	29[b,c]
N	1,309	3,083	1,497

Notes: Smoking status measured at time of marriage. Data are weighted using respondent-level weights.
a = significantly different from 1924-1930 cohort p<.05
b = significantly different from 1924-1930 cohort p<.10
c = significantly different from 1931-1941 cohort p<.05
d = significantly different from 1931-1941 cohort p<.10

Table 3. Trends in Smoking Resemblance by Cohort and Education, HRS (N=5,889 couples)

Husband's Birth Cohort	% different smoking status	% same smoking status	% both spouses don't smoke	% both spouses smoke
	Husband <13 yrs & Wife <13 yrs (low-low education)			
1924-1930	53	47	26	21
1931-1941	45	55	32	23
1942-1953	45	55	30	25
	Husband <13 yrs or Wife <13 yrs (low-high education)			
1924-1930	44	56	29	27
1931-1941	44	56	30	26
1942-1953	37	63	40	23
	Husband ≥13 yrs & Wife ≥13 yrs (high-high education)			
1924-1930	44	56	32	24
1931-1941	39	61	34	27
1942-1953	32	68	51	17

Notes: Smoking status measured at time of marriage. Data are weighted using respondent-level weights.

Table 4. Goodness of Fit Statistics for Loglinear Models of Smoking and Educational Resemblance, HRS (N=5,889 couples)

	Model	G^2	df	p	delta	BIC	LR Test
(1)	[H] [W] [S^m] [S^f] [C]	1998	41	.000	24.8	1642	
(2)	(1) + [HC] [WC] [S^mC] [S^fC]	1582	33	000	22.6	1296	
(3)	(2) + [HW] [HS^m] [HS^f] [WS^m] [WS^f] [S^mS^f]	53.2	27	.002	3.8	-181	
(4)	(3) + [HWC] [S^mS^fC]	42.8	23	.007	3.4	-156	
(5)	(4) + [HWS^m]	35.9	22	.031	3.0	-155	
(6)	(5) + [HWS^f]	35.0	21	.028	2.97	-147	(6) vs. (5) p<.325
(7)	(5) + [HS^fC]	21.4	20	.37	2.2	-152	(7) vs. (5) p<.0001
(8)	(7) + [HS^mC]	19.5	18	.36	1.96	-137	(8) vs. (7) p<.376
(9)	(7) + [WS^fC]	14.2	18	.72	1.8	-142	(9) vs (7) p<.02
(10)	(9) + [WS^mC]	12.7	16	.70	1.5	-126	(10) vs. (9) p<.467
(11)	All three-way interactions	8.2	11	.70	1.3	-87	(13) vs. (8) p<.517

H Husband College Educated (1 = ≥13 years)
W Wife College Educated (1 = ≥13 years)
S^m Husband Nonsmoker at Time of Marriage (1 = yes)
S^f Wife Nonsmoker at Time of Marriage (1 = yes)
C Husband's Birth Cohort, 2 dummies (1931-1941; 1942-1953; reference=1924-1930)

Table 5. Loglinear Model Coefficients from Model 7 Shown in Table 4, HRS (N=5,889 couples)

Variable	OR	SE	p-value
Born 1931-1941	2.273	0.197	0.000
Born 1943-1953	0.767	0.081	0.012
Husband ≥13 yrs education	0.314	0.039	0.000
Husband ≥13 yrs * Born 1931-41	1.284	0.180	0.075
Husband ≥13 yrs * Born 1942-53	1.343	0.220	0.072
Wife ≥13 yrs education	0.237	0.025	0.000
Wife ≥13 yrs * Born 1931-41	1.086	0.118	0.449
Wife ≥13 yrs * Born 1942-53	1.795	0.229	0.000
Husband Nonsmoker	0.268	0.032	0.000
Husband Nonsmoker * Born 1931-41	0.994	0.136	0.966
Husband Nonsmoker * Born 1942-53	1.329	0.201	0.060
Wife Nonsmoker	2.143	0.184	0.000
Wife Nonsmoker * Born 1931-41	0.839	0.086	0.086
Wife Nonsmoker * Born 1942-53	0.565	0.072	0.000
Husband ≥13 yrs * Wife ≥13 yrs	7.225	1.001	0.000
Husband ≥13 yrs * Wife ≥13 yrs * Born 1931-1941	0.772	0.120	0.097
Husband ≥13 yrs * Wife ≥13 yrs * Born 1942-1953	0.853	0.151	0.369
Husband Nonsmoker * Wife Nonsmoker	2.113	0.284	0.000
Husband Nonsmoker * Wife Nonsmoker * Born 1931-1941	1.344	0.214	0.063
Husband Nonsmoker * Wife Nonsmoker * Born 1942-1953	1.558	0.277	0.013
Husband ≥13 yrs * Wife Nonsmoker	0.669	0.085	0.002
Husband ≥13 yrs * Wife Nonsmoker * Born 1931-1941	1.028	0.150	0.848
Husband ≥13 yrs * Wife Nonsmoker * Born 1942-1953	1.676	0.279	0.002
Husband ≥13 yrs * Husband Nonsmoker	1.197	0.097	0.027
Wife ≥13 yrs * Husband Nonsmoker	1.072	0.097	0.444
Wife ≥13 yrs * Wife Nonsmoker	0.861	0.056	0.022
Husband ≥13 yrs * Wife ≥13 yrs * Husband Nonsmoker	1.360	0.167	0.012
Intercept	146.895	10.757	0.000

Table 6. Differences in Smoking from First Marriage to First Birth (% shown) HRS (N=4,134)

		Men			Women		
Cohort 1924-1930 (N=1,013)							
		At First Birth			At First Birth		
		Never	Current	Past	Never	Current	Past
At Marriage	Never	95	5	0	90	10	0
	Current	0	97	3	2	94	4
	Past	0	0	100	0	0	100
Cohort 1931-1941 (N=1,966)							
		At First Birth			At First Birth		
At Marriage		Never	Current	Past	Never	Current	Past
	Never	84	16	0	86	14	0
	Current	0	96	4	0	93	7
	Past	0	4	96	0	0	100
Cohort 1942-1953 (N=1,155)							
		At First Birth			At First Birth		
At Marriage	Never	Never	Current	Past	Never	Current	Past
	Current	96	4	0	96	4	0
	Past	0	91	9	0	84	16
		0	2	98	0	2	98

Notes: Smoking status measured in year of first marriage and year of first birth. Data are weighted using respondent-level weights.

Table 7. Binary Logit Model (Odds Shown) of Quitting Smoking between First Marriage and First Birth, HRS (N=2,272)

Husband education <12 years (reference)	
Husband education = 12 years	0.40
Husband education = ≥13 years	0.43
Wife education <12 years (reference)	
Wife education = 12 years	2.51*
Wife education ≥13 years	2.53*
Born 1924-1930 (reference)	
Born 1931-1941	.747
Born 1942-1953	0.200*
Husband Educ.=12 x Born 1931[a]	1.52
Husband Educ.=12 x Born 1942[a]	14.77*
Husband Educ.≥13 x Born 1931[a]	3.88†
Husband Educ.≥13 x Born 1942[a]	30.80*
Husband smokes (reference)	
Wife smokes	2.728*
Both smoke	.538*
Black	1.340
Hispanic	1.251

Notes: Smoking status measured in year of first marriage and year of first birth. Sample restricted to couples in which at least one spouse smokes in year of first marriage. Data are weighted using respondent-level weights.
[a] Jointly Significant $p<0.003$; * $p<0.05$; †$p<0.053$

Figure 1. Predicted Probability of Quitting Based on Model Results Shown in Table 7, HRS, (N=2,273)