Investigating the Education Gap in Mortality: The Case of Cigarette Smoking

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Abstract

We examine the extent to which the education gap in mortality is moderated by one of the most harmful individual health behaviors, cigarette smoking. Using National Health Interview Survey Linked Mortality File (NHIS-LMF) data for selected years from 1995-2002, we examine patterns to determine (1) if cigarette smoking moderates the relationship between education and all cause mortality and (2) whether younger, middle, and older age males and females experienced similar patterns of mortality by education and smoking. Using Cox proportional hazard models we find that cigarette smoking reduces the education mortality gap for all males and for younger females (under age 70). Younger cohorts of the least educated men, ages 25-49 and ages 50-69, experienced substantial reductions – over 30 percent – to mortality. Older cohorts (age 70 and older) of men experienced more modest reductions, and older women experienced no reduction in the education mortality gap. Thus, studies that examine the effects of education on mortality must consider the moderating effects of smoking.

The strong, persistent graded relationship between education and mortality is well-known and established (Lauderdale 2001; Link and Phelan 1995; Lynch 2003; Pappas et al. 1993; Warren and Hernandez 2007; Williams 1990). Most studies of education and mortality have controlled for age, sex, and race, but have not examined important health and health-related mediating factors. For example, Pappas et al. (1993) and Lauderdale (2001) recognized that educational gaps in mortality might be due to changes in health behaviors, with individuals of higher education more likely to adopt healthy lifestyles.

Link and Phelan (1995) demonstrate that education is a fundamental cause of health and longevity. Education affects individual's employment, income, social relations, and health behaviors. And education is increasingly related to cigarette smoking.

In the 1960s, cigarette smoking rates were similar across educational levels. After the U.S. Surgeon General's report of 1964, cigarette smoking became much more common among lower educational groups, with high educational groups demonstrating higher quit rates and lower rates of smoking initiation. In 1966, among individuals aged 20 years and over, the prevalence of smoking was 36.5% for those who had less than a high school degree and 33.7% among college graduates. By 1987, the smoking prevalence rate remained about the same for individuals with less than a high school degree, at 35.7%, but was halved for college graduates, with a rate of 16.3% (DHHS 1989). By 2006, there are clear, graded effects between smoking and education. In the U.S., the age-adjusted cigarette smoking prevalence rates of adults age 25 and above was 28.8% for those with less than a high school degree, 26.5% for those with a high school

diploma or GED, 22.1% for those with some college but not bachelor's degree, and just 8.2% for those with a bachelor's degree or more (NCHS 2007a). Thus, compared to those with the more advanced educational attainment, those with the lowest educational attainment are 3.5 times as likely to smoke (NCHS 2007a).

Not only have fewer individuals with advanced education begun smoking, but disproportionately more individuals with advanced education have quit smoking. Thus, it is important for us to examine how smoking helps to moderate the education-mortality relationship for all adults as well as for specific age, gender, and racial/ethnic groups.

Waldron (1991) examined age, sex, and education differences in smoking in the U.S. in 1985. She found that smoking is higher among males than females, younger than older adults, and individuals with lower levels of education. Individuals with higher levels of education are less likely to be current smokers, less likely to have ever smoked, and more likely to have quit smoking. For instance, among males aged 20-34, only 16% of college graduates but 59% of individuals with less than a high school degree were current smokers.

The diffusion of innovations hypothesis (Ferrence 1988) states that compared to females, males are more likely to adopt innovations earlier because they have traditionally earned higher incomes, had greater power, traveled more extensively, and have been exposed to more information. Thus, compared to females, males were the first to start smoking in the early 1900s when smoking was fashionable, and were also the first to quit smoking in the 1960s, after the Surgeon General's report that highlighted the hazards of smoking. These trends have resulted in reasonably similar smoking patterns by sex in recent years. For instance, in 2006, the percentage of smokers aged 25 and over

was 22.9% among males and 17.9% among females (NCHS 2007a).

The diffusion of innovation hypothesis also applies to education, where more educated individuals are more likely to adopt new innovations than less educated individuals (Waldron 1991). This helps to explain why the sex differences in smoking prevalence are greater for older individuals with less education: earlier cohorts of less educated women had low rates of smoking (Waldron 1991).

Although there is an inverse relationship between education and smoking, there may be more direct relationships between income and employment status and smoking. Women's increased employment and income may contribute to their ability to afford cigarettes (Waldron 1991).

Research Aims

This paper examines the extent to which educational differences in overall mortality risk are moderated by cigarette smoking in the U.S. Because of differences in the adoption and prevalence of cigarette smoking by younger versus older and men versus women, we also investigate the extent to which the moderating effect of smoking differs across age and sex groups.

Data and Method

We use data from the National Health Interview Survey Linked Mortality File (NHIS-LMF) for the year 1995, and years 1997 through 2000 linked to prospective mortality through December of 2002. The 1995 and 1997-2000 years of the NHIS contain a standard set of sociodemographic and health variables that vary little over time (NCHS

various years). Further, the 1995 NHIS includes a supplement concerned with meeting objectives contained in Healthy People 2000. This supplement gathered information on cigarette smoking, as does the NHIS Sample Adult File (SAF) for the years 1997-2000. Because the 1996 NHIS does not include information on cigarette smoking, we do not include it in our analyses. The NHIS-LMF is well-suited for our analyses because it allows for the examination of the risk of death from all causes among a large non-institutionalized adult population.

Our sample includes 123,817 adults age 25 and older. We include only respondents who are age 25 or older to partially account for the delay in completion of educational attainment in the United States and to better reflect the relationship between education and all cause mortality. We drop 2.4 percent of cases because NCHS designates them as ineligible to be linked to prospective mortality or because they are missing data on our key variables; NCHS (2007b) provides weights that adjust for the exclusion of ineligible records.

We construct a consistent measure of educational attainment over the sample years that reflects whether the adult has more than 4 years of college (the referent), has completed 4 years of college, has some college but not 4 years completed, has a high school education, or has less than a high school education or a GED.

Our initial models control for age, sex, race/ethnicity, marital status, employment status, and income. Age is a continuous 5-year interval measure, and sex is coded as male (the referent) or female. We also include sex-specific models and break adults into age 25-49, age 50-69, and age 70 or older groups. A series of dummy variables captures race/ethnicity, reflecting whether a person is non-Hispanic white (the referent), non-

Hispanic black, Hispanic, or some other race/ethnicity. Because previous work has established important mortality differentials by marital status (Rogers, Hummer, and Nam 2000) we include whether the person is married (the referent), divorced or separated, never married, or widowed.

Numerous works have demonstrated the effects of socioeconomic status on health and mortality prospects (Rogers, Hummer, and Nam 2000; Williams and Collins 1995). Although this body of work has shown that education has some of the strongest effects on health and mortality (Lleras-Muney 2005), it is important to simultaneously consider the effects of employment and income. The independent effects of each of the socioeconomic indicators—education, employment, and income—are no doubt affected by each other. For example, more education typically leads to greater income and better employment opportunities. To exclude any of the socioeconomic indicators while considering the effects of one of them might lead to falsely heightened estimates. To account for this, we include a measure of employment status that represents whether the person is working (the referent) or not working or in the labor force, and a measure of income that represents an annual household income of greater than or equal to $20,000 (the referent) or less than $20,000.

To investigate the moderating effects of smoking status on the education mortality relationship we first delineate never smokers (the referent), former smokers, and current smokers. Second, we use a measure of cigarettes smoked daily to construct detailed current smoking categories. Consistent with the literature (see Rogers et al. 2005), we classify those who smoke 19 or fewer cigarettes a day as light smokers, 20 to 39

cigarettes a day as moderate smokers, and 40 or more cigarettes a day as heavy smokers (20 cigarettes typically equals a pack).

We use Cox proportional hazard models to examine the risk of all cause mortality (Allison 1984). Duration in quarter year interval is used to indicate the time to death in the survival models and records are censored if respondents survived the follow-up period. Cox models are particularly useful because they do not impose a particular distribution of death across age and because the model is sturdy when based on a large nationally representative sample (Therneau and Grambsch 2000). All results are reported as hazard ratios (HRs), and Stata 9.0 software is used to incorporate sample weights and to estimate robust standard errors that account for the stratified and clustered sampling design of the NHIS (NCHS various years; StataCorp. 2006).

Results

Table 1 provides weighted proportions of never, former, and current smokers by educational attainment and highlights important differences in smoking status by education for all adults, across age groups, and by sex. Panel A provides a description of the entire sample and shows that current smoking status decreases with increasing educational attainment—for example, 31.1 percent of those with less than a high school degree or GED are current smokers while only 9.9 percent of those with post-baccalaureate education are current smokers. Examining the age groups in Panel A gives a glimpse into important age differences in the proportions of smokers by educational attainment. For 25 to 49 year olds with less than a high school education or GED, 40.9 percent are never smokers, 13.6 percent former smokers, and 45.5 percent current

smokers. There are double the proportions of former smokers for those aged 50 to 69 with similar education and 13.3 percent fewer current smokers. Compared to the younger age groups, if one has lived to age 70 or older the expectation is that fewer of these persons would be current smokers regardless of educational attainment. Similar to the younger age groups, the proportion of current smokers declines with increasing educational attainment for those 70 and older, but only 10.1 percent of those with the lowest educational attainment at these ages are current smokers.

Panels B and C of Table 1 describe important distributional differences of smoking status by educational attainment stratified by sex and age. A greater proportion of males with less than a high school education or GED are current smokers compared to the full sample. This is true for all males, as well as, males in every age group with that level of educational attainment. The smoking by education gradient is most visible and disturbing for the youngest group of males, those age 25 to 49. Among this age group there are large proportions of current smokers in the lowest educational categories—49.8 percent of less than high school educated, 39.0 percent of high school educated, and 30.9 percent of some college educated males in this age group are current smokers. Although the proportions of current smokers by educational attainment for all females are smaller than for males, trends similar to males emerge in the two youngest age groups, 25 to 49 and 50 to 69 (compare Panels B and C). For example, 41.5 percent of females age 25-49 with less than a high school education or GED and 34.0 percent with a high school education are current smokers. Further, the proportion of current smokers among females in this age group steadily declines to 9.7 percent for those with greater than 4 years of college.

Table 2 presents hazard ratios for the risk of all cause mortality for adults of all ages and for three broad age groups. Model 1 for all adults shows an inverse association between education and mortality, net of other important confounding factors. Compared to those with more than 4 years of college education, those with 4 years of college experienced a 16 percent increase, and those with less than high school or a GED degree experienced a 68 percent increase in the risk of death. Model 2 shows the impact that smoking has on mortality and on the education gap in mortality. Compared to never smokers, former smokers are at a 38 percent, and current heavy smokers are at a 2.6-fold increased risk of death. At the same time, including smoking status in Model 2 decreases the risk of death for the least educated compared to the most educated from a 1.68 HR to 1.54 HR – a reduction of over 20 percent (that is, [1.68-1.54]/[1-1.68]). A similar percentage reduction in the risk of death by education occurs for high school educated individuals, with a decline from a 1.50 HR to a 1.38 HR, and some college educated individuals, from a 1.46 HR to a 1.35 HR.

We can also examine the moderating effect of smoking on the relationship of education on mortality by age group. Model 1 for those aged 25-49 shows that educational attainment is most strongly linked to prospective mortality for the youngest age group. In fact, those with some college or less education experience over double the risk of death compared with those in the highest educational category. Smoking status also has some of its strongest moderating effects among young adults. Including smoking in Model 2 reduces the HR for individuals aged 25-49 compared to those with more than

4 years of college, by 11 percent for those with 4 years of college, 23 percent for those with some college, 26 percent for high school graduates, and 33 percent for those with less than a high school degree.

Smoking status also substantially moderates the effect of educational attainment on mortality for those aged 50-69. Although the risk of death for the least educated in Model 1 for 50-69 year olds is not as high as in the youngest cohort, Model 2 for these persons shows that smoking reduces the educational gap in mortality by about 30 percent or more. For persons aged 70 and older, educational attainment is related to mortality risk, but exerts more modest moderating effects. The educational gap in mortality is reduced approximately 10 percent with the introduction of smoking.

Table 3 further examines these age-specific relationships by sex. The moderating effect of smoking on the relationship between education and mortality among adults of all ages is much stronger for men than for women (compare all ages, Models 1 and 2, Panels A and B). For example, smoking reduces the risk of death for less than high school educated males compared to males with more than 4 years of college by over 28 percent, from a 1.67 HR to a 1.48 HR. The same comparison for females yields a mere 6.5 percent reduction, from a 1.77 HR to a 1.72 HR.

(Table 3 about here)

Males and females are further differentiated by age. Smoking has a substantial moderating effect among the youngest and least educated males. Indeed, compared to males aged 25-49 with more than four years of college, smoking reduces the mortality gap for comparably aged males with some college by 27 percent, for those with a high school degree by 31 percent, and for those with less than a high school degree by 38

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percent. Smoking also reduces the male mortality gap between the education extremes (those with more than four years of college compared to those with less than a high school degree) by 38 percent among those aged 50-69.

Although the risks of death by education appear high for females age 25-49, only females with some college education are at a significantly higher risk of death compared to females with more than 4 years of college. Notably, smoking reduces that risk nearly 20 percent, from a 2.22 HR to a 1.99 HR.

Finally, the results for the oldest cohorts of men and women reveal very different findings. For ages 70 and older, smoking moderately reduces the risk of mortality by education for men but has no moderating effect for women. For example, for the least educated oldest men compared to the most educated oldest men, smoking reduces the mortality risk by 20 percent, from a 1.60 HR to a 1.48 HR. But for women of these same categories, the risk of death actually increases, albeit slightly, when smoking status enters the equation.

Conclusions

Smoking explains part of the education differences in mortality. Among adults of both sexes and all ages, smoking contributes to about 20 percent to the educational gap in mortality. One of the reasons individuals with higher levels of education live longer is that they are less likely to smoke cigarettes.

The moderating effects of smoking on education and mortality are strong, graded, and vary by age and sex. The moderating effects of smoking on education and mortality are greater among males than females, and among younger than older ages. The stronger

moderating effect of smoking on the education gap in mortality at younger than older ages may be because: (1) some of the greatest disparities in smoking prevalence rates by educational level are at the youngest ages; (2) smoking may be particularly pernicious at the youngest ages, (3) many heavy smokers die before reaching older ages and therefore introduce selectivity at the oldest ages; and (4) at the oldest ages, there are more competing risks, so that the effects of smoking on mortality are attenuated.

Smoking moderates the educational effects of mortality for younger but not older women. This finding is consistent with smoking trends, whereas smoking is becoming more heavily concentrated among younger and less-educated women. Both males and females and all age groups generally experience a strong, graded effect with smoking and mortality. But among older females, the effects of smoking on mortality show less gradation, with current moderate smokers exhibiting lower mortality risk than current light smokers. Thus, the lack of attenuation in the educational gap in mortality among older women may be due to a variety of factors, including: (1) the less clear gradation in smoking statuses, (2) constrained educational opportunities among these women when they were in their 20s, (3) or perhaps perverse effects of the movement of women to gain equality. In an effort to demonstrate their equality, some young women in the 1950s and 1960s, especially independent women with higher levels of education and greater aspirations, began smoking cigarettes to highlight equality to men. Thus, it is possible that earlier behaviors to demonstrate independence and that were connected to educational attainment of now older women color their current situation.

Smoking contributes to educational inequality in mortality. As smoking becomes more concentrated among the lower socioeconomic statuses, we expect that it will

contribute to widening differences between education and mortality.

Individuals can increase their survival prospects through increased education and reduced smoking. Unfortunately, although we know the risk factors, we cannot compel individuals to engage in longevity promoting activities or behaviors. Furthermore, some individuals may use smoking as a coping mechanism that they loathe to relinquish. Some individuals may calculate the risks, yet decide to take up or continue smoking. Of course, the assumption that individuals are well-informed of smoking risks may be flawed if smoking is most common among individuals with low levels of education.

Our results suggest a strong link between low education, smoking, and mortality. We know that smoking and education occur prior to mortality. But we cannot fully disentangle the timing or causal connection between smoking and education. Most likely, they are interrelated – low education encourages smoking, which in turn impedes individual's educational trajectory. Each is detrimental, both are harmful.

Social policies could improve life expectancy by reducing the prevalence of smoking, and could further close the education-mortality gap by reducing the disproportionately high smoking prevalence among the least educated. The age-adjusted cigarette smoking prevalence rate of adults aged 25 and older in the U.S. has experienced tremendous declines – from 36.9% in 1974 to 20.3% in 2006. Yet the prevalence rate remained unchanged in 2005 and 2006 (NCHS 2007a). Government regulation – in terms of taxation, smoking bans, and other forms – works. But we may be nearing the floor on smoking prevalence rates; those individuals who smoke may be unlikely to quit for any reason. And, as we reduce smoking prevalence, we may further concentrate smoking prevalence rates into the low educated groups.

Cigarettes are a relatively cheap, convenient source of immediate gratification, escape, enjoyment, pleasure, relaxation, and stress relief (Waldron 1991). It is possible that individuals with lower levels of education rely more heavily on smoking as a way to cope, relax, and enjoy life, however short. And more educated individuals have access to other sources of relaxation and enjoyment.

Education is a fundamental cause of health and longevity (Link and Phelan 1995). Smoking is the single-most preventable cause of death in the U.S. And smoking and education are interrelated, with smoking concentrated among those with the least education. Thus, controlling for smoking explains part of the education gap in mortality. Further efforts to increase life expectancy in the U.S. will need to focus on increasing education, reducing educational disparities, and reducing smoking prevalence, especially among the least educated. Such gains will not only reduce SES disparities in longevity, but will also increase life expectancy for the nation.

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Table 1. Percent Never, Former, and Current Smoker by Education, Age, and Sex, U.S., 1995-2000.[a]

| | | Panel A. Full Sample (N = 123,817) | | |
| | | | Age Groups | |
	All Ages	25 to 49 years	50 to 69 years	70 years and older
Never Smoker				
Less than High School, GED	43.5 %	40.9 %	36.8 %	54.1 %
High School	47.1	47.0	43.3	53.9
Some college	49.0	52.3	39.9	49.5
4 years of college	61.6	68.2	44.7	49.6
More than 4 years of college	64.8	72.5	53.7	51.1
Former Smoker				
Less than High School, GED	25.4	13.6	31.0	35.8
High School	24.8	16.6	32.4	36.2
Some college	25.7	18.9	36.7	41.3
4 years of college	24.1	17.0	39.7	43.9
More than 4 years of college	25.3	17.3	36.0	42.7
Current Smoker				
Less than High School, GED	31.1	45.5	32.2	10.1
High School	28.1	36.4	24.3	9.9
Some college	25.3	28.8	23.4	9.2
4 years of college	14.3	14.8	15.6	6.5
More than 4 years of college	9.9	10.2	10.3	6.2
		Panel B. Males (N = 53,393)		
Never Smoker				
Less than High School, GED	28.9 %	33.6 %	22.7 %	28.6 %
High School	37.7	43.0	28.7	31.6
Some college	42.7	49.4	29.1	30.1
4 years of college	57.1	65.9	38.1	38.3
More than 4 years of college	61.8	71.3	50.1	44.7
Former Smoker				
Less than High School, GED	34.5	16.6	40.7	59.1
High School	30.0	18.0	43.4	58.5
Some college	29.8	19.7	45.9	60.8
4 years of college	27.2	17.6	44.7	57.2
More than 4 years of college	28.3	17.9	39.9	50.1
Current Smoker				
Less than High School, GED	36.5	49.8	36.6	12.3
High School	32.3	39.0	27.9	9.9
Some college	27.5	30.9	25.0	9.1
4 years of college	15.7	16.5	17.2	4.5
More than 4 years of college	9.9	10.8	10.0	5.2
		Panel C. Females (N = 70,424)		
Never Smoker				
Less than High School, GED	54.6 %	47.5 %	48.2 %	68.2 %
High School	54.0	50.6	52.6	63.5
Some college	53.7	54.6	48.1	60.5
4 years of college	65.8	70.2	52.0	60.5
More than 4 years of college	68.1	73.5	58.1	60.1
Former Smoker				
Less than High School, GED	18.5	11.0	23.2	22.9
High School	20.9	15.4	25.5	26.7
Some college	22.5	18.3	29.7	30.2
4 years of college	21.2	16.5	34.2	31.2
More than 4 years of college	22.1	16.8	31.2	32.1
Current Smoker				
Less than High School, GED	26.9	41.5	28.6	8.9
High School	25.1	34.0	21.9	9.8
Some college	23.8	27.1	22.2	9.3
4 years of college	13.0	13.3	13.8	8.3
More than 4 years of college	9.8	9.7	10.7	7.8

[a]Smoking statuses for each education group add to 100 percent.

Table 2. Hazard Ratios for Mortality among All Adults and Select Age Groups, U.S., 1995-2002 (N=123,817).

	All Ages		Age 25-49[a]		Age 50-69[b]		Age 70 and older[c]	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Education (more than 4 years college, ref)								
Less than High School, GED	1.68 **	1.54 **	2.53 **	2.03 **	1.63 **	1.42 **	1.54 **	1.50 **
High School	1.50 **	1.38 **	2.22 **	1.90 **	1.40 **	1.27 *	1.37 **	1.32 **
Some college	1.46 **	1.35 **	2.06 **	1.82 **	1.45	1.32	1.26 **	1.22 **
4 years of college	1.16 **	1.13 **	1.38 **	1.34 **	1.09	1.04	1.15 **	1.13 *
Age (continuous 5 yr intervals)	1.39 **	1.43 **	1.45 **	1.44 **	1.30 **	1.34 **	1.51 **	1.58 **
Sex (female, ref)								
Male	1.77 **	1.58 **	1.80 **	1.70 **	1.76 **	1.57 **	1.75 **	1.54 **
Race/Ethnicity (non-Hispanic white, ref)								
non-Hispanic black	1.11 **	1.13 **	1.13	1.22 **	1.09 **	1.13 **	1.08 *	1.08 **
Hispanic	0.84 **	0.91 **	1.03	1.18 **	0.78 **	0.87 **	0.77 **	0.80 **
Other	0.96	1.02	1.35 **	1.43 **	0.94	1.01	0.81 **	0.87 **
Marital status (married, ref)								
Divorced or separated	1.41 **	1.29 **	1.63 **	1.53 **	1.36 **	1.26 **	1.26 **	1.18 **
Never married	1.41 **	1.43 **	1.53 **	1.48 **	1.44 **	1.46 **	1.22 **	1.23 **
Widowed	1.22 **	1.21 **	1.12	1.05	1.30 **	1.26 **	1.17 **	1.14 **
Employment (working, ref)								
Not working	2.05 **	1.96 **	2.64 **	2.57 **	1.98 **	1.94 **	1.62 **	1.58 **
Income ($\geq$ $20,000, ref)								
< $20,000	1.19 **	1.17 **	1.37 **	1.32 **	1.44 **	1.40 **	1.07 **	1.05
Smoking status (Never smoker, ref)								
Former smoker		1.38 **		1.18 **		1.45 **		1.42 **
Current light smoker		1.97 **		1.62 **		1.99 **		2.11 **
Current moderate smoker		2.07 **		1.90 **		1.97 **		2.26 **
Current heavy smoker		2.57 **		1.97 **		2.44 **		3.06 **
Log Likelihood	-31372.8	-31155.2	-3400.5	-3377.2	-7400.9	-7332.2	-14301.0	-14181.1

*p $\leq$ .05; **p $\leq$ .01

[a] N = 70,449

[b] N = 33,961

[c] N = 19,407

Table 3. Hazard Ratios for All-Cause Mortality by Sex and Age, 1995-2002.[a]

	All Ages		Age 25-49		Age 50-69		Age 70 and older	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Panel A. Males (N = 53,393)								
Education (more than 4 years college, ref)								
Less than High School, GED	1.67 **	1.48 **	2.53 **	1.95 **	1.58 **	1.36 **	1.60 **	1.48 **
High School	1.45 **	1.31 **	2.21 **	1.84 **	1.46 **	1.30 **	1.31 *	1.22
Some college	1.46 **	1.35 **	1.98 **	1.72 **	1.60 **	1.44 **	1.22 *	1.15
4 years of college	1.01	0.99	1.12	1.08	1.01	0.98	1.01	0.99
Smoking status (Never smoker, ref)								
Former smoker		1.31 **		1.25 **		1.33 **		1.34 **
Current light smoker		2.06 **		1.65 **		2.14 **		2.21 **
Current moderate smoker		2.17 **		2.07 **		1.98 **		2.47 **
Current heavy smoker		2.54 **		1.87 **		2.47 **		3.25 **
Log Likelihood	-11820.8	-11713.9	-1490.2	-1475.9	-3192.0	-3155.0	-4337.4	-4288.2
Panel B. Females (N = 70,424)								
Education (more than 4 years college, ref)								
Less than High School, GED	1.77 **	1.72 **	2.62	2.19	1.78 **	1.59 **	1.54 **	1.62 **
High School	1.61 **	1.55 **	2.29	2.01	1.47	1.38	1.44 **	1.49 **
Some college	1.50 *	1.45	2.22 *	1.99	1.46	1.33	1.28 **	1.32 **
4 years of college	1.41	1.40	1.86	1.82	1.37	1.29	1.32 **	1.34 **
Smoking status (Never smoker, ref)								
Former smoker		1.47 **		1.10		1.67 **		1.52 **
Current light smoker		1.94 **		1.64 **		1.91 **		2.15 **
Current moderate smoker		1.90 **		1.70		2.01 **		1.87 **
Current heavy smoker		2.63 **		2.55 **		2.13 **		2.93 **
Log Likelihood	-14831.5	-14718.6	-1383.2	-1372.8	-2925.2	-2890.1	-7215.6	-7146.8

*$p \leq .05$; **$p \leq .01$.

[a]All models control for age, race/ethnicity, marital status, employment, and income.